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TESTIMONY
OF BEN JOHNSON, PH.D.

On Behalf of the

STATE OF NEW HAMPSHIRE
OFFICE OF CONSUMER ADVOCATE

Before the

STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

DW 15-199
Application of Abenaki Water Company Inc.
For Approval of a Rate Adjustment

Water Rates: Present, Company Proposed, and OCA Proposed (Company Revenue Requirement)

			Present			Company Proposed			OCA Proposed		
	Customers	CCF	Base/Mo.	\$/CCF	Revenue	Base/Mo.	\$/CCF	Revenue	Base/Mo.	\$/CCF	Revenue
Belmont Water											
Single Family Residential	150	4,903.93	32.33	5.3388	84,375	30.00	8.7275	96,799	28.00	8.9316	94,200
Multi-Family Residential	1	1,853.75	1,034.66	5.3388	22,313	1,280.00	8.7275	31,539	896.00	8.9316	27,309
Commercial A	1	187.70	436.00	15.0495	8,057	538.00	19.6385	10,142	436.00	17.8632	8,585
Commercial B	4	897.97	145.66	6.7967	13,095	180.00	8.4694	16,245	145.66	8.9316	15,012
Total Belmont Water	156	7,843.35			127,840			154,725			145,106
Bow Water											
			Present Rates			Present Rates			Present Rates		
	Customers	CCF	Base/Qtr	\$/CCF	Revenue	Base/Qtr	\$/CCF	Revenue	Base/Qtr	\$/CCF	Revenue
Total Bow Water	95	5,481.20	10.00	10.2000	67,308	30.00	8.7275	82,037	16.80	13.3974	92,586
Combined Water					195,148			236,762			237,692

Customers and CCF from attachment to Temporary Rates Settlement (12/10/2015) as revised in Technical Session 2-2 and 2-3
 Present rates from AWC tariffs effective 4/1/2015
 Company Proposed rates from proposed tariff
 OCA Proposed rates from Attachment SJR-3

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1 **Introduction**

2

3 **Q. Would you please state your name and address?**

4 **A.** Ben Johnson, 5600 Pimlico Drive, Tallahassee, Florida.

5

6 **Q. What is your present occupation?**

7 **A.** I am a Consulting Economist and President of Ben Johnson Associates, Inc., a consulting
8 firm specializing in public utility regulation.

9

10 **Q. Have you prepared an appendix that describes your qualifications in regulatory and**
11 **utility economics?**

12 **A.** Yes. Appendix A, attached to my testimony, will serve this purpose.

13

14 **Q. Have you prepared any exhibits in support of your testimony?**

15 **A.** Yes. I have an exhibit consisting of 18 schedules. These schedules were prepared under
16 my supervision and are true and correct to the best of my knowledge.

17

18 **Q. What is your purpose in making your appearance at this hearing?**

19 **A.** My firm has been retained by the Office of Consumer Advocate (OCA) to assist in
20 preparing and presenting evidence in this proceeding with respect to the cost of capital
21 and rate of return of Abenaki Water Company, Inc. (Abenaki, or the Company).

22 Following this introduction, my testimony has seven sections. In the first section, I
23 discuss the Company's capital structure and cost of debt. In the second section, I
24 describe the comparable earnings and market approaches to determining the cost of

1 equity. In the third section, I discuss changing economic conditions. In the fourth section
2 I present the results of my comparable earnings analysis. In the fifth section, I present the
3 results of my market approach. In the sixth section, I summarize my conclusions and
4 recommendations.

5

6 **Capital Structure and Cost of Debt**

7

8 **Q. Let's turn to the first section of your testimony, regarding the Company's capital**
9 **structure and cost of debt. To begin with, what is the requested capital structure?**

10 A. The Company is proposing a capital structure of 41.56% long-term debt and 58.44%
11 common equity, as shown in Schedule 4 attached to the testimony of Deborah Carson.

12

13 **Q. With regard to the appropriate capital structure for ratemaking purposes, are there**
14 **several options that could be considered by the Commission?**

15 A. Yes. The Company is wholly owned by New England Service Company (NESC); no
16 common stock is issued or sold directly to the public, and its capital structure is almost
17 entirely within the control of the management of NESC. As a wholly owned subsidiary,
18 the equity ratio of Abenaki can be increased or decreased through equity infusions from
19 or dividends to the parent company, and by choosing how much debt to issue in the name
20 of Abenaki, in the name of other subsidiaries controlled by management, and by the
21 parent company NESC.

22

23

24

In a case like this, where the utility is operated by a subsidiary of a holding
company, there are several ways the capital structure can be developed for regulatory
purposes. For instance, the Commission could use the consolidated capital structure for

1 NESC as a whole, it could use the operating subsidiary's capital structure, it could use an
2 imputed capital structure, it could use an industry-average capital structure, or it could
3 use a hypothetical capital structure.

4 The fact that the Company obtains its common equity indirectly through affiliated
5 relationships makes it important to at least examine data for the the parent firm, which
6 issues common stock that is directly owned by the public. The parent company's
7 consolidated financial statements indicate that NESC is using a similar degree of debt
8 leveraging as it is proposing for use in this case: 39.8% debt and 60.2% common equity.

9
10 **Q. Is there any reason to be concerned about this capital structure?**

11 **A.** Yes. The Company's proposed capital structure includes a larger fraction of common
12 equity than is necessary. Using a larger equity ratio tends to be costly, because debt
13 generally costs less than equity. Also, using a larger equity ratio effectively requires
14 customers to pay a higher level of income tax expense, because interest is a deductible
15 expense, while profits are taxable. Taking into account both effects, even small
16 differences in the debt to equity ratio can have a significant impact on the revenue
17 requirement and customer bills.

18
19 **Q. You indicated the proposed capital structure includes more equity than the
20 minimum amount necessary. Can you please explain the basis for this statement?**

21 **A.** Yes. I formed this opinion based on more than 40 years of experience studying public
22 utilities and analyzing their cost of capital, as well as my analysis of recent data for a
23 group of 11 publicly held water utilities (including NESC). These are the same utilities I
24 used in developing my cost of equity analysis. The 11 companies included in my

1 comparative analysis, and their respective long term debt and common equity ratios,
2 appear on Schedule 1.

3 All 11 of these firms provide water (or water and wastewater) service, their stock
4 is publicly traded, and they primarily, if not entirely operate within the United States.
5 With the exception of NESC, financial and other data for each of these firms is provided
6 in Compstat Company Research reports that are published by S&P Capital IQ (part of
7 McGraw Hill Financial). I also reviewed a few other firms that initially appeared to
8 match these criteria, but upon further review, I excluded them because their operations
9 were fundamentally different from the others, or they were not currently paying dividends
10 (making them less useful for my cost of equity analysis), or both.

11 I simplified this analysis by excluding short term debt, preferred stock and current
12 maturities of long term debt. If these items had been included, the common equity ratios
13 would have been somewhat lower than those shown in Schedule 1, (although the impact
14 would be fairly small).

15 As shown in Schedule 1, as of December 31, 2014, the common equity ratios in
16 this group of 11 utilities ranged as low as 0.1% and as high as 60.9%. NESC has the
17 second highest equity ratio, at 60.2%. The overall average equity ratio for the group is
18 46.4%. Excluding York Water Company on the basis that it is an outlier, the average
19 equity ratio is 51.0%.

20 This data demonstrates that firms of this type can successfully finance their
21 operations with less equity than the 60% ratio maintained by the parent company, the
22 ratio of 56% reflected on the Company's statement of capitalization as of December 31,
23 2014, or the 58% ratio shown in the Rate of Return Information attached to Ms. Carson's
24 testimony. Based upon my general knowledge and experience, which is confirmed by the

1 recent data for this group of 11 comparable firms, it is my opinion that Abenaki can be
2 operated with a higher degree of leveraging, and this would be less costly for customers
3 than using a common equity ratio of 55.8% to 58.4%, as has been suggested for potential
4 use in this case.

5

6 **Q. What is your recommendation concerning the appropriate capital structure in this**
7 **proceeding?**

8 A. I recommend the Commission use a capital structure consisting of 50% common equity
9 and 50% long term debt. My recommended equity ratio of 50% is less costly than using
10 a 56.0% or higher ratio, as suggested by the Company, and it is more consistent with the
11 equity ratios of the group of 11 water utilities, which averaged 46.4% (51.0% if the
12 outlier is removed).

13

14 **Q. Let's turn to the Company's cost of debt. What debt rate has the Company**
15 **requested?**

16 A. As shown on its Schedule 4, the Company is proposing a long term debt cost of 4.13%.
17 This is based upon an outstanding balance of \$252,802 on its loan from CoBank, based
18 upon an interest rate of 3.68% plus \$1,803 in amortized financing costs.

19

20 **Q. Did the Company provide additional details concerning its debt costs?**

21 A. Yes. The Company explained it obtained long term debt financing from CoBank, with a
22 nominal interest rate of 3.68%, and an effective interest rate of 2.93% if you deduct just
23 the cash portion of the "patronage distribution" offered by the bank. However, the
24 effective interest rate is just 2.68%, if you consider the entire distribution, including the

1 non-cash portion. In addition, the Company incurred an origination fee and legal costs
2 which totaled \$20,634. Depending upon how these additional costs are accounted for,
3 they could add approximately 0.7% to 1.00% or more to the effective annual cost of the
4 loan. Thus, the cost of this debt financing is in the vicinity of 3.38% to 4.68% or so,
5 depending upon how the closing costs and patronage discount are handled.

6 The Company also provided information in response to Data Request OCA 2-6,
7 which indicates that the parent company has borrowed long term debt at a cost of 3.00%,
8 and its other water utilities have obtained long term debt with costs that range from
9 3.00% to 3.38%.

10
11 **Q. What do you recommend concerning the cost of debt?**

12 **A.** Taking into account all of the information just discussed, as well as my recommendation
13 to use a 50% equity ratio, I recommend using a cost of debt of 3.75% for ratemaking
14 purposes

15
16
17 **Alternative Methods for Determining Cost of Equity**

18
19 **Q. Let's turn to the next part of your testimony. How can the cost of equity be
20 estimated?**

21 **A.** There are at least two major approaches used to estimate the cost of equity capital which
22 have historically been used in regulatory proceedings — the comparable earnings
23 approach and the market approach. In the former approach the analyst attempts to derive
24 the utility's cost of equity capital from published data concerning the achieved returns

1 that firms actually earn on the equity funds that have been placed at their disposal. In the
2 latter approach, the analyst attempts to calculate the cost of equity capital using data from
3 securities markets.

4 Although each approach emphasizes a different aspect of economic theory, when
5 properly performed both methods attempt to measure the same concept: the cost of equity
6 capital. In practical applications these two approaches can produce different results from
7 time to time, because they rely upon different data sources, which aren't necessarily
8 synchronized with respect to the business cycle, investor expectations, and other
9 variables.

10

11 **Q. Can you compare the Comparable Earnings Approach with the Market Approach?**

12 **A.** Yes. As I use these terms, the comparable earnings approach is grounded in the economic
13 theory of competition in the market for goods and services, rather than the market for
14 securities. This theory suggests that over the long run, the return earned by the average
15 firm in a competitive industry will tend to be equal to the opportunity cost of equity
16 capital — the return which could be earned by investing and operating in another industry
17 while facing comparable risk. To the extent this is temporarily not true in specific
18 industries, equity capital will tend to flow away from the industries earning insufficient
19 returns and into the ones earning excessive returns. It is also theoretically possible for a
20 temporary imbalance to exist throughout the entire economy, in which case the results of
21 the comparable earnings approach may not closely match the results of the market
22 approach during some time periods.

23 When an imbalance just occurs in specific sectors of the economy, competition
24 will gradually diminish in industries which lose firms and increase in industries which

1 gain firms. As firms leave the industries with insufficient returns, the remaining firms
2 will tend to earn higher returns. Conversely, increased competition in industries with
3 excessive returns will drive down returns, until they no longer exceed the opportunity
4 cost of equity capital. The same pattern of competitive forces also occurs as firms earning
5 high returns expand their capacity, and firms earning inadequate returns retrench. Over
6 time, returns tend to equilibrate towards a normal level (although some individual firms
7 may repeatedly earn more than their cost of capital, due to the presence of market power
8 or other unique attributes).

9 Consequently, the theory of competition provides a basis for determining the
10 opportunity cost of equity capital using the comparable earnings approach: one can
11 estimate the long-run cost of equity as equivalent to the level of returns being earned, on
12 average, by firms throughout the economy. To the extent one is using this method to
13 estimate equity costs for a firm that faces above or below average risk, it is necessary to
14 adjust the economy-wide level of equity cost for the relevant differences in risk.

15 One of the major advantages of the comparable earnings approach is its
16 simplicity. Basically, the analyst starts by determining the returns on book equity that
17 have been earned by firms throughout the economy over one or more business cycles.
18 The resulting observed average return provides a direct estimate of the cost of equity; it is
19 then only necessary to adjust this average cost of equity for any differences in risk that
20 may apply to a particular context.

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Q. The comparable earnings approach appears to be fairly simple. Are there any pitfalls?

A. Yes, there are several potential pitfalls. First, it is important to include a wide cross-section of companies in the study. This broader base helps avoid selection of an unusual group of firms which earn returns significantly above or below the norm – reflecting barriers to entry or imbalances in competitive forces, rather than the actual cost of equity. Second, particular care must be taken to avoid the use of data that is biased toward “winners” from a group of firms which have a large amount of monopoly power. Otherwise, the returns included in the study may be biased upward to a significant degree by the presence of monopoly profits. Third, it is important to resolve any differences in risk. For instance, if the firms included in the study face a higher degree of risk than the firm in question, this difference must be recognized by adjusting downward the observed returns to reflect the cost of equity to a firm facing lower risk.

Q. Can you please briefly explain the market approach?

A. Yes. In contrast to the comparable earnings approach, the market approach tends to be more complex, and it rests upon a somewhat different theoretical foundation. Generally speaking, the market approach, when properly applied, is tied to the theory of competition in the market for investment securities, instead of goods and services. In a competitive securities market, the returns earned on any one security will tend towards equality with the returns earned on other securities of comparable risk. If the return earned on a particular security exceeds the level they require, investors will bid up the price of that security. By the same token, investors will bid down the market price of a

1 security if its return is below the required level. In both cases, the price will be adjusted
2 until the expected total return reaches the required level, which is the cost of equity
3 capital.

4 The market and comparable earnings approaches are interrelated, because the
5 theory of competition suggests that in equilibrium the cost of equity derived from the
6 comparable earnings approach should exceed the cost of equity derived from the market
7 approach by only a small fraction, in order to cover the transaction costs associated with
8 common stock issuance. Only this small marginal deviation can logically persist,
9 assuming there is sufficient competition in both the securities and goods and services
10 markets.

11 To illustrate this principle, it is helpful to consider the following situation: What
12 would happen if existing firms consistently earned returns considerably higher than the
13 level demanded by investors in the securities market? In all probability, entrepreneurs
14 would create new firms in an effort to share in the high returns enjoyed by existing firms.
15 In addition, at least some of the existing firms would expand in an effort to maintain or
16 expand their market share and take advantage of the opportunity for supra-normal profits.
17 To fuel this growth, additional equity shares would be issued and/or profits retained.

18 In the absence of barriers to entry or other factors that preclude competitive forces
19 from being completely effective, the universe of competing companies would grow, and
20 the supply of equity securities would expand, until the actual returns earned by firms
21 were driven down to levels that are consistent with the returns required by equity
22 investors. Accordingly, because of the interaction between the securities market and the
23 markets for goods and services, and assuming competition exists in both sets of markets,
24 earnings on book equity should in the long run be very similar to the return on equity

1 demanded by investors. At most, a very small discrepancy might persist, related to the
2 transaction costs associated with securities issuance.

3
4
5 **Changing Economic Conditions**

6
7 **Q. To build a foundation for your analysis of equity costs, can you please provide an**
8 **overview of recent economic events ?**

9 A. Yes. In recent years we have seen extraordinary events occurring in the financial markets
10 and the broader economy. With the benefit of hindsight, these unusual events can be
11 traced back to 2007, as the upward trend in home prices stalled, and troubles in the
12 financial sector became increasingly visible. Eventually, it became apparent that a bubble
13 in home prices had occurred, which was largely a consequence of overly aggressive
14 efforts to encourage home ownership in combination with excessively supportive
15 monetary policy. The collapse of this bubble slowly but inexorably led to a financial
16 “panic” that was reminiscent of the one that occurred in 1929.

17 The first strong sign of the seriousness of the problems occurred on September 7,
18 2008, when the US Treasury bailed out both of the Government-sponsored (but privately
19 owned) mortgage companies – Freddie Mac and Fannie Mae. In some ways this was a
20 relatively minor change, merely making explicit assurances of federal support for these
21 firm's debt which had previously been implicit. But, in other ways, this was an extremely
22 significant event both because of the magnitude of the amounts involved, as well as the
23 fact that these firms were a major driving force behind the housing bubble. In fact, over
24 the prior decade, these publicly traded, profit-making firms' “book of business” (their

1 assets plus the mortgage securities they guaranteed) had grown to a total of about \$5.2
2 trillion – which was nearly as large as the entire \$5.3 trillion of external debt then owed
3 by the US Government. Despite the enormous size of this bailout, it didn't end the
4 financial and housing crisis, nor did it bring an end to federal bailout actions.

5 A week later, on September 15, 2008 Lehman announced that it had filed Chapter
6 11 bankruptcy - at the time the largest bankruptcy in U.S. History. The next day, on
7 September 16, 2008, the Federal Reserve agreed to an \$85 billion bailout of troubled
8 insurance giant AIG. Then, on October 3, 2008, the Federal Government announced a
9 \$700 billion Troubled Asset Relief Program for the purchase of "troubled" bank assets.
10 But, even this extraordinary program was not the end of the line. On November 25,
11 2008, the Federal Reserve announced an additional \$800 billion package intended to help
12 support the financial sector.

13 Although my focus here is on the “real” economy, it is worth noting that these
14 extraordinary bailout efforts were accompanied by an equally unusual easing of monetary
15 policy. Around the same time, the Federal Reserve began slashing short term interest
16 rates and taking various other actions in an attempt to avert panic and increase liquidity --
17 efforts which have continued to this day. By December 16, 2008, the benchmark Fed rate
18 had been cut to near zero, and the fed funds target rate remained there for seven years. It
19 was finally increased to .24% in December 2015 and .34% in January 2016.

20 The National Bureau of Economic Research declared the recession officially
21 began in December 2007, and it officially ended in June 2009. Although the officially
22 defined recession was quite brief – lasting just a year and a half – few observers have
23 been satisfied with performance of the economy since that ending date. Throughout most
24 of the subsequent years, unemployment and under-employment remained at unacceptably

1 high levels, and incomes remained weak. This led some to apply the descriptive term
2 “Great Recession,” despite the fact that the recession itself was not extraordinarily long
3 or deep. What was extraordinary (and somewhat reminiscent of the Great Depression)
4 was the subsequent prolonged period of lingering economic weakness, which was
5 accompanied by high levels of uncertainty concerning the direction of federal economic
6 policy, and an abiding hope for a sharp turnaround which never seemed to materialize.

7 There are many unusual aspects of this recent “recovery” period, the most
8 significant being the fact that economic growth, investment activity and employment
9 conditions have been so weak for a such a long time, despite (not because of) the brevity
10 and sharpness of the recession itself. Although the recession officially ended years ago,
11 real economic growth has remained weak, employment conditions have remained poor,
12 and firms have been unusually reluctant to expand or invest – resulting in mounting
13 levels of cash sitting unused on many corporate balance sheets.

14 Most knowledgeable observers would typically expect the sort of sharp, rapid
15 drop in economic activity which occurred in late 2008 to be followed by an equally sharp
16 and robust rebound in activity, once confidence was regained, as firms would be eager to
17 take advantage of the abundant investment opportunities that would normally be
18 perceived as the economy emerges from the recession. At least within the past century,
19 the only really comparable period of prolonged weakness was during the 1930's, which
20 came to be known as the Great Depression.

1

2

3 **Q. How have other unregulated sectors of the economy performed during this period?**

4 A. The impact of the recession and subsequent weakness in the overall economy can be most
5 easily seen by reviewing data for U.S. Gross Domestic Product (GDP), which was still
6 growing – albeit slowly – during the second half of 2007, extending a pattern of strong
7 economic growth which began in 2003. As shown on Schedule 2, GDP fell by an
8 annualized rate of 2.7% in the first quarter of 2008 before partially recovering in the
9 second quarter. In the third quarter of 2008 market confidence rapidly worsened, with
10 news outlets increasingly focused on problems with mortgage derivatives, huge losses by
11 banks and other firms holding this paper, a growing liquidity crisis, and frantic efforts to
12 push for approval of the Troubled Assets Relief Program (TARP), in an attempt to bail
13 out certain firms that were seen as “too big to fail” (or too politically important to let die).

14 While it isn't feasible to fully disentangle cause and effect, what is clear is that
15 during the last half of 2008 and the first quarter of 2009 the real economy sharply
16 deteriorated. GDP “grew” at a negative annual rate of 3.7%, 9.2% and 6.8% during the
17 third and fourth quarters of 2008 and the first quarter of 2009, respectively. These sharp
18 declines occurred despite near-zero short term interest rates, a multi-trillion dollar
19 expansion of the Federal Reserve's balance sheet, successful passage of TARP, and other
20 extraordinary attempts at propping up the economy.

21 Data from 2009 initially appeared to be encouraging, as the stock market began to
22 stabilize, and the recession appeared to end. GDP contracted by an annualized rate of just
23 0.7% during the 2nd quarter of 2009, and growth turned positive during the next several
24 quarters. As I mentioned, the National Bureau of Economic Research decided the

1 recession officially “ended” in June 2009, and it initially appeared that a normal recovery
2 was underway, with GDP growing at an annual rate of nearly 4.0% for several quarters in
3 a row.

4 However, in 2010 the rate of expansion slowed, rather than escalating above 4%
5 as would more typically be expected. This was an unfortunate harbinger of events to
6 come. During subsequent years, GDP growth has repeatedly disappointed. During this
7 prolonged period, the pace of growth has never been strong enough to really repair the
8 initial damage, nor has it been sufficient to return personal income or employment to the
9 levels that would have occurred if the recession hadn't occurred, or if historical growth
10 patterns had resumed, as normally occurs after a recession.

11 While there have been some periods of modest strength, they haven't matched the
12 extraordinary bursts of growth which often occur during post-recessionary periods, and
13 these brief interludes of modestly stronger growth have often been followed by
14 subsequent periods of disappointing weakness. For instance, the third quarter of 2012
15 saw growth of 2.6%, but this was followed by growth well under 2.0% in each of the
16 subsequent two quarters.

17
18 **Q. Can you please elaborate on how economic conditions during this period have**
19 **differed from the pattern that is more typically observed in a post-recessionary**
20 **period?**

21 **A.** While no two business cycles are identical, it is fair to say that the current post-
22 recessionary period has been unusually weak. For instance, as shown on Page 1 of
23 Schedule 2 of my exhibit, during the post-recessionary period commencing from January
24 1983 through March 1985, GDP grew at an average annual rate of about 7.6%, with some

1 individual quarters seeing growth at an annual rate of 8% or more. The economy then
2 slowed to a more normal yet strong pace, growing at an average rate of about 3.8% over
3 the next several years. In contrast, during the recovery period commencing on July 1,
4 2009 through December 31, 2013 there was just one quarter in which GDP growth
5 exceeded 4.0%, there were several quarters with negative or very low growth, and the
6 overall average rate of growth was deeply disappointing – just 2.2% per year, over this
7 period.

8 This lingering weakness occurred despite (contrarians might argue it is actually
9 because of) massive efforts by the US Treasury and the Federal Reserve to pump money
10 into the economy. Considering the enormous, historically unprecedented magnitude of
11 these efforts, under the standard Keynesian view of macroeconomic forces, one would
12 logically expect to see extraordinarily robust growth, rather than the unusually weak
13 growth. While knowledgeable economists all agree the economy has not performed well
14 in recent years, it remains a matter of dispute why this has occurred, how the economy
15 would have fared in the absence of the extraordinarily vigorous attempts at both
16 monetary and fiscal intervention into the economy, or why the patient hasn't responded to
17 these policy prescriptions as expected.

18 Despite widely publicized attempts to quantify “jobs created and saved” and
19 various other efforts to estimate the impact of recent fiscal and monetary policies, no one
20 really knows how the economy would have fared in the absence of these efforts. Nor is
21 anyone sure how much net economic benefit, if any, has been provided by the
22 extraordinary sums spent by both the Federal Reserve and the federal government in an
23 effort to stimulate the economy.

1

2 **Q. In there evidence that the economy been weak, despite all these efforts?**

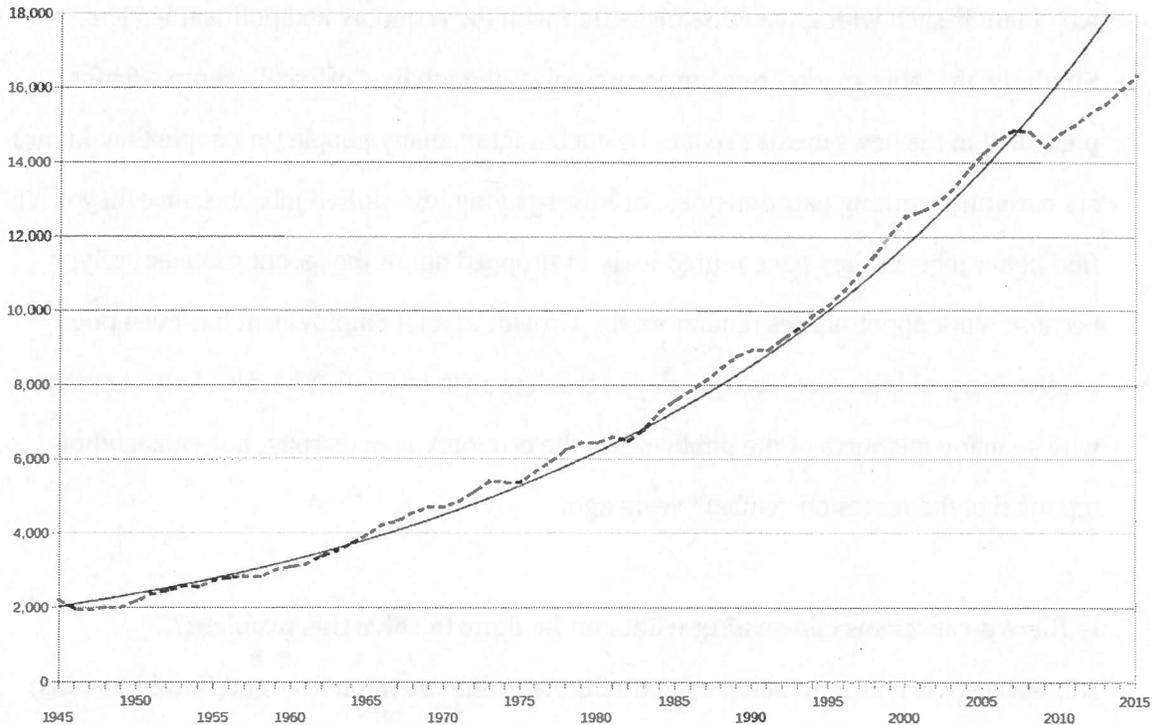
3 A. Yes. The following graph demonstrates there is a problem. The thick dashed line tracks
4 the size of the U.S. Economy, based upon the overall magnitude of Real GDP (the actual
5 volume of goods and services produced in the United States, after removing the impact of
6 inflation). The thin solid line shows the upward trajectory GDP has followed since World
7 War II – a path of long term compound growth which has resulted in ever-increasing
8 prosperity, and which has consistently left most people feeling their children were “better
9 off” than they themselves were during the analogous stages of their own lives. However,
10 during the roughly ten years since the peak of the last business cycle, GDP stopped
11 following this long-standing upward growth trajectory.

1

U.S. Real Gross Domestic Product

2

1945 - 2015



4

Looking at this graph, it's easy to see there is a large and growing gap between the economy's actual performance and the historical growth trajectory, as illustrated by the thin solid line. Not only is the gap already quite large, the gap continues to grow, and there are no signs it is going to be eliminated. This gap helps explain why so many ordinary people continue to feel the economy is weak – years after the recession officially “ended” – despite news reports concerning low unemployment and a strong stock market.

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1 Although few people have been shown hard data demonstrating the severity of
2 this problem, the underlying weakness is very real and significant, and it helps explain
3 why there is such widespread dissatisfaction with the economy and political leaders.
4 Similarly, the labor market remains very weak, although the “official” labor statistics
5 published in the news media seem to be encouraging, many people (or people they know)
6 are currently working part time jobs, or lower-paying less-skilled jobs, because they can't
7 find better jobs, or they have retired early or dropped out of the labour force entirely,
8 because work opportunities remain weak. Growth in total employment has been poor,
9 evidencing problems that have paralleled weak growth in GDP. This also helps explain
10 why so many members of the public sense the economy is not strong, notwithstanding
11 reports that the recession “ended” years ago.

12
13 **Q. Is there a consensus concerning what can be done to solve this problem?**

14 **A.** No, but there is reason to believe the traditional solutions (monetary and fiscal stimulus)
15 are not working – and might even be contributing to the problem. As suggested by the
16 complaints of both the “Occupy Wall Street” and the “Tea Party” movements, these
17 policies led to an enormous flow of benefits from the government to specific interest
18 groups, ranging from large banks and Wall Street firms to the United Auto Workers. The
19 sums flowing to these politically well-connected groups have been enormous – measured
20 in the billions and even hundreds of billions of dollars – but any corresponding benefits
21 to the taxpayers and the public in general have been much less visible or measurable. As
22 time passed, and the costs mounted, attention was increasingly drawn to the
23 corresponding increase in the federal debt and the Federal Reserve Board's actions

1 effectively monetizing a substantial portion of the debt which have led to extraordinarily
2 low level of interest rates which have prevailed throughout this period.

3 The disappointing trajectory of the economy in the face of such massive fiscal and
4 monetary intervention has reinvigorated long running debates amongst economists over
5 the theoretical underpinnings of Keynesian economics, and the effectiveness of various
6 approaches to stimulating or supporting the economy through monetary and fiscal
7 policies. Given the massive scale of the interventions on both the monetary and fiscal
8 fronts the lack of a highly visible and unequivocal response to this extraordinary level of
9 monetary and fiscal stimulus has been both striking and deeply disappointing.

10 Considering the depth of the initial decline (which would normally suggest an equally
11 sharp rebound) and the extraordinary scale and speed of the monetary and fiscal
12 intervention, orthodox (Keynesian) macroeconomics would logically suggest an
13 extraordinarily strong and rapid rebounding of the economy. Instead, the reality has been
14 quite the opposite -- growth has actually been weaker during these years than during the
15 typical post-recessionary period.

16 The discrepancy between actual results and the magnitude of the stimulus efforts
17 is quite striking – but it is open to more than one interpretation. For instance, followers
18 of the “Chicago School” of economics can plausibly argue that Keynesian monetary and
19 fiscal policy has just failed its largest test ever – supporting their contention that the
20 Keynesian model is flawed, and it's policy prescriptions are deeply misguided. On the
21 other hand, some defenders of Keynesian economics have looked at the same evidence
22 and reached the opposite conclusion – arguing that the Keynesian “fix” was applied on
23 too small a scale because policy makers misjudged the magnitude of the recession – or
24 that the standard Keynesian assumptions concerning “multiplier effects” were off the

1 mark, given the unique nature of this particular recession. This debate cannot easily be
2 resolved, since no one has yet developed any convincing estimates (and the data may
3 simply not exist) for how far down the economy would have dropped in the absence of
4 government action, or in the presence of any specific alternative approach to government
5 policy.

6 Interestingly, the central debate I just sketched – whether monetary and fiscal
7 policy hasn't worked, or just hasn't been deployed on a massive enough scale – does not
8 exhaust the range of possible explanations for why the economy has been performing so
9 poorly in recent years. There is another explanation (or contributing factor) worth
10 mentioning, which can most easily be understood by considering one of the most striking
11 parallels between the current time period and the Great Depression: both have been times
12 of unusually intense public focus on the economy, and a time of great political and
13 economic uncertainty.

14 In the first dozen years of his time in office, President Franklin D. Roosevelt
15 engaged in an extraordinarily wide ranging program of economic and political
16 experimentation, trying many different (sometimes contradictory) policies, in hopes of
17 finding something – anything – that would pull the economy out of the depression. Some
18 of his policies were subsequently reversed or abandoned, and others were eventually
19 found to be unconstitutional, while still others became fundamental pillars of our
20 economic and political system. But, what is striking about this time period is that all of
21 this experimentation and unprecedented intervention into the economy had the
22 unintended consequence of creating an economic and political environment of great
23 uncertainty – which undoubtedly served to discourage risk taking, expansion and
24 investment. This period of great uncertainty didn't end until attention in Washington and

1 the country shifted away from economic policy experimentation to the more
2 straightforward problem of increasing production of ships, planes and armaments for
3 World War II.

4 Recent controversies over Federal health care policy, rising fears concerning the
5 long term solvency of Medicare and other entitlement programs, pitched battles
6 concerning “cap and trade” before Congress, passage of the Dodd-Frank bill, which
7 mandates thousands of pages of new regulations, the sovereign debt crisis in Europe, far-
8 ranging and highly controversial climate-related rulemaking by the Environmental
9 Protection Agency, a series of “temporary” tax cuts, “fiscal cliffs,” and unusually intense,
10 highly publicized debates concerning the size and scope of the federal government,
11 fundamental tenets of federal tax policy, the size of the federal deficit, the federal debt
12 ceiling, and intense media focus on the timing of Federal Reserve action to return interest
13 rates to more normal levels, have all combined to create a climate of extraordinary
14 political and economic uncertainty. In fact, there has never been a period of such extreme
15 uncertainty since the Great Depression.

16 While the impact of this instability cannot be readily measured, logic suggests it
17 could be contributing to the problem, by slowing the pace of private sector capital
18 investment and business expansion, as decision makers hold off on investment and
19 expansion plans and hiring of more full-time workers until they have better forward
20 “visibility” concerning the future.

21
22 **Q. What has occurred in the national labour market during this time period?**

23 **A.** In January 2008, the national unemployment rate stood at just 5.0%. Unemployment
24 climbed slightly to 5.1% by March 2008. But, conditions began to deteriorate as

1 problems in the housing sector spread into other sectors, with unemployment increasing
2 to 5.8% by July 2008. Then, as the financial crisis and federal bailout efforts began to
3 dominate the headlines, firms began to scale back their operations to cut costs, and the
4 rate of unemployment began to escalate even more rapidly.

5 By January 2009 the national unemployment rate had reached 7.8%, and
6 conditions continued to deteriorate. By October, 2009 (a few months after the official
7 end of the recession) unemployment had increased to 10.0%. Unemployment gradually
8 declined thereafter, to a low of 7.6% in March, 2013. Since that time, unemployment has
9 gradually declined, and is currently running just under 5%. Yet, most people are not
10 satisfied with the current situation, sensing that the labor market still isn't back to normal.

11 One reason for this disconnect is that a large number of workers have become
12 discouraged and left the labor force, while others are currently underemployed – wanting
13 to work full time, but having to work part time, or having to work at lower paying jobs
14 because they are unable to find better-paying work for which they are fully qualified.
15 Similarly, the number of people who have remained unemployed for several months or
16 longer has remained at disturbingly high levels.

17
18 **Q. Is there a standard data series that is sometimes used to quantify the**
19 **“underemployment” phenomenon you just mentioned?**

20 **A.** Yes. The Bureau of Labor Statistics publishes several alternative measures to its official
21 unemployment rate. The official unemployment rate, or “U-3” series, measures the total
22 unemployed as a percentage of the civilian labor force. One alternative measure is
23 referred to as the “U-6” series, which measures the “total unemployed, plus discouraged
24 workers, plus all marginally attached workers, plus total unemployed part time for

1 economic reasons, as a percentage of the civilian labor force plus all marginally attached
2 workers". [See, *Measures of Labor utilization From the Current Population Survey*, BLS
3 Working Papers, March, 2009]

4 This alternative measure provides a broader view of weakness in the labor market
5 because it considers, for example, individuals who are forced to work part time because
6 they can't find a full time job. The standard measure of unemployment was at 4.4% in
7 October, 2006, while the broader "underemployment" rate was 8.2%, or 3.8% higher. By
8 December, 2009, the standard measure of unemployment had reached 9.9%, while
9 underemployment had sky-rocketed to 17.1%, or 7.2% higher. It's taken a long time, but
10 both official unemployment and underemployment have gradually declined since then,
11 dropping to 4.9% and 9.9% in January 2016, respectively.

12 However, even the broader U-6 measure doesn't necessarily capture the full extent
13 of the economic pain experienced by many ordinary people. For instance, some young
14 people remained in college longer than they planned, or went back to school, because
15 good jobs haven't been plentiful. Some families no longer have two people working,
16 because it seems so hard to find good jobs, and it makes sense for one person to stay at
17 home full time, thereby avoiding costs associated with commuting, child care and
18 housekeeping. And, many people are now working in jobs with lower pay and fewer
19 benefits, because they've given up hope of finding jobs as good as the ones they held in
20 earlier years. When people make these sorts of life style decisions, dropping out of the
21 labour force, they aren't considered "unemployed" even in the broadest U-6 measure, yet
22 they are nevertheless suffering from the consequences of an economy that is not growing
23 at a normal pace.

24

1 **Q. How have the earnings of unregulated firms responded during this time period?**

2 A. Perhaps the broadest, most reliable indication of how unregulated firms are affected by
3 the economy is in the data provided by the U.S. Census Bureau for "All Manufacturers" –
4 a data series that has been compiled (initially by the Federal Trade Commission) since
5 shortly after World War II.

6 The earnings on common equity for these firms dropped like a rock in the final
7 quarter of 2008, plunging to -12.5%. Unlike employment, however, the weakness in
8 corporate earnings was short-lived. As the economy weakened, firms aggressively
9 trimmed payrolls, inventories, and other expenses, quickly bringing costs in line with the
10 anticipated, lower level of aggregate demand. As a result, the decline in corporate profits
11 was not prolonged. After just a couple of quarters of weakness, profits returned to robust
12 levels. Profits were bolstered by reductions in interest costs, which flowed through to the
13 bottom line, and a widespread hesitancy to expand operations during uncertain times.
14 This created an unusual investment climate, in which profits were strong, and the Federal
15 Reserve Board was flooding the economy with cash in an effort to encourage firms to
16 invest, yet most firms remained very reluctant to expand their operations, or invest in new
17 capacity, due to an abiding feeling of uncertainty about the political climate and the state
18 of the economy. This led the Federal Reserve to become ever more aggressive (and
19 prolonged) in its policy of monetary stimulus, while firms were reluctant to invest –
20 which, in turn, kept profits at elevated levels.

21 Page 1 of Schedule 2 shows quarter-by-quarter changes in GDP, with bold type
22 indicating the approximate timing of various recessions. Page 1 of Schedule 3 shows
23 annual (moving average) returns on equity for this broad-based group of industrial firms
24 on a quarter-by-quarter basis for the same time period, from 1979 to date. The initial

1 decline in earnings during the most recent recession was typical of other recessions, but
2 the drop in earnings was short-lived in comparison with the other recessions. For
3 example, during the recession in the early 1990's, the four-quarter moving average
4 remained in low to mid single digits for 3 years. In comparison, four-quarter moving
5 average returns only briefly dropped into single digits at the onset of the "great
6 recession." Unlike overall economic growth, profits quickly bounced back and they have
7 remained at historically high levels throughout this extended post-recession period.

8 This combination of high earnings and weak employment and economic growth is
9 quite unusual. Among other possibilities, this discrepancy might be an indication that
10 firms have been responding to the extraordinary levels of economic and political
11 uncertainty by maintaining high cash reserves, avoiding or delaying new investments,
12 and avoiding the risk of hiring more full-time, permanent employees, and by taking other
13 steps to minimize their risk exposure during a time of heightened global economic and
14 political uncertainty. This would provide a logical explanation for why profits have been
15 running at relatively high levels, despite weakness in aggregate demand, and despite
16 extraordinarily low interest rates which were intended to stimulate private investment.

17 At least to date, the combination of historically high profits and historically low
18 borrowing costs has not motivated many firms to expand their operations, or make large
19 new investments – contrary to the expected pattern in which either high returns or low
20 borrowing costs will encourage firms to increase investment, which in turn leads to
21 intensified competition and lower profits.

1 All of this has some interesting implications for the analysis of equity costs (and
2 the relationship between the comparable earnings and market approaches), which I will
3 discuss in the next section. It also provides a reason to remain hopeful about the potential
4 for the economy to finally return to its historic trajectory, and for corresponding
5 improvements in employment and personal incomes at some point in the future, if we can
6 ever move past the current climate of extraordinary economic and political uncertainty.
7 We could eventually see an investment boom and strong economic expansion at some
8 point in the future.

9
10
11 **Comparable Earnings Analysis**

12
13 **Q. Would you please briefly explain the approach you've taken in developing your**
14 **comparable earnings analysis, and how it relates to this discussion of changing**
15 **economic conditions?**

16 **A.** Yes. To provide a sufficiently broad data base for my study of achieved returns, and to
17 avoid circular reasoning in my conclusions, I analyzed the earned returns of a wide range
18 of firms in the unregulated sectors of the economy over a lengthy period of time. This
19 wide-spectrum approach minimizes any bias inherent in the data, especially since I
20 primarily focus on the earnings of unregulated firms which do not exert large amounts of
21 monopoly power. Also, I have not assumed achieved returns (for a specific firm or group
22 of firms, or during a specific time period) are always equal to the cost of equity –
23 particularly if there is evidence to the contrary. By taking these precautions, any potential
24 circular reasoning is prevented.

1 One of the major advantages of this approach, properly used, is its relative
2 simplicity. My analytical procedure can be summarized in four steps. First, I studied the
3 rates of return on average common equity earned by unregulated (primarily industrial)
4 firms. Second, I estimated the current cost of equity capital to the average unregulated
5 (industrial) firm on the basis of the historical earnings of these firms in conjunction with
6 an analysis of current economic conditions. Third, I examined the relative risk of utilities
7 versus unregulated firms, and I estimated the current cost of equity for various types of
8 utilities, including water companies, based upon the historical earnings of the unregulated
9 firms adjusted downward for risk differences. Fourth, I used the results of the first three
10 steps to derive my comparable-earnings-based estimate of the Company's cost of equity.
11 In this final step, I evaluated and took into consideration the level of equity risk that is
12 specifically applicable to Abenaki, including consideration of my recommended capital
13 structure.

14 While earnings fluctuate sharply in response to changing economic conditions,
15 over longer periods that include two or more full business cycles, unregulated firms tend
16 to earn remarkably consistent returns. For instance, as shown at the top of Page 2 of
17 Schedule 3, during the 30 year period ending in the fourth quarter of 2009, returns on
18 equity reported by the U.S. Census Bureau for "All Manufacturers" averaged 12.2%.
19 This is very similar to (just a bit lower than) the 12.9% average earned during the 30
20 years ending in the fourth quarter of 2014. In fact, looking at the entire data series – all
21 of the calendar years for which this data is available (beginning in 1948) – the earnings of
22 this broad group of unregulated firms have never averaged less than 11.8% nor more than
23 12.9% over any 30 year period. I have been studying equity returns for many years, and I
24 am convinced this data provides strong evidence concerning the "normal" level of profits

1 which unregulated firms need to earn – notwithstanding the fact that earned returns
2 fluctuate far above and below this “normal” level during many shorter time periods.

3 As depicted on Page 1 of Schedule 3, returns earned by unregulated firms tend to
4 fluctuate with the business cycle – increasing during periods of expansion and falling
5 during recessions. For example, just before the 1980 recession, the returns of All
6 Manufacturers peaked above 16%; they declined sharply during the subsequent recession.
7 Similarly, in 1988, the returns again peaked just over 16%. They then began to fall,
8 reaching a low of 2% in 1992. As the economy strengthened, annual returns ending in
9 the 4th quarter climbed above 15% for the years 1994 through 2000, then dropped to less
10 than 3% during the recession in 2001. More recently, returns climbed well above 17%
11 during 2006 and the first half of 2007, then dropped to less than 8% in 2008, and the first
12 few quarters of 2009. As I just mentioned, returns subsequently rebounded sharply,
13 reaching as high as 16.95% during the four quarters ending in December 2011 before
14 moderating somewhat in the last couple of years.

15 It is notable that unregulated earnings bounced back so quickly and strongly from
16 their recession lows, and that they have remained at lofty levels, despite lingering
17 weakness in the overall economy, as evidenced by the weak GDP growth and weak
18 employment data I discussed earlier. As I explained, this weakness is atypical of prior
19 recessions, and such extended strength in corporate profits is equally atypical for a period
20 of economic weakness. I believe this unusual combination may be attributable to the
21 confluence of several unusual factors, starting with rapid corporate belt-tightening in the
22 manufacturing sector in response to the rapid spread of news concerning financial panic
23 and fears of a recession which occurred in the summer of 2008 – weaknesses that
24 initiated in the financial, construction and real estate sectors, rather than in

1 manufacturing. This rapid belt-tightening allowed earnings to quickly bounce back from
2 the recession lows, despite weakness in other parts of the economy. Since then, many
3 firms have been letting their cash stockpile, or buying back shares of their stock, rather
4 than investing in expansion due to the extraordinary levels of political and economic
5 uncertainty.

6 This collective reluctance to expand and invest during a period of great
7 uncertainty has kept competition at bay, and allowed profits to remain stronger than
8 normal, and it helps explain continuing weakness in the labor market. Eventually, if the
9 political and economic uncertainty diminishes, there is reason to be hopeful that firms
10 will invest and expand, and more new firms will enter the market. This increased level of
11 investment, in reaction to this extended period of strong earnings, may eventually
12 intensify competition and push earnings back toward the long term normal range,
13 consistent with firms' actual cost of equity capital as evidenced by the longer term
14 historical record.

15
16 **Q. What have you concluded concerning the cost of equity to industrials and other
17 unregulated firms in developing your comparable earnings analysis?**

18 **A.** Although unregulated returns can vary widely, depending on the specific time period,
19 average returns have been quite stable over longer time periods, which is consistent with
20 the premise that competitive forces tend to push earned returns toward the cost of equity
21 capital over the long run. Considering the full spectrum of information concerning
22 returns earned in the unregulated sectors over the course of the business cycle, I have
23 concluded that the long-term "normal" level of earnings, and thus the opportunity cost of
24 equity capital, for a typical unregulated firm is in the neighborhood of 12.25% to 14.25%.

1

2 **Q. How did you arrive at this conclusion concerning the “normal” level of earnings for**
3 **a typical unregulated firm?**

4 A. This is based upon my evaluation of the historical data, including but not limited to the
5 30 year averages, which is indicative of the average returns earned by the unregulated
6 firms over an entire business cycle or two. However, I selected a range that is wide
7 enough to encompass the average returns generated over many of the shorter 5, 10, 15
8 and 20-year periods, as shown on Page 2 of Schedule 3. The only exceptions are shorter
9 periods that happen to be heavily weighted with data from “boom” times, which include
10 little or no data from periods when unregulated profits plunge due to an economic
11 downturn.

12 More specifically, the low end of this range (12.25%) is approximately equal to
13 the 12.2% and 12.3% returns earned by the FTC “All Manufacturers” during the 30 year
14 periods ending in the fourth quarter of 2009 and 2010, respectively. The midpoint
15 (13.25%) is similar to, or a little higher than, the highest returns ever observed during any
16 of the 30 year periods since this data series began in 1948. The midpoint of 13.25% is
17 also similar to the 13.3% to 13.5% returns that were earned during most of the 15 year
18 periods shown on page 2 of Schedule 3. Finally, the high end of this range was selected
19 to give at least some consideration to the higher returns which can be observed during
20 other time periods – particularly some of the more recent 5 and 10 year periods, as shown
21 toward the bottom of Page 2 of Schedule 3.

22

1 **Q. Does a public utility's cost of equity differ significantly from the cost to a typical**
2 **unregulated firm?**

3 A. Yes. The cost of equity for the average regulated utility is significantly lower than that of
4 the average unregulated, competitive firm because of differences in the risks they face.
5 These risk differences are very significant and it's important to fully consider them when
6 developing an estimate of a utility's cost of equity capital. That is not to say that all
7 utilities face the same level of risk. To the contrary, significant risk differences can and
8 do exist between different utilities. For example, telephone utilities face a far greater
9 degree of competition as well as rapidly changing regulatory and market conditions.

10

11 **Q. Why do you believe that utilities are so much less risky than competitive firms?**

12 A. First, some public utilities enjoy (or at one time enjoyed) territorial certificates that
13 largely free them from competition within their market area. Unregulated firms do not.
14 But even if they are not legally protected from competition, public utilities generally
15 enjoy enormous economies of scale and scope, along with a dominant or near-monopoly
16 market shares. They also tend to operate in markets where substantial barriers to entry
17 exist, and these barriers reduce the risk of erosion of their market share. The average
18 competitive firm, by contrast, does not enjoy as large a share of the market, and is not as
19 protected by barriers to entry. As a result, it constantly faces numerous uncertainties
20 related to the actions that are being taken, or may soon be taken, by its rivals, continually
21 running the risk that another firm's success will reduce its own earnings.

22 Consider a particularly striking, recent example: the near-total collapse of the
23 profitability of the maker of Blackberry hand held electronic devices – despite high levels
24 of user loyalty and their nearly universal adoption by the corporate buyers of these types

1 of devices. The collapse occurred not so much due to mistakes by the maker of these
2 devices, but due to the extraordinary success of Apple's entry into the consumer cellphone
3 market.

4 In sharp contrast, even in states where public utilities have lost the privilege of
5 being the sole government-certificated monopoly or lost the benefit of other legal barriers
6 to entry, these firms still enjoy a quasi-monopolistic market position. They continue to
7 enjoy a very substantial, if not overwhelmingly dominant, share of the market they serve,
8 and it's inherently difficult for other firms to penetrate that market or gain more than a
9 toehold in it.

10 Second, because of the nature of their services, utilities face relatively minimal
11 variations in demand, compounding the benefits that result from not having to deal with
12 wide swings in their share of the market. Aside from the routine fluctuations associated
13 with changing seasons and weather conditions, there is little likelihood that the demand
14 for electric, gas distribution or water and sewer service will drop substantially over a
15 short period of time. In contrast, most competitive firms face uncertainty not only about
16 the actions of their competitors, but also about the prospects of their entire industry –
17 even if their share of the market remains stable, their earnings may plummet as a result of
18 unpredictable changes in consumer tastes and preferences.

19 Third, utilities are far less subject to the uncertainties associated with fluctuations
20 in the business cycle than most other firms. Typically, the demand for public utility
21 services holds relatively firm throughout a recession and does not increase sharply in
22 periods of economic expansion. The demand for utility services does fluctuate somewhat
23 with changing economic conditions – for instance, industrial consumption of electricity
24 and gas tends to decline as factory output declines – but these services are often viewed

1 as non-discretionary by both business and residential consumers, and thus demand often
2 is sustained even when unemployment is increasing and consumers cut back on other,
3 more discretionary expenditures.

4 Fourth, because their services are considered to be necessities by most consumers,
5 public utilities are reasonably certain of recovering most of their costs most of the time.
6 Although utilities are not impervious to short term economic conditions, and there can be
7 problems with regulatory lag, most competitive firms would be thankful to have the same
8 assurance as utilities that they will eventually be able to recover increased costs from
9 their customers.

10 Because of these substantial risk differences, public utilities have a lower cost of
11 capital, and they should be provided with the opportunity to earn returns that are lower
12 than the ones earned by unregulated, competitive enterprises.

13
14 **Q. Can you elaborate on the differences in risk within the public utility sector?**

15 **A.** Yes. Risk is affected by differences in product line, operational characteristics, market
16 structure, size, management techniques, bond ratings, capital structure, and many other
17 factors. In isolated cases a public utility may actually face risks comparable to those of
18 an unregulated firm, if not greater. Such an exceptional situation will rarely, if ever,
19 occur when making comparisons with the average unregulated firm, but it can sometimes
20 occur when drawing comparisons between individual firms; for instance, a particular
21 unregulated firm might enjoy a substantial degree of monopoly power, which lessens its
22 exposure to normal competitive risks.

23 More generally, there are differences in risk that are associated with specific
24 industries and operating environments. For instance, amongst the traditional public

1 utility categories, the greatest level of business risk is currently faced by incumbent
2 telephone carriers operating in major urban markets. Telephone utilities have long relied
3 on technologies that are subject to rapid change. But, these firms are now facing an
4 increasing degree of technological upheaval and increased market uncertainty due to
5 growing importance of the Internet and mobile telecommunications technologies, as well
6 as changing federal policies (e.g. potential redeployment of spectrum previously used for
7 analog over-the-air television broadcasting). These risk factors vary across the country,
8 with most metropolitan areas seeing more competition than most rural areas, but it is fair
9 to say that telephone utilities serving major metropolitan areas are currently facing a
10 greater level of risk than electric and gas utilities – coming closer to matching the levels
11 of risk faced by the average unregulated firm.

12 This is due to the impact of government policies designed to increase competition,
13 changing technologies, changing consumer tastes and preferences, and the increasing
14 variety of different products and services which can be substituted for many of the
15 services provided by these firms. Most local exchange companies, which historically
16 operated as de facto monopolies in their service areas, are experiencing increased
17 competitive pressures from cellular carriers and cable television carriers – and in some
18 markets from smaller, more specialized telecom suppliers. Most of the incumbent local
19 telecom carriers continue to enjoy a dominant share of most of the geographic markets in
20 which they operate, and the degree of competitive pressure is sometimes misunderstood
21 or exaggerated (e.g. most of these firms or their affiliates are also important participants
22 in the broadband and cellular telephony markets). Nevertheless, it is fair to say that these
23 firms currently face the most intense level of competition within the public utility sector –

1 approaching (but rarely matching) the level of risk faced by a typical unregulated
2 competitive firm.

3 While telecom utilities face the greatest risk, other utilities are not risk free. For
4 instance, electric and gas distribution utilities face some risks attributable to changes in
5 the cost and availability of various fuels, and they face various uncertainties related to
6 potential changes in environmental regulation and government energy policy. Similarly,
7 electric utilities are very capital-intensive, having to construct and maintain massive
8 generating plants and transmission facilities. As a result, they are forced to wrestle with
9 various construction-related risks, relating to various planning and lead time issues,
10 construction management and budgeting, as well as massive financing requirements – all
11 of which are typically more significant than the analogous risks faced by water and sewer
12 utilities.

13 At the low end of the spectrum are water and wastewater utilities, which typically
14 face very little risk from competition and product substitution, and as a result these firms
15 tend to face the lowest overall level of equity risk. Furthermore, the elasticity of demand
16 for water service is extremely low, thereby reducing the equity risks faced by the average
17 local water company to a level far below that of the typical industrial firm, and below
18 most other regulated utilities. Simply stated, life cannot exist without water. At any
19 conceivable price – no matter how high – most customers will continue to use a water
20 utility's product, at least in urban areas where water wells and septic tanks are not viable
21 options. This is crucially important, because it suggests that most of the risks that a water
22 utility confronts can potentially be solved, if necessary, by raising prices. For instance,
23 changing environmental regulations may lead to cost increases, but water utilities can rest

1 assured that these cost increases will ultimately be passed through and borne by their
2 customers.

3 Electric utilities and gas distribution utilities fall somewhere between
4 metropolitan telecommunications carriers at the high end, and water utilities at the low
5 end of the spectrum of risk. Many regulated electric utilities face a limited degree of
6 competition from unregulated electric providers, particularly in the generation sector. On
7 the other hand, like water utilities, electric utilities are the only viable option for most
8 customers, and they provide a service with no short run substitute. Gas utilities face a
9 more substantial, but still limited, degree of product substitution risk – risks that are
10 primarily concentrated in portions of the industrial sector, where customers often
11 maintain, or can threaten to develop, dual fuel capabilities. Most gas customers,
12 however, will continue using natural gas even if the price of propane or fuel oil declines
13 relative to the price of gas. As well, the prices of natural gas and substitute fuels tend to
14 move somewhat in tandem – in response to global market forces – and thus gas utilities
15 face only limited risk from product substitution and other forms of indirect competition,
16 particularly over the short run.

17 Of course, both gas and electric utilities face uncertainties related to long term
18 trends in energy markets – cost increases, environmental concerns, and conservation
19 efforts create unique, but limited risks. But, these risk factors are greatly ameliorated by
20 the dampening effects of pervasive government regulation and nearly insurmountable
21 barriers to entry, which help protect these firms from ordinary competitive forces.

22

1 **Q. What is your conclusion with respect to the level of risk facing different utilities?**

2 A. I believe all utilities tend to face far lower risks than the typical unregulated firm, because
3 the services they provide are vitally important, demand for those services tends to be
4 relatively impervious to changes in the business cycle, and they generally enjoy the
5 benefits of substantial barriers to entry and limited competition. Still, there are
6 significant risk differences within the utility sector, with telecom carriers at the top,
7 electric and gas utilities in the middle, and water utilities at the bottom of the spectrum.

8
9 **Q. How did you translate this set of conclusions concerning relative risk into your
10 comparable earnings-based quantification of the cost of equity?**

11 A. I started with my conclusion that the current and near-future opportunity cost of equity
12 capital to the typical unregulated firm is in the neighborhood of 12.25% to 14.25%, based
13 purely on comparable earnings data. Because of risk differences, I believe the current
14 and near-future cost of equity to utilities is substantially lower. More specifically, I
15 estimate the cost of equity to the typical telephone utility falls in the range of 11.0% to
16 12.5%, the cost of equity to the typical gas and electric utility falls in the range of 10.0%
17 to 11.0%, and the cost to a typical water utility serving a large, diversified service
18 territory falls in a range of 9.0% to 10.0%. These conclusions are derived from my
19 estimate of the cost of equity to unregulated firms, adjusting for differences in risk:
20 logically, the cost of equity for electric companies must be substantially lower than for
21 manufacturers and other unregulated firms, because of the very substantial differences in
22 risks faced by these respective types of firms. A similar discrepancy clearly exists when
23 comparing the risks facing an energy utility and a water utility.

1 In essence, I've estimated the risk-based difference in equity cost between the
2 average unregulated competitive firm and the average water utility is nearly 4.0%. This is
3 consistent with analogous differences in capital costs associated with equally large risk
4 differences where they can be observed in other capital markets. Consider, for example,
5 the high returns demanded by investors in speculative enterprises like oil wildcatting,
6 relative to less risky enterprises. Or, consider the higher market-based yields that need to
7 be offered in order to sell "junk" bonds, relative to the yields offered by less risky
8 corporate and government bonds.

9
10 **Q. Where do the Company's water operations in New Hampshire fit into this risk**
11 **hierarchy?**

12 **A** I believe Abenaki's New Hampshire operations fall toward the upper end of the risk
13 spectrum for water utilities, because its operations are narrowly focused on a few small
14 geographic markets that lack much diversity. This is somewhat offset by operating within
15 the context of a stable regulatory climate that is supportive of good credit quality, and
16 which is particularly sensitive to the needs of small utilities. It is also worth noting the
17 Company benefits from the risk-dampening effects of a relatively conservative amount of
18 equity deployed at the subsidiary level. However, I have offset this benefit by
19 recommending the use of a less conservative (and less costly) 50% equity ratio for
20 ratemaking purposes, which helps explain why I didn't place the Company farther down
21 the risk spectrum for water utilities.

22 While important in understanding where the Company falls within the context of
23 its industry, these differences in risk are minor, compared to the much more substantial
24 differences that exist when drawing comparisons to the average competitive, unregulated

1 firm. Demand for the Company's services is far stronger and more stable than the
2 demand for the products and services produced by the typical unregulated firm. Because
3 the underlying demand for most products is not as stable as the demand for water utility
4 services, the average unregulated firm – even if well managed – faces the possibility of
5 negative earnings, bankruptcy, and total extinction. They also confront far greater
6 uncertainty attributable to the potential for unexpected changes in the market share of
7 individual firms, and to the unpredictable impact of changing technology and other forces
8 in the context of a competitive environment. The contrast with the Company's water
9 operations in New Hampshire is clear and substantial.

10 It is also important to keep in mind that risks associated with operating in small
11 geographic markets – while significant – do not have an overwhelming impact on equity
12 costs, because this is a type of risk that can easily be ameliorated by investing in a
13 diversified portfolio of investments in other utilities, operating in other markets. In
14 general, risks that are easily mitigated by diversification have less impact on equity costs
15 than risks that cannot easily be mitigated in that manner.

16
17 **Q. What is your conclusion concerning the Company's cost of equity using the**
18 **comparable earnings approach?**

19 **A.** As I just explained, I believe the equity risks facing Abenaki's New Hampshire water
20 operations are similar to, but higher than, those of the average water utility. In making
21 this assessment I have taken into consideration the Company's operating characteristics,
22 including the small size of its service territory, as well as the stable and supportive
23 regulatory climate which exists in New Hampshire. I have also taken into account the
24 capital structure I am recommending for ratemaking purposes, which includes a similar

1 amount of equity as the average used by the 11 water utilities that I used for comparison
2 purposes.

3 Although a stable regulatory environment and conservative capital structure both
4 provide a supportive context for the Company's construction program, they don't
5 completely eliminate the associated risks, and I've taken that into account in developing
6 my estimate of the Company's cost of equity. More specifically, considering this risk
7 evaluation, and assuming the results will be applied to a 50.0% common equity ratio, I
8 estimate the Company's cost of equity to be in the range of 9.50% to 10.00%, based
9 purely on the comparable earnings approach. However, as I explain later in my
10 testimony, I do not recommend using this estimate on a stand alone basis; instead, I
11 recommend using this information in conjunction with the results of the market approach.

12
13

14 **Market Analysis**

15

16 **Q. Would you now explain how the cost of equity is determined under the market**
17 **approach?**

18 **A.** Yes. In essence, data from securities markets is used to estimate the return requirement
19 for equity investors. Since the supply of a particular security tends to be fixed at any
20 point, securities markets allow supply and demand to match by adjusting the price to an
21 appropriate, market-clearing rate of return. In the broadest sense, the market approach is
22 simply a technique for determining the rate of return that investors require from a

1 particular security or a specific group of securities – the only problem is that the market
2 clearing return cannot be directly observed, but instead must be inferred from the data.

3

4 **Q. What specific methods have you employed in your market analysis of the cost of**
5 **equity?**

6 A. I used several closely related analytic processes, involving a wide variety of different data
7 from financial markets. More specifically, I developed three sets of distinct, yet closely
8 related, calculations: First, I analyzed historic market-wide returns earned by investors in
9 publicly traded common stocks of unregulated firms. Second, I prepared a Discounted
10 Cash Flow (DCF) analysis using data for a group of 11 publicly traded water companies.
11 Third, I performed a CAPM analysis. It is worth noting that my market analysis is
12 independent of my comparable earnings analysis, except for some parallels in my
13 evaluation of relative risk levels, but all three of my market analyses are closely related to
14 each other.

15

16 **Q. Are there potential pitfalls you've tried to avoid in developing your cost of equity**
17 **estimate using securities market data?**

18 A. Yes. A wealth of market data is available, but appropriately interpreting this data is not as
19 simple, or as straightforward, as it might appear. For instance, it is important to give
20 adequate consideration to actual, historical data. I believe relatively little weight should
21 be given to short term earnings and “target price” estimates published by Wall Street
22 analysts. In my view, a market analysis which is heavily reliant on the opinions of Wall

1 Street analysts, or that is not solidly anchored in actual, historical data, can lead to
2 unrealistic estimates of equity costs (most typically, overstated estimates). I believe it is
3 also important to carefully assess the status of investor expectations or psychology, since
4 this can lead to confusion and mistakes in interpreting the market data. To avoid
5 misleading conclusions it is important to closely examine the securities markets and the
6 various psychological and economic factors that influence them at any given time.

7 I also believe a strictly mechanical process should not be used when
8 implementing the market approach, because this would consider neither the available
9 evidence regarding investors' moods and expectations nor important yet subtle nuances
10 such as the sustainability of particular growth rates (whether historically achieved or
11 projected for the future). There are times when the consensus view of growth over the
12 near term may be very optimistic (or pessimistic), reflecting a short term growth spurt (or
13 slowdown) but this growth will obviously not be replicated into perpetuity. With a purely
14 mechanical approach, it is all too easy to generate DCF numbers that make no logical
15 sense – suggesting an extremely high or low cost of capital, due to placing excessive
16 weight on short term growth rates which cannot be expected to continue into perpetuity.

17 For instance, during the bear market conditions experienced in February 2009,
18 many stock prices dropped sharply, resulting in higher dividend yields than were
19 observed prior to, or subsequent to, this time period. In a purely mechanical approach,
20 this market fluctuation might be misinterpreted as a sharp increase in the cost of equity
21 during this period. But, this would ignore the fact that during this time period many
22 investors were more pessimistic and worried about the economy. These concerns

1 undoubtedly translated into more pessimistic views concerning long growth prospects –
2 relative to the views they held prior to that period, or subsequent to it. This shift in
3 market psychology is important, even though it is not directly measurable. It should not
4 be ignored simply because it was not adequately reflected in any of the available growth-
5 related data (e.g., historical averages or financial analyst forecasts) that were available at
6 the time, or shortly thereafter. This example demonstrates the problem with using a
7 mechanistic approach to analyzing market data or developing a DCF analysis.

8
9 **Q. You've alluded to market psychology. How should this be taken into consideration?**

10 **A.** It is sometimes necessary to decide whether investors are optimistic or pessimistic about
11 the future of the firm or firms in question. For instance, when attitudes are very negative,
12 price/earnings (P/E) ratios will be unusually low, and market-to-book ratios will tend to
13 be low, since the stock price is depressed by factors not fully reflected in the current
14 earnings figure.

15 Conversely, during a period of bullish speculation, or when investor attitudes are
16 particularly buoyant about the company or industry in question, the calculated P/E ratio
17 will tend to be inordinately high. In effect, investors are anticipating extra earnings from
18 their investment in the stock, beyond those reflected in the current and near-future
19 earnings per share.

1 **Q. Can you briefly discuss how the broad stock market has reacted to the changes in**
2 **economic conditions and related events you discussed earlier?**

3 A. Yes. The Dow Jones Industrial Average stood at 13,044 at the beginning of 2008, just
4 modestly below a new all-time high that was reached a few months earlier. By late
5 November 2008, as financial markets tightened and fears of a deep recession began to
6 spread, the Dow plunged below 8,000 and then began fluctuating wildly. The Dow
7 finished 2008 off its November low, but it was still down 36 percent – its worst annual
8 performance since the Great Depression.

9 As 2009 started, optimism was spreading that perhaps the worst was over and a
10 market bottom had formed. However, early in 2009, stock prices starting dropping again.
11 The market continued to drop sharply during the first two months of 2009, decisively
12 breaking through the prior year lows and falling all the way to a new low of 6,594 on
13 March 5, 2009. Not only had the market failed its “test” of the lows experienced in
14 November 2008, the Dow breached the psychologically important 7,000 level – a level
15 last experienced in 1997.

16 Because the Dow had declined more than 50% relative to its level at the
17 beginning of 2008, in March, 2009 some observers suggested at least a temporary
18 correction was overdue, while others argued the worst must be over and the bottom had
19 finally been reached. While many of the classic signs of a market bottom were missing,
20 market psychology improved substantially by mid-March, and the market rallied sharply
21 during the remainder of March and April 2009. By late April, the Dow was again trading
22 above 8,000.

23 The subsequent rally was both significant and sustained, with the Dow climbing
24 to 10,428 by the end of 2009. Since that time, the market has seen a tug of war between

1 bulls and bears, with the bulls mostly prevailing. Memories of the deep pessimism that
2 was briefly experienced in late 2008 and early 2009 are slowly fading. But luke-warm
3 economic news, concern about the slow economic recovery and the fear of a possible
4 double dip recession, as well as the lack of a clear, permanent resolution of the ongoing
5 European sovereign debt crisis have taken turns dampening market enthusiasm over the
6 course of the past few years, at least temporarily offsetting more encouraging factors like
7 surprisingly strong corporate earnings and the re-emergence of a more supportive
8 environment for Initial Public Offerings and Mergers and Acquisitions.

9 During mid-2010, the Dow entered firmly into “correction” territory (dropping
10 more than 10% from the peak of the 2009 rally), falling below 9,700 on July 2nd, 2010.
11 It then climbed back up to 10,680 on August 4, 2010, followed by a relatively steady
12 march to reach 12,000 by January 2011. From that point, prices have pushed even higher,
13 exceeding 12,500 in late April and early May, before plunging well below 11,000 in
14 August, 2011. From there the Dow climbed above 13,000 in April, 2012 before falling to
15 nearly 12,000 two months later.

16 From that point forward, the bulls have clearly prevailed, aside from some
17 occasional corrections – most recently in the latter half of 2015. After reaching a new all-
18 time record high in excess of 18,000 during the Summer, the Dow dropped below 16,000
19 in August, bounced back up above 17,500 but well short of the previous high, then
20 dropped back down to nearly 16,000 – essentially testing the recent low – in early 2016.
21 At the time I prepared this testimony, the Dow was near the middle of this recent range,
22 trading a little above 17,000.

23

1 **Q. How have interest rates and credit markets behaved during this time period?**

2 A. Recall from the earlier discussion that the National Bureau of Economic Research
3 declared that the recession officially began in December 2007, and it officially ended in
4 June 2009. At the start of the recession, in January, 2008, yields on 3 month treasuries
5 were just under 3.00%. By June of 2008, short term yields had dropped to 1.86%, as the
6 economy slowed and monetary policy eased. Then, short term rates plummeted in
7 response to further deterioration in the economy and a resulting lessening of credit
8 demand, as well as the massive easing of monetary policy – with yields on 3 month
9 Treasuries declining to near zero levels by December, 2008. As shown on page 1 of
10 Schedule 4, short term rates have remained just above 0.00% ever since, reflecting both
11 lingering weakness in the economy and credit demand, as well as extraordinarily loose
12 monetary policy (due to unsuccessful efforts to overcome that weakness). Rates on 3
13 month Treasuries remained below one quarter of one percent throughout the entire period
14 from 2010 until December 2015, when the Federal Reserve finally decided to pull back
15 slightly from its extremely aggressive monetary stimulus policy. At the time I prepared
16 this testimony, the yield on 3 month Treasuries was averaging a little above .25%.

17 Long term interest rates do not generally move in synch with short term rates, but
18 they can be influenced by the same changes in monetary policy and external economic
19 events. Not surprisingly, then, long term rates have also recently experienced some rather
20 dramatic changes. In January, 2008, yields on 20 year Treasury bonds were 4.35%. By
21 June of 2008, long term yields had actually increased slightly, to 4.74%, despite the
22 gradual weakening of the economy, the easing of monetary policy and the decline of
23 short term rates. Then, as the financial crisis and federal bailouts dominated the
24 headlines, investors suddenly became very worried about all forms of risk, which made

1 US Government debt (and the highest rated corporate debt) seem extremely attractive,
2 relative to riskier options. Yields on 20 year Treasury bonds abruptly plummeted all the
3 way to 3.18% before investors began to calm down, and yields moved back toward more-
4 normal levels. Over the next few months, yields on 20 year Treasury bonds stabilized,
5 fluctuating in the range of 4.11% to 4.53% from May 2009 through May 2010.

6 As both fiscal and monetary policy became extraordinarily aggressive. Having
7 already pushed short term rates close to zero, the Federal Reserve became more and more
8 creative in its attempts to stimulate the economy, buying massive quantities of long term
9 bonds and expanding the money supply, as part of a widely publicized effort that came to
10 be known as “Quantitative Easing.”

11 The results of some of these extraordinary exertions were not entirely as
12 anticipated. Not only did the Federal Reserve fail to achieve its goal (the economy didn't
13 not quickly recover from the recession and economic growth continued to disappoint),
14 but even some of the immediate, direct impacts were contrary to the announced goals.
15 Most notably, when Quantitative Easing was first announced, yields on long term
16 Treasury bonds initially began climbing, rather than declining as intended, reaching
17 4.42% in February, 2011, before receding in the wake of continued weakness in the
18 economy. It wasn't until August and September 2011 that yields on 20 year Treasury
19 bonds fell sharply, in what was widely interpreted as a “flight to quality” in response to
20 mounting concerns over the European sovereign debt crisis, as well as lingering
21 weakness in the economy, the potential for a double dip recession, and news concerning
22 the Federal Reserve's plan to further increase its holding of long term bonds in an effort
23 to “twist” the yield curve toward lower long term interest rates. With so many different

1 news events happening around the same time, there is no easy way to know the
2 magnitude, or even the direction, of the actual impact of specific Federal Reserve actions.

3 In any event, during September 2011 the average yield on 20 year Treasury bonds
4 dropped below 3.00%, and it subsequently dropped even further to 2.22% by July, 2012,
5 as the Federal Reserve continued to pursue efforts to bring down long term interest rates
6 and many investors viewed US Treasuries as a low-risk haven in an unusually confusing
7 and uncertain market. Since that time, interest rates have been fluctuating at historically
8 low levels, with 20 year treasury bonds yielding 2.47% at the end of 2012, up to 3.63% at
9 the end of 2013, back down to 2.55% at the end of 2014 and – most recently 2.20% in
10 February 2016. Unlike investors in short term treasuries, who were receiving interest
11 payments hovering close to zero, long term bond holders were continuing to receive
12 substantial current income from their investments, but the value of their holdings was
13 fluctuating throughout this period. In general, however, it's fair to say that yields have
14 recently fluctuated at or below the extreme low end of the historical range, as indicated
15 by the annual averages during the 15 year period from 1994 through 2008, which ranged
16 from a high of 7.49% to a low of 4.36%, as shown on Page 4 of Schedule 4.

17 In return for the relatively paltry yields received in recent years, holders of these
18 “low risk” investments remained exposed to significant month-to-month fluctuations in
19 the market value of their holdings, as well as the risk attributable to uncertain levels of
20 inflation over the 20 year period in which these securities will remain outstanding. While
21 investors in US Government securities can be reasonably confident they will receive both
22 principal and interest payments (since the Government can print whatever amounts are
23 needed to fulfil its promises), there is considerable uncertainty what those payments will
24 be worth in “real” terms. The future rate of inflation is inherently unpredictable, but the

1 associated risks are particularly severe currently, during a period in which the Federal
2 Reserve has been engaged aggressively in monetary easing and has been intervening in
3 long term bond markets in an extraordinary, historically unprecedented fashion. With a
4 “goal” of 2% inflation, and the potential for sharply higher or lower levels of inflation
5 actually occurring during any portion of the 20 year period in which these bonds will be
6 outstanding, a yield of less than 3% is not risk-free in “real” terms.

7 With interest rates hovering close to the rate of inflation, the potential for higher
8 rates of inflation in the future, and interest rates that are near historic lows, investors who
9 have engaged in a “flight to quality” are nevertheless taking substantial risks –
10 particularly the risk they will receive back dollars that are worth less than what they
11 originally invested, and the risk that bond prices may plummet if interest rates return to
12 more-normal levels in the future.

13 Interest rates on long term corporate debt have also fluctuated in recent years, but
14 not in lock step with government bonds. In part these fluctuations have been attributable
15 to periodic shifts in attitudes toward risk and changing perceptions concerning the
16 potential for default by individual corporate borrowers, both during and subsequent to the
17 2008 financial crisis. In part, these fluctuations are related to other factors, including the
18 impact of monetary policy.

19 To put this in perspective, consider that Aaa rated corporate bonds were yielding
20 5.33% in January, 2008, or approximately 1% more than the corresponding yield on 20
21 year Treasury bonds. At the end of 2008, in the midst of headlines concerning the
22 financial crisis, these very low risk corporate bonds were yielding 5.05%, which was just
23 slightly lower than when the year began, in sharp contrast with Treasury bond yields,
24 which had declined sharply at that point. As a result, the lowest risk corporate bonds

1 were yielding nearly 2% more than the corresponding yield on Treasury bonds at that
2 time – when the flight from risk was at a peak.

3 Since Aaa corporate bonds have historically been viewed by most investors as
4 being just one notch more risky than Treasury bonds, this unusually large gap suggests
5 the “flight to quality” that temporarily benefited Treasury bonds did not fully extend to
6 even the highest quality corporate bonds during the crisis atmosphere that existed at the
7 end of 2008. However, since that time, risk relationships have been more normal, with
8 yields on Aaa corporate bonds averaging a little more than 1% greater than yields on 20
9 year US Treasury bonds during most years. Similarly, yields on Baa corporate bonds (the
10 low end of the “Investment Grade” category) have averaged about 1.00% to 1.50% more
11 than the yields on the highest rated corporate bonds.

12 In early August 2011, Standard & Poor's downgraded US Government debt to
13 AA+ in a widely noted decision which helped trigger a sharp downturn in the stock
14 market. The downgrade had very little, if any, impact on the market for US Government
15 bonds – which widely anticipated the downgrade (albeit not necessarily the exact timing),
16 and continued to see these securities as one of the least risky investment options,
17 notwithstanding concerns about the rapidly growing size of the federal debt, the lack of a
18 consensus about how to reduce the deficit, and lingering concerns about the long term
19 fiscal and inflationary outlook.

20 The market for higher risk corporate bonds has generally been more volatile,
21 reacting to changing economic conditions to a greater extent. Yields on Baa corporate
22 bonds were 6.54% in January, 2008, representing a premium of 1.21% relative to Aaa
23 bonds, or 2.19% relative to Treasury bonds. As I just mentioned, at the end of 2008, fears
24 of a possible further collapse of the financial system scared investors away from higher

1 risk alternatives, pushing Treasury yields sharply lower, with the yield on Baa bonds
2 moving in the other direction, climbing to 8.43%. The result was an extraordinarily large
3 gap of 3.38% between Baa and Aaa corporate bond yields in December 2008, and an
4 even more extreme gap of 5.25% between Baa bonds and 20 year Treasury bonds. Once
5 this extreme “flight to quality” receded, bond risk premiums returned to more normal
6 levels, although the gap between different categories of bonds continued to fluctuate to a
7 moderate extent, in response to shifting attitudes toward current and future economic and
8 political events.

9 Reviewing the monthly yields shown on Pages 1 through 3 of Schedule 4, it is
10 clear the “flight to quality” or extreme pessimism about the future that was experienced
11 during the initial reaction to the recession has been replaced with a more normal attitude
12 toward risks – and a largely unrequited desire for higher income and yields on the part of
13 investors. This led to a rebound in the market for “junk bonds” and a willingness by
14 investors to “chase higher yields” until the Summer of 2015, when the market for high
15 yield debt began to weaken amid mounting concerns about the impact of Federal Reserve
16 monetary tightening and continued weakness in the economy on future default risks.
17 This change in attitudes toward more risky debt was most pronounced in the market for
18 sub-investment grade debt, but it was also reflected in the market for debt at the low end
19 of investment grade. For instance, as shown on page 3 of Schedule 4, by December 2015
20 the gap between Baa and Aaa bonds had sharply increased to 2.96%, and it was 3.14% in
21 February 2016 – well above the 2.04% average experienced during the 5 years from 2010
22 through 2014, or the 1.86% average during the 20 years from 1994 through 2013.

23 The Federal Reserve Board's extraordinary attempts to push down yields on both
24 long and short term Treasury instruments has had, and continues to have, a massive effect

1 on all financial markets – forcing investors to accept lower yields from government debt,
2 which in turn has pushed down yields on all competing investments, including both high
3 and low rated corporate bonds, as well as dividend-paying stocks.

4
5 **Q. Securities markets can move sharply up or down over relatively brief periods of**
6 **time. In contrast, the rate of return established in this case will be applicable until**
7 **the company's next request for a rate increase, which could be years from now. Are**
8 **there options for estimating equity costs that aren't reliant on a short term view of**
9 **market data?**

10 A. Yes. In fact, I prefer taking a somewhat long term view of equity costs, and consistent
11 with that preference, when I develop an estimate of equity costs using the market
12 approach, I begin with a detailed analysis of market data over a multi-decade time period.
13 I believe this is helpful both because it provides a strong empirical foundation for the
14 analysis, and because it provides a clear historical context in which to view more recent
15 day to day or month to month market fluctuations.

16 More specifically, I begin by reviewing the total returns for the S&P 500, starting
17 with data that was initially developed by Ibbotson Associates in its annual Stocks, Bonds,
18 Bills and Inflation Yearbook. During the 50 year period from 1926 to 1976, these total
19 returns were calculated by summing the return from capital appreciation return and from
20 income (dividends) for this group of stocks. The capital appreciation return is measured
21 as the change in the S&P 90 stock index from 1926 to March 1957, and the S&P 500
22 stock index from 1958 to 1976. According to the explanation provided by Ibbotson

1 Associates, the income return was calculated by extracting quarterly dividends from
2 rolling year dividends reported quarterly in S&P's Trade and Securities Statistics, then
3 allocated to months within each quarter using proportions taken from the 1974 actual
4 distribution of monthly dividends within quarters. For time periods subsequent to 1976,
5 the total returns reported in this source were provided to Ibbotson Associates by the
6 National Bank and Trust Company of Chicago. For the most recent years, I obtained the
7 data from ycharts.com.

8 Schedule 5 shows total returns for each year, from 1926 to 2015. This 90-year
9 period covers many business cycles and stock market cycles, and as a result we can
10 observe dramatic fluctuations in earned returns throughout the data series. These wide
11 fluctuations have a profound effect upon the observed returns that can be calculated from
12 stock market data for any particular time period. For example, for the period 1929 to
13 1932, total returns averaged -21.2% per year. On the other hand, from 1933 to 1936,
14 annual returns averaged 33.4%.

15 Clearly, investors do not invest in the market in the expectation of earning
16 extremely low or negative returns, nor do they expect or require extremely high returns.
17 Yet, multi-year stretches of inordinately high or low returns do occur. During some time
18 periods, investors are unusually lucky, or they benefit from "irrational exuberance" which
19 boosts stock prices year after year. During other periods investors are unusually unlucky,
20 or they suffer the effects of undue pessimism, which pushes market prices below their
21 long term trend line. Similarly, after a lengthy period of exuberance, there can be sudden
22 corrections (the "bubble" may burst), or the upward march of stock prices may slow

1 considerably, with prices easing back down to their long term trend line, resulting in
2 relatively low returns during the transition period.

3 For instance, as reflected on page 1 of Schedule 5, during the mid 1990's market
4 returns were repeatedly running above the long term norm, averaging 18.3% during the 6
5 year period ending in 1996 and 20.6% during the second half of that 6 year period. Thus,
6 it wasn't entirely surprising that Federal Reserve Board chairman Alan Greenspan
7 delivered a speech in December 1996 musing about "irrational exuberance." Yet, despite
8 this warning, stock market participants continued to push prices even higher during the
9 subsequent few years, resulting in returns during 1997-1999 that averaged 27.7% per
10 annum. When the dot-com bubble suddenly burst, the entire market retreated, resulting
11 in negative returns for three years in a row, averaging -14.4% per annum during 2000-
12 2002. Clearly, the average return that any investor experiences, or that is measured using
13 market data, will depend heavily on whether it includes the years in which returns turned
14 negative, or if only (or mostly) the "good" years are included.

15 As a result of these types of sharp month to month and year to year fluctuations,
16 average returns vary noticeably even when they are measured over fairly long stretches of
17 time. These fluctuations can result in severe discrepancies between investor return
18 requirements and actual earned market returns during any given multi-year period. This
19 problem is not limited to this sort of market-wide data. In fact, discrepancies between
20 required returns and earned returns can appear in all types of market data, and the
21 resulting "noise" represents the largest single problem in accurately estimating the cost of
22 equity using financial market data. Oscillations in securities prices strongly influence

1 dividend yields and other data that is typically relied upon in developing equity cost
2 estimates, as well as the achieved returns that are actually earned by investors. These
3 fluctuations can create controversy and they leave room for significant differences in
4 opinion when carrying out any of the various versions of the market approach which are
5 used to estimate the cost of equity.

6 One way to deal with this problem is to take advantage of the fact that a strong
7 measure of central tendency can be observed if one looks at a representative data series
8 over a long enough time period, or if one is careful to focus on time periods which
9 include a balanced mixture of bear and bull markets. In this regard, it is worth noting that
10 returns for these large stocks averaged 11.9% over the entire 90 year period for which the
11 data is available. Obviously, this is a long enough time period to eliminate the impact of
12 temporary market fluctuations. In my opinion, this long term average provides a useful
13 starting point, or reference point for consideration in evaluating other data sets, or smaller
14 portions of the same data set. It represents an objective, reasonable estimate of the long
15 term equilibrium cost of equity for large unregulated companies.

16 While the cost of equity can deviate somewhat from this long term average during
17 any one year or any particular set of market conditions, there is no theoretical reason to
18 expect it to deviate greatly from this long term norm over shorter time periods. In other
19 words, while observed returns, and analyst estimates of the cost of equity can vary widely
20 when focusing on market data for short periods of time, there is every reason to assume
21 the actual cost of equity for these types of firms falls somewhere in the general vicinity of
22 11.9% – although the exact level could fluctuate somewhat over time.

1

2 **Q. Have you performed additional calculations that can be compared to this 11.9%**
3 **estimate of the long term cost of equity for typical large unregulated firms, like**
4 **those in the S&P 500?**

5 A. Yes. On page 2 of Schedule 7, I show the average returns over numerous different 30, 25,
6 20, 15, 10 and 5 year periods. Not surprisingly, the longer time periods tend to have the
7 most stable results – for example, looking at the far right hand column, the 30 year
8 averages vary over a fairly narrow range that encompasses the 11.9% figure mentioned
9 earlier. The highest observed return was 14.1% during the 30 years ending in both 1998
10 and 1999. The lowest return was 11.0%, which was observed during the 30 years ending
11 in 1985 and in the 30 years ending in 1991.

12 To gain a deeper insight into this data, I completed a series of computations of
13 averages for time periods of different durations and ending points. These are shown at
14 the bottom of Page 2 of Schedule 5. For instance, the average of the returns during the 30
15 year periods ending in each of the years from 1976 through 2015 was 12.6%. Similarly,
16 the average for the 30 year periods ending in 1986-2015 was 12.7%. Interestingly, the
17 results of this averaging process are quite similar when the same technique is applied to
18 shorter time periods. For example, the overall average of observed returns during the 15
19 year periods ending in 1976 through 2015 was also 12.7%. Needless to say, the observed
20 returns vary depending upon exactly which data is included, but it's worth noting that
21 most of these averages fall in the immediate vicinity of the overall 90 year average, or
22 they are just modestly above or below that 11.9% figure. Consider, for example, the 5

1 year periods ending in 1976 through 2015, which averaged 12.4%. Or, consider the 10
2 year periods ending in 1996 through 2015, which average 11.0%, or the 15 year periods
3 ending in 1986 through 2015, which averaged 13.0%, or the 25 year periods ending in
4 1981 through 2015, which averaged 12.7%, or the 30 year periods ending in 1996
5 through 2015, which averaged 13.1%.

6 There are many ways to this large data set but the central message is very
7 consistent. Consider, for example, spot checking the 30 year period ending in 1975,
8 when returns averaged 11.7%. Compare that to the 30 year period ending exactly 10
9 years later (in 1985) and you'll see returns averaged 11.0%, or the 30 year period ending
10 10 years after that, when returns averaged 13.4%, or 10 years after that (ending in 2005),
11 when returns averaged 13.9%, or 10 years after that (ending in 2015) when returns
12 average 11.8%. All of these examples are similar, and they average to 12.36%, with the
13 most recent example being nearly identical to the 90 year average.

14 Looking at the historical data collectively, it is apparent that all of the multi-year
15 average returns are telling much the same story as the 90 year long term average
16 discussed earlier, although the specific numbers can vary, depending on how much they
17 are influenced by bull and bear markets.

18
19 **Q. What conclusion did you reach from this analysis of long term historical stock**
20 **market data?**

21 **A.** I concluded that the equilibrium return required (and expected) by equity investors in the
22 average large unregulated company is currently a little higher than the 11.9% average

1 achieved market return observed over the entire 90 year period – but not dramatically
2 higher. More specifically, based upon this analysis of the long term historical data, I
3 estimate the cost of equity for these types of firms is approximately 12.0% to 12.5%.

4 Although there is some evidence to suggest the cost of equity has recently
5 declined modestly, the data is not sufficient to conclude it has returned all the way back to
6 the long term average of 11.9%. This is based on my observation of market conditions
7 since the 2000 dot com bubble burst, the achieved returns during various length time
8 periods ending in recent years, and the cumulative averages for various time periods,
9 particularly those summarized at the bottom of Page 2 of Schedule 5.

10 My conclusion is based in part on my decision to focus on the central tendency of
11 the data, while carefully giving consideration to trends in the data, and my decision to
12 give very little weight to short term fluctuations in the data. In so doing, I am explicitly
13 recognizing that it is inherently difficult to pinpoint a precise estimate of equity costs
14 based exclusively on “current” market data, because the data fluctuates widely in
15 response to short term changes in market psychology, growth expectations, and other
16 factors. This avoids the risk of drawing incorrect conclusions concerning the current cost
17 of capital which can occur if the analyst puts too much emphasis on short term
18 aberrations in the data, like the 9.1% average return that was achieved during the 10 years
19 ending in 2015, or the 6.8% return observed during the 15 years ending in 2015.

20 While the cumulative weight of this data suggests investors currently require
21 returns in the general vicinity of 12.0% to 12.5% when investing in large unregulated
22 companies, I would reiterate my earlier comments that different levels of risk correspond

1 to different required return levels. If investors require a 12.0% to 12.5% return from
2 investments in companies that could potentially lose their market position or go bankrupt
3 in a few short years due to globalization, technological changes, shifting consumer
4 preferences, and a myriad of other unpredictable factors, it is self evident that investors
5 do not require that high a return from investments that are largely shielded from these risk
6 factors – like the stocks of the typical regulated public utility.

7 Investors expect substantially lower returns from investments in the average water
8 utility stock, because of the same sort of risk differences discussed earlier in the context
9 of the comparable earnings approach. More specifically, to estimate the cost of equity to
10 Abenaki, I recommend applying a downward adjustment of about 3.5% to 3.75% to this
11 12.0% to 12.5% range, in order to adequately compensate for differences in risk. After
12 making this risk adjustment I concluded this historical market data indicates Abenaki's
13 cost of equity is somewhere in the vicinity of 8.25% to 9.00%.

14
15 **Q. Earlier, you mentioned a Discounted Cash Flow analysis. Can you please explain**
16 **this how you used the DCF method to help you estimate the Company's cost of**
17 **equity?**

18 **A.** Yes. To prepare my DCF analysis I focused on the same group of 11 water utilities that I
19 used for my capital structure analysis. I concluded that, on average for this group of 11
20 firms, investors require a return of approximately 7.50% to 9.00%. This is composed of a
21 dividend yield of 2.50% to 3.00% and a long term future growth rate of 5.00% to 6.00%.
22 However, I do not recommend applying this 7.50% to 9.00% cost estimate directly to

1 Abenaki. Instead, I suggest focusing on the upper part of this range, consistent with my
2 conclusions concerning that the Company's risk level, relative to other water utilities.

3 The 2.50% to 3.00% dividend yield used in my DCF analysis is consistent with
4 the recent historic range of yields for these 11 companies' stocks, as shown on Schedule
5 6. These yields are viewed as satisfactory by investors, given the relatively low returns
6 available from money market instruments, bonds and other income-generating investment
7 alternatives, as well as the potential for growth in dividends and appreciation in the value
8 of these stocks over the long term, and taking into consideration current attitudes about
9 the risk and growth profiles of these firms.

10 The estimated long term future growth rate of 5.00% to 6.00% that I am using in
11 my DCF analysis is consistent with this dividend yield, as well with the historical growth
12 rates that have actually been achieved by these firms during various 3, 5 and 7 year
13 periods ending in 2012, 2013, 2014 and 2015, as summarized on my Schedules 7 through
14 12.

15

16 **Q. Would you please briefly explain how you selected this particular range of dividend**
17 **yields for these 11 firms?**

18 A. Yes. As shown on page 1 of Schedule 6, the average dividend/price ratio (yield) for the
19 11 water companies during 2015 was 2.9%. The yield has recently been a little lower,
20 averaging 2.4% during a recent 60 day period immediately preceding the time when I
21 prepared this testimony. Based upon my review of the recent historical data, as well as
22 the very recent market data, I selected a dividend yield of 2.50% to 3.00% for my DCF
23 analysis.

24

1 **Q. Could you now discuss the growth rate you used in your DCF analysis?**

2 **A.** Yes. Since growth is a multidimensional phenomenon, no single variable proves
3 adequate in fully describing a firm's growth, or investor expectations concerning that
4 growth. This becomes apparent when studying historical growth statistics, since they
5 vary quite widely, depending upon the type of growth measured and the specific time
6 period chosen. To deal with this complex phenomenon, I examined the historical pattern
7 of growth in dividends, earnings, and book value for the 11 water utilities included in my
8 comparable group.

9 Some might argue that recent historic growth in dividends is the best single
10 indicator of future growth in dividends. While there is some merit to this view, short
11 periods of historic dividend growth do not always provide a good indicator of long term
12 future dividend growth – which is the type of growth that is most relevant in a DCF
13 analysis.

14 Firms are not under any compulsion to pay out any particular portion of their
15 earnings, nor are they forced to keep increasing dividends just because they have done so
16 in the recent past. To the contrary, they are free to modify the pace at which they pay out
17 dividends, and they may decide to flatten the pace of growth, or even reduce their
18 dividend, if earnings growth is not sufficient to support the dividend, or if they conclude
19 that it would be better to retain earnings for reinvestment within the firm (e.g. to help
20 fund an expanding construction program).

21 In any event, investors do not simply look at the historical rate of dividend growth
22 in valuing stocks. To the contrary, investors recognize that growth is a dynamic process,
23 which responds to changes in industry conditions, and the underlying financial health of
24 each firm. In particular, investors realize that a firm with a low dividend payout and low

1 rate of dividend growth may be reinvesting a large portion of its earnings in the firm, and
2 this should ultimately benefit investors through increased earnings, higher stock prices,
3 and (perhaps) higher dividends in future years.

4 As shown at the bottom right corner of page 2 of Schedule 7, the 11 water
5 companies increased their dividends by an average of 4.3% from 2007 to 2013, by 6.1%
6 from 2008 to 2014 and by 5.3% from 2009 to 2015. From 2010 to 2014 they increased
7 their dividends by an average of 5.9% per year, and during 2011 to 2015 they raised their
8 dividends by an average of 6.0%. They increased their dividends by 6.0% per year from
9 2012 to 2014 and by 6.9% from 2013 to 2015. The overall average of all 9 growth rates
10 is 5.6%.

11
12 **Q. Have you prepared other analyses of the historical dividend information, to provide**
13 **additional insight into the long term dividend growth prospects for these firms?**

14 **A.** Yes. The purpose of reviewing historical growth rates is to gain insight into the growth
15 rates that investors can reasonably expect over the long term future. In an effort to reduce
16 distortions from unusual short term fluctuations, I performed an alternative analysis that
17 excludes from consideration all year to year changes (positive or negative) in the annual
18 dividend payment rate of greater than 20%. The effect of this procedure is simply to
19 remove extreme swings in the dividend rate, including sudden dividend reductions, as
20 well as the impact when firms temporarily slash their dividends or resume payments at a
21 sharply higher level. This is a method of removing “outliers” or extreme values, without
22 having to remove all of the data for that particular firm.

23 The results of this alternative approach are summarized on page 2 of Schedule 8.
24 As shown, after removing outliers, dividends for the 11 companies increased at average

1 annual rates of 4.0%, 4.2%, and 4.8% during the seven year periods ending in 2013,
2 2014, and 2015, respectively. Similarly, using this approach over five year periods,
3 dividends increased at an average annual rate of 4.4%, 4.9%, and 5.3% during the periods
4 ending in 2013, 2014 and 2015, respectively. Finally, over the shorter, more recent three
5 year periods ending in 2013, 2014 and 2015, the growth rates averaged between 4.1%
6 and 5.3% after removing outliers. The overall average of all 9 growth rates excluding
7 outliers is 5.1%.

8
9 **Q. Can you now discuss your review of historical growth in earnings for the 11**
10 **companies?**

11 **A.** Yes. A review of earnings growth is important, because dividends are paid out of
12 earnings; if earnings growth slows or stops, dividend growth will eventually slow or stop
13 as well. Conversely, if earnings are growing rapidly there is reason for investors to
14 anticipate future dividend growth, even if dividend payments have not kept pace with the
15 recent growth in earnings. However, earnings tend to be volatile, and the DCF method is
16 focused on long term dividend growth – not near-term growth, and thus it can be difficult
17 to draw strong conclusions from the earnings data.

18 For instance, as shown on page 2 of Schedule 9, from 2007 to 2013, earnings for
19 the 11 water companies increased by an annual average rate of just 3.9%, while during
20 the analogous time period ending one year later – from 2008 to 2014 – saw earnings
21 growth that averaged 5.8%. This volatility is also reflected in the shorter periods ending
22 in 2012 to 2014; in each case average earnings growth was very rapid – averaging from
23 8.1% to 13.0%, but there is no reason to believe such rapid growth can be replicated year
24 after year into perpetuity.

1 As with dividends, I have prepared an alternative analysis of earnings growth, in
2 which I excluded instances in which earnings increased or decreased by more than 20%
3 from one year to the next. The results of this analysis are shown on page 2 of Schedule
4 10. As shown, under this approach, earnings increased by 3.7% during the seven year
5 period ending in 2013, and by 4.6% during the analogous period ending in 2014. During
6 the shorter five year time periods ending in 2012, 2013 and 2014, earnings grew at annual
7 rates of 5.2%, 3.6% and 4.4%, respectively, after removing fluctuations greater than 20%.

8 In general, the average rates of growth in earnings excluding outliers are fairly
9 similar to the analogous rates of growth in dividends excluding outliers, although they
10 tend to be a little lower. Given the high volatility of earnings, it is difficult to draw strong
11 conclusions from the earnings data, but it does suggest that the very rapid earnings
12 growth observed in some of the more recent years is not likely to be sustainable over the
13 long term future.

14
15 **Q. Aside from earnings and dividends, is there other historical data that can also**
16 **provide insight into the underlying long term growth prospects for these firms?**

17 **A.** Yes. Book value is an important indicator of the fundamental earnings power and growth
18 prospects for a regulated firm. Among other reasons, book value is closely related to the
19 amounts which are likely to be allowed in the firm's rate base in the event of a rate
20 proceeding. For instance, if book value has been growing, investors can anticipate growth
21 in earnings and dividends in the future, even if dividends and earnings have been
22 stagnant, or declining, in the recent past. For this reason, I closely examined growth in
23 book value for the 11 water utilities.

1 During the multi-year time periods shown on page 2 of Schedule 11, book value
2 grew at average annual rates ranging from a low of 4.2% in the five years ending in 2012
3 to a high of 8.0% in the three years ending in 2013. During the seven years ending in
4 2014, growth averaged 5.0% and during the five years ending in 2014 it averaged 6.2%.
5 The overall average of all 8 growth rates is 5.8%.

6 Consistent with the approach I used with the other historical growth data, I also
7 looked at growth rates excluding instances in which book value increased or decreased by
8 more than 20%. The results of that analysis are shown on page 2 of Schedule 12. Under
9 this approach, for the periods 2007-2013 and 2008-2014 book value grew by an average
10 annual rate of 3.6% and 3.9%, respectively. In the most recent three and five year periods
11 growth rates averaged between 3.3% and 5.7%, excluding the impact of outliers. The
12 overall average of all 8 growth rates excluding outliers is 4.3%.

13 Book value closely tracks the underlying growth in equity capital per share
14 (primarily due to reinvested earnings), and it therefore provides an indicator of the long
15 term prospects for both earnings and dividends per share. As well, in the case of rate
16 base regulated companies, book value is conceptually related to the process used in
17 developing a firm's revenue requirements, and thus growth in book value is a useful
18 indicator of the firm's long term future earnings and dividend growth potential. For these
19 reasons, as well as the fact that book value growth tends to be less volatile than growth in
20 either dividends or earnings, I put substantial weight on the book value growth data.

21

1 **Q. Can you please explain how you selected the appropriate growth rate to use in your**
2 **DCF analysis for this group of 11 utilities?**

3 A. As I stated at the outset of this discussion, I selected a long term growth rate of 5.00% to
4 6.00% for use in my DCF analysis. This growth rate is solidly grounded in the historical
5 rates of growth for dividends, earnings and book value, although it is lower than the rapid
6 growth in earnings that has recently occurred, and it is slightly higher than some of the
7 other recent historical data – which I believe is appropriate.

8 The high end of this range (6.00%) is equal to the average rate of growth in
9 dividends during the period 2011-2015. It is also approximately equal to the average
10 dividend growth rate during 2010-2014 and 2012-2014, although it is a bit lower than the
11 analogous growth rate during 2013-2015. The low end of this range (5.00%) is very
12 similar to (just a little lower or higher than), the average dividend growth rates for this
13 group of 11 water utilities during most of the other time periods shown on Page 2 of
14 Schedule 8, as well as those shown on Page 2 of Schedule 9 (after excluding outliers).
15 The simple average of the 9 multi-period averages excluding outliers is 5.1%, while the
16 analogous average including outliers is 5.6%.

17 This 5.00% to 6.00% growth rate is lower than the historical data concerning
18 annual growth in earnings before removing outliers. However, it is a bit higher than the
19 same data after the outliers are removed. I believe investors are currently anticipating
20 solid growth in earnings over the long term future – but they don't expect the extreme
21 bursts of growth enjoyed by many of these firms during some of the recent years to be
22 replicated on a consistent basis into perpetuity. In any event, because earnings data tends
23 to be so volatile, I gave this data less weight than the other measures of growth.

1 As is my usual practice, I placed significantly more emphasis on growth in book
2 value per share than on growth in earnings. Book value data tends to be more stable, and
3 they tend to be more indicative of the firm's long term future dividend growth prospects,
4 for the reasons I explained earlier. The simple average rate of growth in book value over
5 all 8 of the multi-year periods shown in the lower right of Page 2 of Schedule 11 is 5.8%
6 – just below the top of the range I used in my DCF analysis. The analogous average
7 excluding outliers is 4.3%, which is just a little lower than the low end of the range I
8 selected.

9 While it's fair to say this range is reasonably consistent with all of the historical
10 data, it is also fair to say this range is a bit higher than some of the most recent historical
11 data – particularly the earnings data before removing outliers. My conclusions
12 concerning the appropriate growth rate to use in the DCF method is consistent with my
13 view of current stock market conditions, which is that investors are not currently wildly
14 optimistic. I believe investors are viewing these firms' long term growth prospects in a
15 positive manner, recognizing that earnings have been rapidly improving even though the
16 economy has only slowly been improving, while recognizing that such rapid growth can't
17 be replicated into perpetuity. Further, I believe investors have bid up prices for these
18 stocks in part as a hedge against risk – realizing that these firms are well insulated from
19 the serious medium to long term risks facing other sectors of the economy. I believe this
20 optimism (or reduced pessimism) is captured in the most recent stock market and
21 dividend yield data, but it is not fully reflected in some of the recent historical growth
22 data – which is why I selected a growth rate for my DCF analysis that is a little higher
23 than some of the historical data – particularly some of the book value growth rates
24 excluding outliers.

1 Nevertheless, as I just demonstrated, the growth range I selected for use in my
2 DCF analysis is reasonably consistent with most of the average growth rates experienced
3 by the 11 water companies during the recent past. I continue to believe that it is
4 inappropriate to use purely speculative projections of future growth rates, or to select a
5 DCF growth rate that is inconsistent with the bulk of the historical data.

6 In reconciling differences between the various growth indicators, I gave the
7 greatest weight to the book value and dividend data. As a general rule, I tend to give the
8 least weight to earnings data because this type of data tends to be so volatile. For this
9 same reason, I gave more emphasis to the earnings data after excluding the impact of
10 outliers,. In this case, the unadjusted earnings growth rates were too high to plausibly
11 continue into perpetuity, and they were inconsistent with all of the other growth evidence.

12 Needless to say, while I have anchored my analysis in the historical data, I believe
13 it is reasonable to choose a growth rate that differs somewhat from portions of the
14 historical data (e.g. the unadjusted earning growth rates). For one thing, the various data
15 series have different averages over the different time periods, and there are some
16 differences between the various data series that need to be reconciled. More importantly,
17 it is investor *expectations* about the future, not past results, that are most relevant in
18 developing a DCF analysis. In my opinion, it is reasonable to conclude that investors are
19 expecting long term future dividend growth to be similar to, or slightly stronger than,
20 recent growth in dividends and book value.

21
22 **Q. Can you now discuss the CAPM approach?**

23 **A.** Yes. The Capital Asset Pricing Model (CAPM) estimates the cost of equity by
24 multiplying a company-specific beta by a measure of the market equity risk premium,

1 and adding the product to a measure of the risk free rate of return. Beta measures the
2 volatility of an individual stock relative to the stock market as a whole; it is used as an
3 indicator of firm-specific risk.

4 My first step was to identify a valid measure of the risk free rate, consistent with
5 the theory underlying the CAPM approach. Some argue in favor of using yields on long
6 term government bonds as a measure of the risk free rate. However, I disagree with this
7 approach. I realize it may seem plausible to use long term bond yields because these are
8 derived from long term securities, and equities can also be classified as long term
9 securities. However, the returns from long term bonds do not necessarily follow a
10 consistent pattern with respect to equity returns, nor is there any basis for assuming that
11 historical relationships between long term debt and equity investments will be replicated
12 in the future, or that historical patterns will necessarily be applicable to current
13 conditions. Thus, the mere fact that both equities and long term bonds are issued for
14 lengthy periods of time does not provide a basis for deviating from the theoretical
15 foundation of the CAPM approach, which requires the use of a true "risk free" return.
16 And it is abundantly clear that investments in long term bonds are far from risk-free. In
17 truth, prices for long term bonds can fluctuate widely – a clear demonstration that these
18 investment instruments are not risk-free. Thus, in my opinion it is preferable not to use
19 long term debt yields as a proxy for the "risk free" rate.

20 As the Commission may realize, the appropriate measure of the risk free rate is an
21 often-debated topic. In my view, the most appropriate measure is provided by short term
22 treasury bills, such as those with 1 month or 3 month maturities. The average yield on 30
23 day treasuries from 1926 through 2015 was 3.40%. [See, Schedule 13, Page 1] This
24 statistic provides a solid starting point for the CAPM analysis.

1

2 **Q. What did you use for the risk free rate of return?**

3 A. I used 3.11%. In arriving at this figure I largely relied on the 3.40% average observed
4 over the period from 1926 through 2015. In general, for purposes of estimating the cost
5 of equity, I believe the risk free rate of return should be seen as a stable concept, which
6 should be estimated and viewed from a long term perspective. However, I also believe it
7 is appropriate to give some recognition to the potential for some modest variation in the
8 risk free rate of return over time in response to current events.

9 This is an important theoretical issue in the context of this case, because we are
10 currently experiencing a period in which T-bills yields have dropped to very low levels in
11 part due to the slowing of the economy, but mostly due to monetary policy. As a result,
12 the current returns that are available to investors from risk free securities have dropped
13 significantly below the long term average at this time, and there is no prospect of risk free
14 returns recovering to the historical norm anytime soon. While the Federal Reserve Board
15 has publicly indicated it anticipates increasing short term rates over the next few years,
16 rates are currently close to zero, and futures market data indicates most investors are
17 anticipating only gradual movement above the current level.

18 The recent anomaly in short term interest rates is clearly visible in the data in
19 Schedule 13, which shows the impact of including near-zero returns in the calculated
20 averages for various time periods. Thus, the question arises: in developing a CAPM
21 analysis for regulatory purposes, would it be reasonable for the Commission to drastically
22 reduce the allowed return on equity, to be consistent with this recent plunge in short term
23 treasury rates? This is not a matter of merely theoretical interest since T-bills are
24 currently trading at yields close to zero and – significantly – investors have every reason

1 to anticipate that these returns will not return to historical norms for at least a few more
2 years. Investors are currently anticipating a lengthy period with very low returns for
3 short term Treasuries, as demonstrated by futures market data, as well as the fact that
4 even 5 and 10 year Treasury securities are trading at very low yields.

5 Under these circumstances, I believe it would be a mistake to exclusively focus on
6 the current (near-zero) risk free rate of return in implementing the CAPM approach, or to
7 go to the other extreme and completely ignore the current data. My preferred solution is
8 to mostly focus on the long term average, but to give some limited consideration to the
9 practical reality that investors do not currently have an opportunity to earn a risk free
10 return that comes anywhere close to the normal historical level.

11 While equity markets and money markets do not move in lock step, it is
12 nevertheless true that there are tradeoffs between different markets, and investors do
13 consider their opportunity costs – and those indirect linkages strongly suggest that the
14 cost of equity is currently running below the normal level which has historically been
15 observed. But, I don't believe the decline in equity costs has been as anywhere near as
16 dramatic as the decline in short and mid-term interest rates.

17 It is for this reason that I used a 3.11% risk free rate, rather than 3.40% (the
18 historical average) or a rate closer to zero based upon the most recent data. More
19 specifically, I developed a blended estimate for the risk free rate by giving 90% weight to
20 the long term average T-bill rate of 3.40% and 10% weight to an estimate of the
21 anticipated near-future T-bill rate (approximately 0.50%). This results in the risk free rate
22 of 3.11%, which is what I used in my CAPM analysis.

1 **Q. Can you now discuss the risk premium you used in your implementation of the**
2 **CAPM approach?**

3 A. Yes. Although the Capital Asset Pricing Model is popular in the academic literature, the
4 appropriate measure of the market risk premium is not well-settled; rather it remains the
5 subject of considerable controversy. For purposes of my analysis, I compared the risk
6 free rate with the returns on investments in stocks in the S&P 500 Index, as reported by
7 Ibbotson. This is the same data series shown on Schedule 5 that I discussed earlier in my
8 testimony.

9 As shown on Schedule 13, observed premiums fluctuate widely from year to year,
10 depending upon the movement of stock prices. For example, during the bull market of
11 the mid-1990's, the returns on stocks greatly exceeded the risk free rate of return,
12 translating into an observed risk premium of as much as 18% or more. The reason is
13 simple: a booming stock market led to realized returns on stocks that clearly exceeded
14 actual investor requirements. This can easily be verified by looking at the average returns
15 earned during the various 5 year periods ending in the years 1995 through 2000, as shown
16 on page 2 of Schedule 5 and comparing those returns with the returns during earlier and
17 subsequent time periods. When the Dot Com bubble burst, prices fell, observed equity
18 returns plummeted, and there was a corresponding plunge in observed premiums. In drop
19 in prices was so extreme, the observed risk premium turned negative for several years in
20 a row. These fluctuations are clearly not a result of shifts in investor return requirements,
21 or the equity risk premium demanded by investors.

22 The result of including even a single year in which stock prices dropped, rather
23 than increased, has a major impact on the multi-year averages for either the market
24 return, or the computed risk premium. Like the impact of the Dot Com bubble, a similar

1 pattern can be observed in other years, like 2008 and 2009 and that impact can even be
2 seen when dealing with averages over lengthy time periods. For instance, the average
3 risk premium dropped from 8.5% for the 20 year period ending in 2007, to 6.1% and
4 6.2% for the 20 year periods ending in 2008 and 2009, respectively. Fluctuations in the
5 20 year periods ending in 2010 (7.5%), 2011 (6.4%) and 2012 (7.0%) are also directly
6 attributable to significant differences in stock market performance over these nearly
7 identical different time periods.

8 All of this creates a challenge in deriving an appropriate risk premium from the
9 historical data. This is particularly true because large portions of the past 30 or 40 years
10 of historical data were greatly impacted by the unusually strong returns that were briefly
11 experienced during the bull market of the 1990's; absent another unusually strong and
12 sustained bull market, equity returns going forward are likely to be lower than those that
13 gave rise to the premiums that were observed during many of the time periods that
14 included those particular years.

15
16 **Q. What risk premium component did you use in your CAPM analysis?**

17 **A.** I used a low estimate of 6.50% and a high estimate of 8.00%. The low end (6.50%) is
18 consistent with the cumulative 30 year averages shown in the lower right corner of page 2
19 of Schedule 13 – including all of the cumulative averages for 30 year periods ending in
20 various time periods from 1979 through 2015. The high end (8.00%) is consistent with
21 the 8.0% average that occurred during the 10 years ended in 2015, as well as the
22 analogous averages of 7.5%, 8.6% and 8.4% observed during the 20, 25 and 30 year
23 periods ending in 2015, respectively, as shown near the bottom right corner of page 2 of
24 Schedule 13.

1 The range I've selected is not just consistent with these particular examples – it
2 encompasses nearly all of the multi-year cumulative averages shown at the bottom of
3 page 2 of Schedule 13. This shows the effect of averaged the results from numerous
4 different 5, 10, 15, 20, 25 and 30 year time periods. This averaging process shows the
5 central tendency of the overall data set, and is consistent with my view that the cost of
6 equity should largely be viewed as a long term, stable concept; it has the added benefit of
7 eliminating most of the noise in the data. This analysis supports my view that the actual
8 risk premium demanded by equity investors has fluctuated in a much narrower range than
9 the premium observed during any one year, which is consistent with my use of a
10 relatively narrow range from 6.5% to 8.00% – which what I decided to use in my CAPM
11 analysis.

12
13 **Q. Can you now discuss the beta component of the CAPM approach?**

14 **A.** Yes. Beta is simply a measure of the relationship between an investment's returns and the
15 returns of the market as a whole. A positive beta indicates that returns for that specific
16 investment tend to move up and down with returns for overall market. In other words, if
17 the overall market returns are above average during a particular time period, a high beta
18 will tend to be measured if the individual investment's returns also tend to be above
19 average during the same time period. Conversely, if the overall market returns are below
20 average or negative, that investment's returns will also tend to be below average or
21 negative.

1 A negative beta is relatively unusual – it indicates the investment's returns tend to
2 move opposite the returns of the overall market. In other words, if the overall market
3 returns during a particular time period are negative, the investment's returns will tend to
4 be positive, and vice versa. An investment will have a beta of zero if its returns move
5 independently of changes in the market's returns.

6 By definition, the market itself (often measured by the S&P 500) has a beta of 1.0.
7 An investment with a beta of greater than 1 has returns that tend to vary more than
8 proportionally with the overall market returns. An investment with a positive beta of less
9 than 1 has returns that tend to vary in the same direction as, but to a lesser degree than,
10 the overall market. In the CAPM, beta is used as a proxy for the investment-specific risk,
11 and thus a firm with a beta below 1.0 is assumed to have lower-than-average risk. The
12 theory behind the CAPM approach assumes investors will require a lower-than-average
13 return from an investment with low risk, as indicated by a low beta.

14
15 **Q. Can the Company's beta be directly measured?**

16 **A.** No. Since Abenaki is not publicly traded, no beta data is available for the Company. The
17 absence of beta data reduces the appeal of the CAPM method in this case. However, beta
18 data is available for many of the 11 publicly traded included in my comparison group.
19 Hence, it is possible to use the CAPM method, by first selecting an appropriate beta for
20 the Abenaki's regulated utility operations in New Hampshire.

21 The key problem with using betas from a proxy group of firms is that the betas
22 associated with the "comparable" companies represent a measure of risk for those
23 companies, which may not be identical to the relevant equity risks applicable to this
24 proceeding, which attenuates one of the potential benefits of using the CAPM approach.

1 However, this problem can be dealt with by considering any differences in risk, and
2 adjusting the proxy data accordingly before applying the CAPM approach. This is the
3 solution I have used.

4 Schedule 14 shows the current and recent historical betas for the same group of 11
5 water utilities I used to develop my capital structure and DCF analyses. The betas are
6 were taken from reports published by S&P Capital IQ. As shown, the historical beta for
7 this group of companies averaged .46, and the current (most recent available) beta is .58.
8 Based upon this data, and taking into consideration the slightly higher risks associated
9 with Abenaki's regulated operations in New Hampshire, I believe it would be reasonable
10 to use a beta of .60 in this proceeding.

11

12 **Q. What is your conclusion regarding the Company's cost of equity under the CAPM**
13 **approach?**

14 A. As shown on Schedule 15, using a true risk-free rate of 3.11%, a corresponding risk
15 premium of 6.50% to 8.00%, and a beta of .60 results in a cost of equity of 7.01% to
16 7.91%.

17

18 **Q. You've developed several market-based cost estimates, drawing upon a variety of**
19 **different data and techniques. What conclusions have you drawn from your market**
20 **analysis?**

21 A. I summarize my market analysis on Schedule 16. As shown, based upon my analysis of
22 90 years of historical stock market data I concluded that the average return required by
23 equity investors in unregulated firms like the S&P 500 is currently about 12.00% to
24 12.50%. To compensate for differences in risk between Abenaki and the average firm in

1 the S&P 500, I made a downward adjustment of about 3.50% to 3.75%. In turn, this
2 translates into an estimated equity return requirement for Abenaki of about 8.25% to
3 9.00%.

4 Schedule 16 next summarizes my discounted cash flow analysis. As I have
5 explained, I believe Abenaki's New Hampshire regulated operations are a bit more risky
6 than the comparable group. After adjusting for this difference in risk, my DCF analysis
7 indicates Abenaki's a cost of equity is somewhere in the vicinity of 8.00% to 9.00%.

8 Schedule 16 also summarizes the results of my CAPM analysis, which ranged
9 from 7.01% to 7.91%. No further downward risk adjustment is necessary in this instance,
10 since I already considered differences in risk in selecting a beta of .60 for use in this
11 analysis.

12 After evaluating these alternative estimates, and considering the full spectrum of
13 market data, I decided to give the most weight to the DCF results, somewhat less weight
14 to the Risk Adjusted S&P 500 long term average data, and still less weight to the CAPM
15 calculations. In so doing, I arrived at my final conclusion using the market approach –
16 that the investor return requirement for the Company's New Hampshire operations is
17 currently in the range of 7.92% to 8.82%, as shown at the bottom of Schedule 16.

18
19 **Q. Have you added an allowance for flotation or the costs for issuing new stock?**

20 **A.** No. Based upon my review of the Supreme Court of New Hampshire's second decision
21 on appeal of the Commission's order in Docket E-7, Sub 408 rate case, I did not include
22 an explicit allowance for "flotation" costs. The cost of equity approved by the
23 Commission after the Supreme Court's first remand included a .1% increment to cover
24 the cost of issuing new stock. In it's second decision remanding the case to the

1 Commission, the Supreme Court found that the record did not support such an
2 adjustment. [State ex re. Utilities Comm. v. Public Staff, 331 N.C.215, 415 S.E. 2d 354
3 (1992)] The Commission has repeatedly rejected the inclusion of flotation costs since the
4 Supreme Court's decision in that case.

5 In light of the Supreme Court of New Hampshire's decision, and this
6 Commission's practice since that time, I have not included a separate allowance for
7 flotation, or the cost of issuing stock, in developing my market cost equity estimate.
8 However, two points are worth noting, in case the Commission were to consider making
9 a flotation adjustment. First, the amount of any such adjustment should clearly be very
10 modest, given the fact that equity issuances are relatively rare, and some of the
11 Company's equity capital is obtained through retained earnings. Second, any such costs
12 are already built into my comparable earnings analysis, since that analysis is based upon
13 achieved returns relative to the book amount of equity, which is typically recorded on the
14 accounting records net of any flotation or issuance costs. For instance, if equity is issued
15 to the public for \$100 per share, and the underwriters retain \$2 per share for their fees and
16 profit, only the net amount of \$98 is included in the book value of the firm – and that is
17 the number that would be reflected in the denominator of all the calculations used in my
18 comparable earnings approach. Consequently, if the Commission were to decide to
19 deviate from its past practice and include an allowance for flotation costs, any such
20 adjustment should only be applied to my market analysis – it is clearly not appropriate for
21 the comparable earnings analysis.

22

1 **Conclusions and Recommendations**

2

3 **Q. Let's turn to the last section of your testimony. You have derived rather different**
4 **estimates of the Company's cost of equity using the comparable earnings and**
5 **market approaches. Is this inconsistent?**

6 A. No. I derived these estimates by methods that are theoretically and practically distinct,
7 and it would be unrealistic to expect identical results from the market and comparable
8 earnings approaches, considering the differences between them. I recommend the
9 Commission make a decision concerning how much weight it wants to give to each of
10 these methods, since they are sending somewhat different signals.

11

12 **Q. Considering the results of both approaches, your equity cost estimates cover a**
13 **rather wide range. Can you be more specific in your recommendation?**

14 A. Yes. I recommend the Commission primarily focus on the central portion of each range,
15 rather than the extreme values. The Commission could give equal weight to both the
16 market approach and the comparable earnings approach, or it could give greater weight to
17 one of the methods. Once this is done, it a straightforward matter to determine a specific
18 point estimate for the cost of equity to use in establishing the Company's revenue
19 requirement. For example, if the Commission decides to give double weight to the
20 market approach, the upper and lower bounds of each range could be averaged, creating a
21 composite range of 8.45% to 9.21%, as shown on Schedule 17. The midpoint of this
22 composite range is 8.83%, which would be appropriate for use in developing the overall
23 allowed rate of return (assuming double weight is given to the market method).

24

1 **Q. What is your recommendation concerning the Company's overall allowed rate of**
2 **return?**

3 **A.** As I explained earlier in my testimony, I recommend a long term cost of debt of 3.75%,
4 and a capital structure consisting of 50.0% equity and 50.0% long term debt. Using a
5 8.83% equity cost estimate for illustrative purposes, I would recommend allowing an
6 overall return on rate base of 6.29%, as shown on Schedule 18.

7
8 **Q. Does this conclude your direct testimony, which was prefiled on March 24, 2016?**

9 **A.** Yes.