

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION OF )  
NORTHERN STATES POWER COMPANY )  
DBA XCEL ENERGY FOR AUTHORITY TO )  
INCREASE ITS ELECTRIC RATES )**

**Docket No. EL12-046**

**RATE OF RETURN AND COST OF CAPITAL**

**TESTIMONY AND EXHIBIT OF BASIL L. COPELAND JR.  
ON BEHALF OF  
THE COMMISSION STAFF**

**November 15, 2012**

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1 **I. BACKGROUND AND QUALIFICATIONS**  
2

3 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

4 A. My name is Basil L. Copeland Jr. and my business address is 14619 Corvallis Road,  
5 Maumelle, AR, 72113.

6 **Q. WHAT IS YOUR OCCUPATION, BY WHOM ARE YOU EMPLOYED, AND FOR WHOM**  
7 **ARE YOU TESTIFYING?**

8 A. I am an economist, specializing in energy and utility economics, and a principal in  
9 Chesapeake Regulatory Consultants, Inc., Annapolis, MD. I am testifying on behalf of the  
10 Staff of the South Dakota Public Utilities Commission.

11 **Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.**

12 A. I received my education at Portland State College (1967-1969), New Mexico Institute of  
13 Mining and Technology (1969), and Oregon State University (1972-75). In 1974 I received a  
14 Bachelor of Science degree in Economics from Oregon State University, and in 1976 a  
15 Master of Science degree in Resource Economics (with a minor in Business Finance) from  
16 the same institution.

17 From August 1975 to February 1977, I worked as a financial analyst and staff  
18 economist for the Arkansas Public Service Commission. From March 1977 to August 1978, I  
19 worked in a similar position for the Iowa State Commerce Commission. In September of  
20 1978 I went to work for the Attorney General of Arkansas in a U.S. Department of Energy-  
21 funded office of consumer services, with responsibility for economic analysis in electric utility  
22 rate cases. While with the Attorney General, I assisted in the development of legislation that  
23 created the Arkansas Department of Energy. In July of 1979, soon after the Department was  
24 officially created, I became Deputy Director for Forecasting. In that position, I directed a staff  
25 with broad responsibilities that included the development of an energy management

1 information system for monitoring energy supply and demand in Arkansas, including  
2 comprehensive forecasts of energy demand by fuel source and sector.

3 I left the Arkansas Department of Energy in January 1981, and worked briefly as an  
4 independent consultant before joining the consulting firm of Hess and Lim, Inc., in April 1981.  
5 While employed by Hess and Lim, I served as a consultant on numerous rate cases before  
6 the FERC and various state utility commissions. I left Hess & Lim in October 1986 to join  
7 with two other consultants in the founding of Chesapeake Regulatory Consultants. I have  
8 testified or provided technical assistance in over 150 proceedings before the FERC, the FCC,  
9 and regulatory bodies in: Alabama, Arizona, Arkansas, California, Colorado, Georgia, Illinois,  
10 Iowa, Kansas, Maine, Maryland, Mississippi, Montana, New Jersey, New Mexico, New York,  
11 Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, Vermont, Washington State,  
12 West Virginia, and the District of Columbia. On four occasions I have been invited to appear  
13 on the program of the annual conference of Michigan State University's Institute of Public  
14 Utilities, and I have served as faculty for the Michigan State-NARUC summer training  
15 program for regulatory commission personnel.

16 I have published numerous articles, set forth in Appendix A, on a variety of utility  
17 issues, including articles or comments in *Land Economics*, *American Economic Review*,  
18 *Public Utilities Fortnightly*, *Journal of Business Research*, *Yale Journal on Regulation*,  
19 *Journal of Portfolio Management*, *Energy Law Journal*, and the *Financial Analysts Journal*.  
20 My 1982 article in the *Financial Analysts Journal* on the equity risk premium received a  
21 Graham and Dodd award from the *Financial Analysts Federation*. I have also served as an  
22 academic referee for two academic journals where I reviewed articles on utility economics  
23 and finance. My article in the Spring 1991 issue of the *Energy Law Journal*<sup>1</sup> deals with the  
24 constitutional standards for due process as applied to utility ratemaking under the celebrated

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<sup>1</sup> "Procedural vs. Substantive Economic Due Process for Public Utilities," with Walter Nixon. *Energy Law Journal* 12 No. 1 (Spring 1991): 81-110.

1 Hope case. It offers a comparative analysis and critique of the 1989 Duquesne decision.<sup>2</sup> A  
2 list of publications is provided at the end of my testimony.

3  
4 **II. OVERVIEW OF TESTIMONY**

5  
6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

7 A. The purpose of my testimony is to present evidence with respect to the cost of capital for  
8 Northern States Power ("NSP") and to recommend a fair and reasonable rate of return based  
9 upon that evidence. I will also review and respond as to NSP's testimony on these matters.

10 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING THE COST OF CAPITAL  
11 AND YOUR RECOMMENDED RATE OF RETURN.**

12 A. Based on the evidence presented in my testimony, I conclude that the return on equity for  
13 NSP should be in the range of 8.25 to 9.25 percent, and I recommend a rate of return on  
14 equity at the midpoint of the range, 8.75 percent. Using my recommended rate of return on  
15 equity and the capital structure and debt costs described later in my testimony, the overall  
16 cost of capital and fair rate of return is 7.46 percent. My recommendations are summarized in  
17 the following table, and in Exhibit\_\_\_\_(BLC-1), Schedule 1:

18  
19  
20  
21  
22  
23  
24  

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<sup>2</sup>Federal Power Comm'n v. Hope Natural Gas, 320 U.S. 591 (1944); Duquesne Light Co. v. Barasch, 488 U.S. 591 (1989).

**Northern States Power Company Minnesota - South Dakota**

Cost of Capital  
December 31, 2011

	<u>Component</u>	<u>Amount</u>	<u>Percent</u>	<u>Cost</u>	<u>Weighted Cost</u>
1	Long term debt	\$3,346,910,310	47.33%	6.03%	2.85%
2	Common equity	<u>\$3,724,776,000</u>	<u>52.67%</u>	8.75%	<u>4.61%</u>
3	Total	\$7,071,686,310	100.00%		<u><u>7.46%</u></u>

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Source: Statement G, Page 2 of 8.

1

2 **Q. YOUR RECOMMENDATION IS 25 BASIS POINTS BELOW YOUR RECOMMENDATION**  
3 **IN DOCKET NO. EL11-019. WHY IS THAT?**

4 **A.** Capital costs have fallen since I prepared my testimony for Docket No. EL11-019. I will  
5 present evidence of this at various points in my testimony.

6 **Q. PLEASE DESCRIBE HOW YOU HAVE ORGANIZED THE REMAINDER OF YOUR**  
7 **TESTIMONY.**

8 **A.** In Section III I present a brief discussion of basic principles regarding rate of return and the  
9 cost of equity in regulation. In Section IV I present a survey of current research on the equity  
10 risk premium that I believe is important to framing judgments concerning the reasonableness  
11 of rate of return recommendations. In Section V I present a detailed discussion of the cost of  
12 equity methodologies I employ, and present my findings based on those methodologies. In  
13 Section VI I calculate an overall rate of return and discuss issues relating to capital structure  
14 and cost of debt. In Section VII I discuss NSP's testimony and evidence regarding cost of  
15 capital and rate of return.

16

17 **III. ROLE OF RATE OF RETURN AND THE COST OF EQUITY IN REGULATION**

18

1 **Q. PLEASE EXPLAIN THE RELATIONSHIP BETWEEN RATE OF RETURN AND THE COST**  
2 **OF EQUITY.**

3 A. Typically, regulated utilities have utilized three sources of capital to capitalize their utility  
4 assets: common stock, preferred stock, and long-term debt. The rate of return for a  
5 regulated firm is usually based on its “weighted average cost of capital.” This weighted  
6 average cost of capital represents the cost of the individual sources of capital weighted by  
7 their proportion as represented in the capital structure.

8 **Q. HOW ARE CAPITAL COSTS MEASURED?**

9 A. The cost of long-term debt can be directly measured from the interest rate (and related costs)  
10 on the various issues of debt used to support the capital structure, and is only rarely a direct  
11 source of significant controversy in establishing a rate of return for a regulated utility. The  
12 cost of common equity, however, cannot be directly measured or estimated. It must be  
13 inferred from market-based common stock dividend and price information using one or more  
14 cost of equity estimation methodologies.

15 **Q. WHY IS IT IMPORTANT TO BASE THE ALLOWED RATE OF RETURN ON EQUITY ON**  
16 **THE MARKET COST OF EQUITY?**

17 A. Basing the allowed rate of return on equity on the market cost of equity accomplishes two  
18 significant and desirable regulatory objectives. First, it fairly balances the competing interests  
19 of ratepayers and shareholders. Ratepayers are interested in receiving safe and reliable  
20 service at the lowest possible cost. Shareholders are interested in receiving the highest rate  
21 of return they can. A rate of return based on the market cost of equity fairly and reasonably  
22 balances these competing interests. If the allowed rate of return on equity is significantly  
23 below the market cost of equity, the impairment of the firm’s financial integrity undermines its  
24 ability to render safe and reliable service. So it is in the ratepayer’s interest to allow a rate of  
25 return on equity at least equal to the market cost of equity. Ratepayers, however, have no  
26 interest in paying a rate of return significantly above the market cost of equity. And while

1 shareholders may delight at the opportunity to earn the excess profits associated with a  
2 return on equity above the market cost of equity, they should not complain if the allowed  
3 equity return is consistently established on the basis of the market cost of equity. Such a  
4 return is commensurate with the financial risks they incur, and with the returns they could  
5 earn elsewhere in the marketplace on comparable investments.

6 Second, an allowed rate of return on equity for the Company equal to the market cost  
7 of equity provides the appropriate management incentives to operate the firm safely, reliably  
8 and efficiently. An allowed rate of return on equity equal to the market cost of equity provides  
9 the same kind of incentive to the managers of a regulated firm as do earnings per share and  
10 market value goals for a competitive unregulated firm. If management has a reasonable  
11 opportunity to earn a rate of return on equity equal to the market cost of equity, it should be  
12 able to meet all reasonable goals and expectations of both shareholders and ratepayers.

13  
14 **IV. EQUITY RISK PREMIUM SURVEY**

15  
16 **Q. WHAT IS THE EQUITY RISK PREMIUM?**

17 A. The equity risk premium (“ERP”) is the additional return that investors require on stock  
18 relative to a risk free investment to compensate for market risk. It is implicit in rate of return  
19 methodologies like the Discounted Cash Flow (“DCF”) method, and explicit in methodologies  
20 like the Capital Asset Pricing Model (“CAPM”).<sup>3</sup> While every equity investment has its own  
21 inherent risk premium required by investors, most discussion and research of the equity risk  
22 premium focuses on the market risk premium – the equity risk premium for the market as a  
23 whole.

24 **Q. WHY SHOULD THE COMMISSION BE INFORMED ABOUT THE EQUITY RISK**  
25 **PREMIUM?**

---

<sup>3</sup>The DCF and CAPM methodologies are described in more detail later in my testimony.



1 A. In the case of methodologies like CAPM, the market risk premium is an explicit component of  
2 the methodology, and an accurate rate of return using this methodology is highly dependent  
3 upon the accuracy of the estimated market risk premium. But even with methodologies  
4 where the risk premium is implicit, knowledge of the market risk premium provides a  
5 benchmark for assessing the plausibility of cost of equity estimates. Furthermore, there has  
6 been a groundswell of research on the equity risk premium in recent years that is  
7 fundamentally undermining some long-held beliefs about the equity risk premium. I believe  
8 that familiarity with this research can help the Commission make a more informed decision  
9 about the appropriate rate of return for NSP.

10 **Q. WHAT HAS SPARKED THE INTEREST IN RECENT YEARS IN THE EQUITY RISK**  
11 **PREMIUM?**

12 A. The reasons are varied. For many, it is the quest to solve what has come to be known as the  
13 "Equity Premium Puzzle." This quest, and the term "equity premium puzzle," stems from a  
14 highly influential article published in 1985 by Rajnish Mehra and Edward Prescott.<sup>4</sup> The  
15 puzzle is that through much of the 20th century, returns on stocks relative to risk free  
16 investments have been much higher than what can be explained by economic theory. A  
17 veritable cottage industry of academic research has grown up trying to solve this puzzle.  
18 While there is almost no end to the suggestions on how to reconcile theory and evidence on  
19 the ERP, there is widespread consensus that the ERP has declined in recent decades, and is  
20 not as great as was once believed necessary to attract investment. This has very important  
21 implications for determining the cost of equity.

22 Somewhat related, recent interest in the equity risk premium has been sparked by  
23 attempts to explain, or understand, the unprecedented "bull market" of the 1990's. Were the  
24 returns earned on stocks during the 1990's rational? Were they part of the "required return?"

---

<sup>4</sup>Mehra, Rajnish, and Edward C. Prescott, "The. Equity Premium: A Puzzle," Journal of Monetary Economics,  
March 1985, 15, 145-62.

1 Do (or can) investors rationally expect such returns to persist in the future? These questions  
2 are extremely pertinent to regulatory decisions about the cost of capital because of the  
3 widespread use of the Ibbotson Associates' (now Morningstar) data on market returns in rate  
4 of return testimony. I cover this in more detail below.

5 Further, with proposals (during the Bush administration) to modify social security to  
6 allow investments in the stock market, and more recently (during the Obama administration)  
7 the debate over the cost of health care reform, the question of the future performance of the  
8 stock market and future investment returns has become an important public policy issue.  
9 More specifically, the ERP is an explicit public policy variable in various proposals to modify  
10 social security and price the cost of health care reform. What are public policy planners  
11 assuming about the future of the stock market? Are those assumptions plausible? How do  
12 they compare with the rates of return that rate case witnesses are proposing?<sup>5</sup> As I note  
13 below in discussing these estimates of the ERP, I think they should be of interest to  
14 regulatory commissions because they provide an independent perspective on the ERP that is  
15 nevertheless similar to what regulatory commissions face from a public policy point of view.

16 For a variety of reasons, the ERP is no longer an issue of narrow interest to utility  
17 regulation and utility rates of return. I believe that the Commission should be informed of  
18 developments in this area, and that this information should factor into the Commission's  
19 decision regarding the fair rate of return for NSP.

20 **Q. HOW WOULD YOU CHARACTERIZE THE CONSENSUS OF CURRENT RESEARCH IN**  
21 **THIS AREA?**

22 A. I will present a survey of the evidence below so the Commission can reach its own  
23 conclusion about what might be the consensus view here. Broadly, though, I think that

---

<sup>5</sup> More recently, there has been a related groundswell of interest in the return forecasts used in quantifying pension fund liabilities. These forecasts embody implicit ERP expectations as well, and serve as yet another kind of public policy issue where expected equity returns play a significant role. I cover this in more detail later in my testimony.

1 current thinking about the ERP falls into one of three categories. Before I summarize these  
2 categories, it is helpful to have a historical perspective. The most common historical  
3 perspective is realized return data published by Morningstar (formerly Ibbotson Associates).  
4 For the period 1926 through 2007, the historical equity return premium for common stocks  
5 averaged 7.10 percent above the income return on long term government bonds, and this  
6 has, in the past, often been touted as evidence of the equity risk premium. For the period  
7 1926 to 2008, the average historical equity return premium fell dramatically to 6.5 percent  
8 because of the market "crash" of 2008. Through 2011, as the market rebounded somewhat,  
9 the historical equity return premium for common stocks averaged 6.6 percent.

10 It is important to note that this historical estimate is based on an arithmetic mean (or  
11 average), and that were we to use a geometric mean, the historical data through 2010  
12 yielded a return premium of only 4.7 percent. I discuss the relative merits of the two ways of  
13 measuring historical returns in detail later in my testimony. In any case, these returns – 6.6  
14 percent arithmetic, and 4.7 percent geometric – give us a historical "benchmark" from which  
15 to characterize current thinking about the ERP.

16 **Q. PLEASE DESCRIBE THE THREE BROAD CATEGORIES OF CURRENT THINKING**  
17 **REGARDING THE EQUITY RISK PREMIUM.**

18 **A.** In the first category are those who believe that the ERP remains relatively high. Today, few  
19 predict that the future ERP will be as high as the historical return on stocks vis-a-vis risk free  
20 investments, but some still believe that the future will come close to realizing the same kind  
21 of returns. Estimates of the ERP in this category tend to fall into the 4-6 percent range.

22 In the second category, which is as close as we get to a consensus, are those experts  
23 who believe that future stock returns will be substantially lower than returns historically  
24 realized through much of the 20th Century, but still comfortably above bond returns. These  
25 estimates of the ERP tend to fall into the 2-4 percent range.

1           The third category is characterized as those who believe that the current ERP is very  
2           low, if not zero, and that stocks are not likely to significantly outperform bonds in the  
3           foreseeable future. Here we are looking at ERP estimates of 0-2 percent, and in some cases  
4           even less.<sup>6</sup>

5   **Q.   WHY IS THERE SUCH A DISPARITY OF OPINION ABOUT THE EQUITY RISK**  
6   **PREMIUM?**

7   A.   With few exceptions, there is uniform agreement across all three groups that the current or  
8           foreseeable future ERP is lower than the historical realized premium on stocks vis-a-vis  
9           bonds.<sup>7</sup> They disagree mainly over how much lower, not that it is lower per se. Thus Peter  
10          Arnott, editor of the Financial Analysts Journal, and a contributor to recent research on the  
11          ERP, thinks it fair to say:

12                   Few serious observers of the capital markets argue that the future risk premium for stocks  
13                   relative to bonds can rival the lofty excess return that stocks have delivered in the past.<sup>8</sup>

14           That said, it is still common to see rate of return witnesses simply extrapolating historical  
15           returns for an equity risk premium. But one can find little serious research these days to back  
16           up such an approach.

17           As to the disparity in views as to how far the risk premium has fallen, I think the  
18           differences owe to a combination of the following factors:

- 19                   ▪   The extent to which researchers use strictly forward-looking fundamental valuation  
20                   models versus analysis of historical return data;  
21

---

<sup>6</sup> The equity risk premium can be negative, or less than zero, when investors have an absolute preference for stocks over bonds. This can occur during times of rapid inflation. Inflation erodes the value of bonds, because the coupon rate is fixed; stocks can better adapt to inflation because firms can pass on the inflationary effect of higher input prices in the output prices of goods sold. This makes stocks a "hedge against inflation" and can lead to a situation where stocks are considered less risky than bonds.

<sup>7</sup> In other words, lower than the 6.6 percent arithmetic and 4.7 percent geometric means realized historically. Keep this in mind when viewing the results presented below.

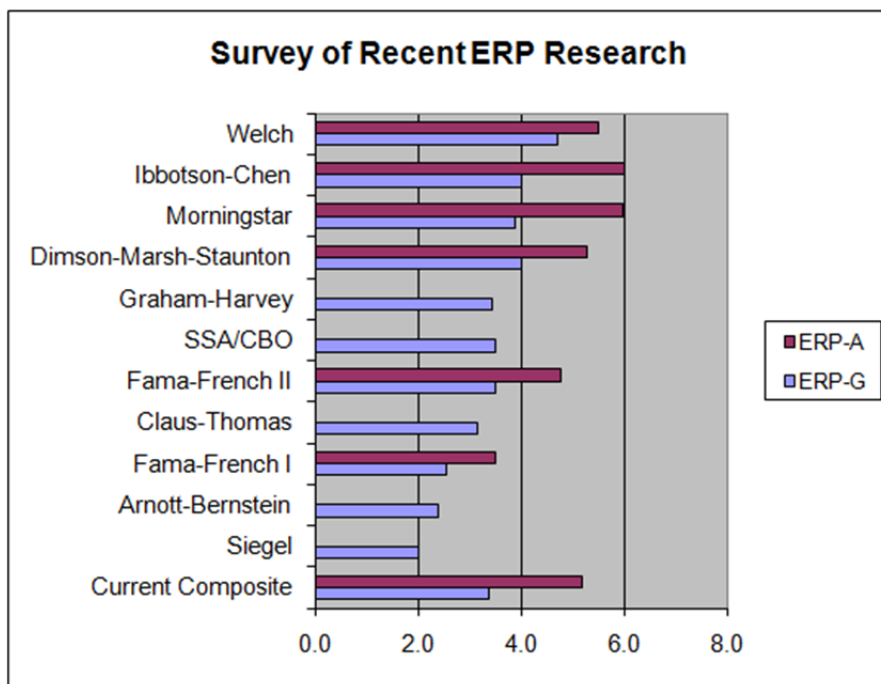
<sup>8</sup> Arnott, Peter, "The Meaning of a Slender Risk Premium," *Financial Analysts Journal*, March/April 2004, pp. 6-8.

- 1           ▪ The selection of time frames when analyzing historical data;
- 2           and
- 3           ▪ Methodological issues such as whether to use geometric or arithmetic averages in
- 4           estimating the ERP, and whether to use Treasury bills or bonds as the proxy for
- 5           determining the risk free rate.

6           I will highlight examples of these kinds of differences in surveying recent studies of the ERP.

7   **Q.   WHAT STUDIES OR EVIDENCE ABOUT THE ERP DOES YOUR REVIEW ENCOMPASS?**

8   **A.**   The studies I review in this survey are summarized in the following chart:



9

10          Details and sources used in composing the chart are presented in Exhibit\_\_\_\_(BLC-1),

11          Schedule 2. The darker (red) bars, labeled “ERP-A”, represent arithmetic estimates of the

12          ERP; the lighter (blue) bars, labeled “ERP-G” represent geometric estimates of the ERP. As

13          just noted, the upper end of recent estimates falls in the 4 to 6 percent range. But even this

14          can be misleading because they do not all use the same base for a risk-free rate, therefore

15          some of these higher estimates are actually lower than they appear. I bring this out in the

1 discussion below, and take it into account when summarizing the results in terms of a Current  
2 Composite.

3 **Q. PLEASE DESCRIBE THE WELCH AND IBBOTSON-CHEN STUDIES.**

4 A. These studies fall toward the upper end of the range of recent estimates of the market risk  
5 premium. In 2001, Ivo Welch, Professor of Economics and Finance at Brown University, and  
6 a National Bureau of Economics Research Associate in the Corporate Finance group,  
7 published survey results, updating an earlier survey, of the views of finance and economics  
8 professors on the ERP. With results from over 400 respondents, Welch reported 30 year  
9 equity premium forecasts of 4.7 percent (geometric) and 5.5 percent (arithmetic).<sup>9</sup> He  
10 observed that this was a significant decline from a survey taken just three years earlier. It is  
11 further notable that the survey used Treasury bills for the risk-free rate. The ERP measured  
12 relative to long term Treasury bonds would be even lower (the 6.6 arithmetic and 4.7  
13 geometric risk premium averages from Morningstar/Ibbotson Associates are relative to  
14 bonds). Professor Welch posted an online update in early 2009 in which he reported that  
15 "[t]ypical expected equity premia are between 5% and 6% per year."<sup>10</sup> The lower end of this  
16 range is based on a geometric mean return, and the upper end is based on an arithmetic  
17 mean return. Again, it should be noted that Professor Welch's survey asks for premiums  
18 relative to Treasury bills, so these results would be lower if measured relative to long term  
19 Treasury bonds.

20 Recent studies by Pablo Fernandez help place Welch's results in perspective. In one  
21 study, Fernandez publishes results based on responses from 1400 economic and finance

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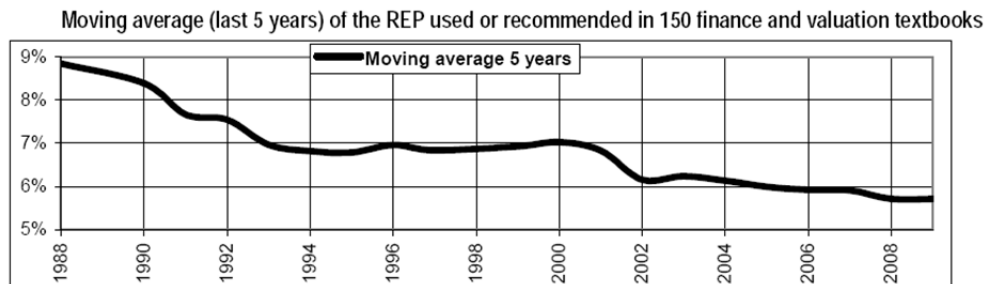
<sup>9</sup>Welch, Ivo, "The Equity Premium Consensus Forecast Revisited" (September 2001). Cowles Foundation Discussion Paper No. 1325. <http://ssrn.com/abstract=285169>.

<sup>10</sup>The updated results are posted online at <http://welch.econ.brown.edu/academics/equpdate-results2009.html>.

1 professors.<sup>11</sup> The mean ERP, 6.3 percent, is similar to the results obtained by Professor  
2 Welch. But Fernandez includes this telling quote from Aswath Damodaran, a finance  
3 professor at the Stern School of Business at New York University:

4 the risk premiums in academic surveys indicate how far removed most academics are  
5 from the real world of valuation and corporate finance and how much of their own  
6 thinking is framed by the historical risk premiums [e.g. Ibbotson  
7 Associates/Morningstar]... The risk premiums that are presented in classroom settings  
8 are not only much higher than the risk premiums in practice but also contradict other  
9 academic research.<sup>12</sup>

10  
11 We will see further proof of this when examining evidence from surveys of corporate CFO's  
12 (Chief Financial Officers) later in my testimony. In other research, Fernandez documents  
13 how the ERP used in textbooks has been falling, demonstrated visually in the following graph  
14 ("REP" in the graph refers to what we are referring to as ERP):<sup>13</sup>



15  
16 Academic references to the equity risk premium have steadily declined, and according to  
17 Fernandez, the latest textbooks use an equity risk premium of 5.7 percent, down from nearly

<sup>11</sup>Fernandez, Pablo, "Market Risk Premium used in 2008 by Professors: a survey with 1,400 answers." [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1344209](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1344209). For a more recent survey, see Fernandez, Pablo, Aguirreamalloa, Javier, and Avendano, Luis Corres, "US Market Risk Premium Used in 2011 by Professors, Analysts and Companies: A Survey with 5,731 Answers," [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1805852](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1805852).

<sup>12</sup>The quotation will be found on page 8 of the 2009 Fernandez paper. The bracketed reference to Ibbotson Associates/Morningstar is here supplied to clarify the meaning of "historical risk premiums." Fernandez shows that historical returns are the most often cited source of the ERP used by professors in the classroom. For a fuller and harsher presentation of Professor Damodaran's view of this, see Damodaran, Aswath, "Equity Risk Premiums (ERP): Determinants, Estimation and Implications - A post-crisis Update," October 2009, <http://www.stern.nyu.edu/~adamodar/pdf/papers/ERP2009.pdf>.

<sup>13</sup>Fernandez, Pablo, "The Equity Premium in 150 Textbooks," September 14, 2009, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1473225](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1473225).

1 9 percent two decades ago. Bear in mind that most professors, and even textbook authors,  
2 do not do original ERP research. They simply repeat "the conventional wisdom," which has  
3 until recent years been dominated by the historical return research of Ibbotson  
4 Associates/Morningstar. Nevertheless, it is significant to observe that even among finance  
5 professors and textbook authors the ERP they use has been falling, and is now no more than  
6 about 6 percent.

7 In my view, though, the exemplary study supporting a high ERP is by Roger Ibbotson  
8 and Peng Chen.<sup>14</sup> Using a variety of historical and supply-side (forward-looking) data, they  
9 concluded that the ERP was about 4 percent geometrically, and 6 percent arithmetically. In  
10 light of the controversy that often surrounds the question of geometric versus arithmetic  
11 returns when measuring the ERP, which I discuss in more detail later, it is notable that they  
12 present estimates of both, and in an interview Ibbotson cites the lower geometric mean as his  
13 basis for estimating the current risk premium.<sup>15</sup> But the more important thing to note is that  
14 they find their 4-6 percent ERP to be 1.25 percent lower than the historical averages. In  
15 other words, they agree with Arnott that future stock returns will not produce as high of a  
16 premium over bonds as has been realized historically.

17 **Q. IS WHAT IBBOTSON AND CHEN PUBLISHED IN THE FINANCIAL ANALYSTS**  
18 **JOURNAL INCONSISTENT WITH WHAT MORNINGSTAR PUBLISHES IN ITS**  
19 **YEARBOOK?**

20 A. No. Morningstar has recently been presenting a "supply-side" estimate of the ERP in its  
21 annual yearbooks. In the 2007 edition of Morningstar this "supply-side" estimate was 6.35  
22 percent arithmetically, and 4.33 percent geometrically. In the 2012 edition, the "supply side"

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<sup>14</sup>Ibbotson, Roger, and Peng, Chen, "Long-Run Stock Returns: Participating in the Real Economy," Financial Analysts Journal, January/February 2003, 88-98.

<sup>15</sup>Lord, Mimi, "Is the Equity Risk Premium Still Thriving, or a Thing of the Past?" Journal of Financial Planning, April 2002, Article 7. [http://www.fpanet.org/journal/articles/2002\\_Issues/jfp0402-art7.cfm](http://www.fpanet.org/journal/articles/2002_Issues/jfp0402-art7.cfm)



1 estimate of the ERP is 6.16 percent on an arithmetic mean basis, and 4.18 percent on a  
2 geometric return basis. So while Morningstar still publishes the historical returns, they now  
3 use the “supply-side” estimate of the ERP for forward looking expectations of the ERP. In the  
4 survey chart above, I have included both the original Ibbotson-Chen results, as well as the  
5 2012 Morningstar “supply side” ERP.

6 **Q. PLEASE EXPLAIN WHAT IS MEANT BY A “SUPPLY-SIDE” ESTIMATE AND HOW IT**  
7 **DIFFERS FROM THE HISTORICAL RETURN.**

8 A. A “supply-side” estimate recognizes that historical returns may incorporate unanticipated  
9 capital gains or losses. There is no quarrel that over the time frame under consideration (here  
10 1926-2010), investors actually received a return of 4.7 percent (geometric) or 6.6 percent  
11 (arithmetic) relative to the income return on long term government bonds. But is this what  
12 investors were actually expecting? There is now growing awareness that over long periods  
13 of time, stocks and bonds may be realizing unanticipated capital gains or losses as a result of  
14 changes in the cost of capital. The “supply-side” approach recognizes this and seeks to  
15 remove the unanticipated component of the return from the historical series in order to more  
16 accurately estimate what investors were actually expecting, as opposed to what they actually  
17 received. This is typically done either by adjusting the historical return for long-term changes  
18 in Price/Earnings (“P/E”) ratios, or dividend yields (Dividend/Price). Ibbotson and Chen use  
19 changes in P/E ratios to develop their “supply-side” estimate. Had they used dividend yields,  
20 as some researchers have done, the “supply-side” ERP would have been even lower.  
21 Moreover, the “supply-side” ERP estimates also vary considerably over time. I present  
22 independently derived estimates of the “supply-side” ERP taking these considerations into  
23 account later in my testimony.

24 **Q. PLEASE DESCRIBE THE FAMA-FRENCH ESTIMATES OF THE ERP.**

25 **A.** The best way to summarize their findings is to quote from the abstract of their article in the  
26 Journal of Finance:

1 We estimate the equity premium using dividend and earnings growth rates to measure the  
2 expected rate of capital gain. Our estimates for 1951 to 2000, 2.55 percent and 4.32 percent,  
3 are much lower than the equity premium produced by the average stock return, 7.43 percent.  
4 Our evidence suggests that the high average return for 1951 to 2000 is due to a decline in  
5 discount rates that produces a large unexpected capital gain. Our main conclusion is that  
6 average stock returns of the last half-century is a lot higher than expected.<sup>16</sup>  
7

8 In other words, as the cost of equity capital (the “discount rate” for equity capital) fell, it  
9 produced large, unanticipated capital gains. This is just another way of reflecting the intuition  
10 behind the “supply-side” estimate of the ERP discussed above: historical returns themselves  
11 only tell us what investors realized on an ex post or after-the-fact basis. The cost of capital,  
12 though, is an ex ante or forward-looking concept.

13 What Fama and French did, to avoid extrapolating ex post returns that are not  
14 indicative of what investors actually expected, was to use forward looking valuation models  
15 essentially identical to the familiar DCF (discounted cash flow) model we use in regulation to  
16 estimate the cost of equity for public utilities. In one model they used dividends; this model  
17 yields the 2.55 percent ERP cited in the abstract. When they used earnings, the estimated  
18 ERP was the 4.32 percent.<sup>17</sup> Either result is considerably below the 6.6 percent arithmetic  
19 return premium, or the 4.7 percent geometric return premium, that has been realized  
20 historically. Again, what this indicates is that investors historically realized unanticipated  
21 returns, and that these cannot be realistically extrapolated in estimating the current expected  
22 ERP.

23 **Q. PLEASE DESCRIBE THE DIMSON-MARSH-STAUNTON AND GRAHAM-HARVEY**  
24 **STUDIES.**

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<sup>16</sup>Fama, Eugene F., and French, Kenneth R., “The Equity Premium,” Journal of Finance, V57, No. 2 (2002), 637-659.

<sup>17</sup>The ranges presented in the chart for the Fama-French study are the “bias-adjusted” figures shown in Table IV of the article, with the “annual” result being interpreted as “arithmetic” and the “long-term” result being interpreted as “geometric.” In the table, the ERP estimated from dividend growth is labeled “Fama-French I” and the ERP estimated from earnings growth is labeled “Fama-French II.”

1 **A.** Somewhat in the vein of the classic historical analysis of Morningstar/Ibbotson Associates,  
2 the Dimson-Marsh-Staunton research goes further by using a longer historical dataset –  
3 beginning in 1900 rather than 1926 – and extending the analysis to equity markets in  
4 countries other than just the US. But in what now is becoming conventional wisdom, they  
5 recognize that the historical series includes unanticipated capital gains, and subtract these to  
6 yield what is essentially a “supply-side” estimate of the historical equity risk premium. For the  
7 US, the 1900-2001 realized return premium was 5.6 percent (geometric); adjusted for  
8 unanticipated capital gains and a declining cost of equity capital, they derived a 4.0 percent  
9 (geometric) ERP for the US over the entire 1900-2001, and projected a 5.3 percent  
10 (arithmetic) ERP going forward.<sup>18</sup> Based on evidence I will present later, I’m sure these  
11 numbers would be much smaller if they used only the latter half of the 20<sup>th</sup> century. These  
12 results also measure the ERP relative to Treasury bills, which makes them higher than the  
13 ERP one would use for longer term investments.<sup>19</sup>

14 The Graham-Harvey study takes a different, and somewhat unique, perspective to  
15 estimating the ERP. Since June of 2000 Duke University has been including in its quarterly  
16 survey of CFO’s a question about expected 10-year average returns on the S&P 500.  
17 Graham and Harvey compare these estimates to 10-year Treasury bond rates at the time of  
18 the survey to derive implied expectations regarding the ERP. The lowest expected ERP  
19 reported by CFO’s since this question was added to the survey was 2.88 percent in March  
20 2002; the highest ERP was 4.74 percent, in February 2009, and the latest ERP was 3.00

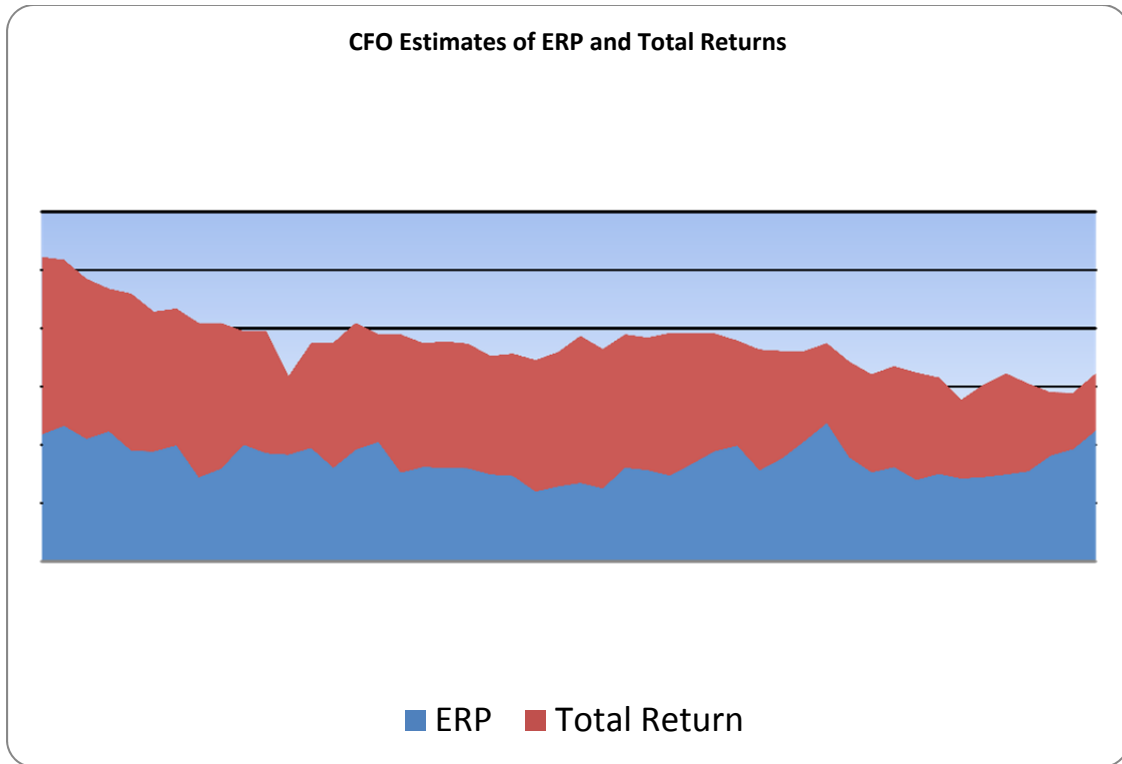
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<sup>18</sup>Dimson, E., Marsh, P.R., and Staunton, M., “Global evidence on the equity risk premium,” Journal of Applied Corporate Finance, Vol. 15, No. 4 (2003), 27-38.

<sup>19</sup>As explained below, I take into account whether a study used Treasury bills or bonds in deriving my “current composite” of the ERP.

1 percent. The average for all quarters since the survey began is 3.45 percent, and this is what  
2 is depicted in the chart on Schedule 2 of my exhibit, and on Page 11 above.<sup>20</sup>

3 I think it is important to emphasize how the ERP from the CFO surveys is determined.  
4 They are not asked what they think the ERP is directly. They are asked what they think the  
5 market return will be relative to 10 year government bonds, and the ERP is derived by  
6 determining the difference between the two. This means that we can compute what the total  
7 expected market return was from the CFO surveys, and I think the results are highly  
8 informative. The following chart depicts the ERP and the total expected return since the  
9 surveys began:



10  
11 Since early 2001, the total expected market return projected by the surveyed CFO's  
12 has been in the single-digit range, i.e. below 10 percent. This is notable because there  
13 seems to be resistance among public utilities and some rate of return witnesses to the notion

<sup>20</sup>Graham, J.R., Campbell, R.H., "The Equity Risk Premium in 2012," March 11, 2012.  
[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2020091](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2020091)

1 that expected market returns and the cost of equity capital are in the single digits. Yet here  
2 we have several hundred CFO's being surveyed, and over 16,000 survey results now over  
3 the past decade, and the consensus is clearly that the total expected market return, i.e. the  
4 cost of equity capital for the market as a whole, is well below 10 percent. Somewhat in the  
5 vein of Professor Damodaran's observation that academic and classroom assessments of  
6 the ERP are often unrealistic and at odds with real world expectations, I would suggest the  
7 same of regulated utilities and witnesses who cannot conceive that the cost of equity might  
8 currently be in the single digits.

9 **Q. PLEASE DESCRIBE THE EQUITY RISK PREMIUM SHOWN FOR SOCIAL SECURITY**  
10 **ADMINISTRATION AND THE CONGRESSIONAL BUDGET OFFICE.**

11 **A.** The ERP used by actuaries of the Social Security Administration (SSA) to project expected  
12 stock returns in analyzing proposals for reforming Social Security during the Bush  
13 administration was 3.5 percent.<sup>21</sup> More recently, the same ERP -- 3.5 percent -- has been  
14 used by the Congressional Budget Office (CBO) in its analysis of budget projections.<sup>22</sup> I think  
15 that these are very important examples of what a credible estimate of the ERP is from a  
16 public policy perspective. The Commission, of course, is making a "public policy" decision  
17 about the ERP when it sets an allowed rate of return on equity for the utility. However, the  
18 Commission's decision only affects the utility and its customers. Social Security, or the  
19 impact of other issues on the Federal government budget, are public policy issues that affect  
20 the nation as a whole, which means that ERP assumptions made by these agencies will be  
21 subjected to even more intense scrutiny.

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<sup>21</sup>Goss, S.C., Wade, A.H., Chaplain, C., "OASDI Financial Effects of the Social Security Guarantee Plus Act of 2005 (H.R. 750), [http://www.ssa.gov/OACT/solvency/CShaw\\_20050512.pdf](http://www.ssa.gov/OACT/solvency/CShaw_20050512.pdf) . See also Campbell, J. Y., Diamond, P. A., and Shoven, J. B., "Estimating the Real Return on Stocks Over the Long Term," papers presented to the Social Security Advisory Board, August 2001.

[http://www.ssab.gov/Publications/Financing/estimated\\_rate\\_of\\_return.pdf](http://www.ssab.gov/Publications/Financing/estimated_rate_of_return.pdf) .

<sup>22</sup> Congressional Budget Office, "How CBO Projects the Real Rate of Interest on 10-Year Treasury Notes, December 2007. [http://www.cbo.gov/ftpdocs/88xx/doc8842/12-21-10-Yr\\_Rates.pdf](http://www.cbo.gov/ftpdocs/88xx/doc8842/12-21-10-Yr_Rates.pdf).

1 **Q. WHAT DO YOU BELIEVE WOULD HAVE BEEN THE RESULT OF PROPOSALS TO**  
2 **MODIFY SOCIAL SECURITY THAT ASSUMED AN ERP OF 6.6 PERCENT (THE**  
3 **HISTORICAL ARITHMETIC RETURN PREMIUM TO COMMON STOCK THROUGH 2011)?**

4 A. I can assure the Commission that such proposals would have been rejected out of hand. The  
5 adverse effects of using a 6.6 percent ERP would have been monumental, and would have  
6 provoked considerable opposition. In the case of Social Security, this would have resulted in  
7 wholly unrealistic estimates of the returns that retirees might expect on funds invested in the  
8 stock market. Critics of the proposal would have blasted this. In the case of budget  
9 projections, and the pricing of the cost of health care, this would have added further fuel to  
10 those opposed to the health care reform proposals of the Obama administration.

11 **Q. IF IT IS UNREASONABLE FOR THE SSA OR THE CBO TO ASSUME THAT THE STOCK**  
12 **MARKET WILL RETURN 6.6 PERCENT (OR MORE) ABOVE A RISK FREE RETURN,**  
13 **HOW DOES 6.6 PERCENT (OR MORE) SUDDENLY BECOME REASONABLE WHEN**  
14 **PRESENTED IN RATE OF RETURN TESTIMONY?**

15 A, It does not. A 6.6 percent ERP is simply not in the realm of a reasonable projection of the  
16 current ERP in the current economy. I would point out here that NSP's rate of return witness,  
17 Mr. Coyne, uses this as the bottom of a range of estimates in his CAPM analysis, contending  
18 for an even higher 8.09 percent risk premium on an ex ante basis. That is wholly implausible.  
19 I will also note here that such high estimates of the ERP are incompatible with actuarial  
20 assumptions for typical pension plan forecasts, including NSP's. I cover all this more  
21 specifically later in my response to the testimony of NSP's rate of return witness.

22 **Q. PLEASE DESCRIBE THE CLAUS-THOMAS, ARNOTT-BERNSTEIN, AND SIEGEL**  
23 **ESTIMATES OF THE ERP SHOWN IN THE CHART ON SCHEDULE 2 OF YOUR EXHIBIT,**  
24 **AND ABOVE ON PAGE 11 OF THIS TESTIMONY.**

25 A. These studies bring us to the lower end of current thinking about the ERP. The Claus-  
26 Thomas study was published in the *Journal of Finance* under the provocative title "Equity

1           Premia as Low as Three Percent? Evidence From Analysts Earnings Forecasts For  
2           Domestic and International Stock Markets.” These studies used what they call an “abnormal  
3           earnings” version of the discounted cash flow model of stock valuation. While it is an over-  
4           simplification to describe it this way, it is similar in construct to a two-stage or non-constant  
5           DCF model (which I discuss and utilize later in my testimony). In my view, the key intuition in  
6           their approach is recognizing that analysts’ forecasts, such as the I/B/E/S or Zack’s  
7           consensus forecasts often used in DCF analysis, are abnormally high and cannot be  
8           projected indefinitely or into perpetuity. When this is taken into account, the studies find that  
9           *the implied* ERP from analysts’ forecasts averaged 3.36 percent from 1985 to 1998.<sup>23</sup>

10           The Arnott-Bernstein study, published in the *Financial Analysts Journal*, looks at an  
11           even longer period of time – 1802 to 2001 – to estimate what can reasonably be called a  
12           “normal” risk premium.<sup>24</sup> One finding from their analysis is that stock returns, especially in  
13           the 20<sup>th</sup> century, have been the product of “happy accidents,” while bond returns experienced  
14           the opposite. Putting this in the language used earlier, stocks have enjoyed a series of  
15           unanticipated capital gains, while bonds have experienced an unanticipated capital loss.  
16           When historical returns are adjusted for these “accidents,” Arnott and Bernstein find that the  
17           “normal” ERP is just 2.4 percent. Moreover, almost all of the “happy accidents” for stocks  
18           have accumulated since 1981, and when they take this into account they suggest that the  
19           current ERP could be zero, or even negative! But what I depict in the chart is their “normal”  
20           ERP of 2.4 percent.

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<sup>23</sup>Claus, J., and Thomas, J., “Equity Premia as Low as Three Percent? Evidence From Analysts Earnings Forecasts For Domestic and International Stock Markets,” *Journal of Finance*, Vol. 56, No. 5 (2001), 1629-1666.

<sup>24</sup>Arnott, R.D., and Bernstein, P.L., “What Risk Premium is ‘Normal’”, *Financial Analyst Journal*, March/April 2002, 64-86.

1           The final ERP shown in the chart (Schedule 2 of my exhibit) is a forecast by Jeremy  
2 Siegel. Siegel is the author of several well known studies and books analyzing historical  
3 returns. In a 2001 forum on the equity risk premium, he projected an ERP of 2 percent.<sup>25</sup>

4 **Q. PLEASE DESCRIBE THE CURRENT COMPOSITE SHOWN IN THE CHART ON**  
5 **SCHEDULE 2.**

6 **A.** The Current Composite takes into account all the ERP's presented in the chart, taking into  
7 consideration whether they were based on Treasury bills or bonds, and whether they  
8 represent geometric or arithmetic means. In deriving this Current Composite I associate  
9 geometric means with Treasury bond yields, and arithmetic means with Treasury bill returns.  
10 (I describe the reason for doing this later when I discuss the issue of geometric versus  
11 arithmetic means in the estimation of the ERP on page 33 below). As shown on the chart, the  
12 studies show an approximate average geometric ERP of 3.50 percent, and an approximate  
13 average arithmetic ERP of 5.21 percent.

14 **Q. HOW SHOULD THE COMMISSION MAKE USE OF THIS INFORMATION IN**  
15 **DETERMINING A RATE OF RETURN FOR NSP?**

16 **A.** Schedule 2 provides the basis for at least one benchmark in judging the reasonableness of  
17 rate of return on equity recommendations. For example, in this case, NSP is requesting a  
18 return on equity of 10.65 percent. Relative to a current 30 year Treasury yield of 3.0 percent,  
19 that would imply an ERP of 7.65 percent, well above even the high end of credible estimates  
20 of the ERP. Simply stated, this puts NSP's requested return on equity of 10.25 percent  
21 outside the realm of possibility in meeting the test of what is a fair and reasonable rate of  
22 return on equity, which must balance investor interests with ratepaer interests. While I will  
23 take into consideration other evidence in determining what is a reasonable ROE to

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<sup>25</sup>Siegel, Jeremy, "Historical Results I," Equity Risk Premium Forum, November 8, 2001, AIMR, 30-34.  
<http://www.cfapubs.org/doi/pdf/10.2469/op.v2002.n1.4018> (the link is no longer active, but a hard copy is  
provided in Mr. Copeland's workpapers).



1 recommend, I believe this evidence of a "low" or "slender" expected risk premium is  
2 important for putting into perspective how unreasonable is NSP's requested ROE of 10.65  
3 percent.

4  
5 **V. NORTHERN STATES POWER'S COST OF EQUITY CAPITAL**

6  
7 **Q. WHAT METHODS DID YOU USE TO DETERMINE NSP'S COST OF EQUITY CAPITAL?**

8 A. I used two variations of the "Discounted Cash Flow" ("DCF") methodology. I also performed  
9 a supplemental analysis using the Capital Asset Pricing Model (CAPM).

10  
11 **A. DCF ANALYSIS**

12  
13 **Q. PLEASE EXPLAIN THE BASIC PROCEDURES INVOLVED IN USING THE**  
14 **"DISCOUNTED CASH FLOW" METHODOLOGY.**

15 **A.** In its most basic form, the DCF theory is a "constant growth" model in which the investor's  
16 required return on common stock equity equals the dividend yield on the stock plus the  
17 expected rate of growth in the dividend. This relationship is commonly represented  
18 mathematically as:

$$k = D/P + g$$

19  
20 where k is the cost of equity capital (the investor's required return), D/P is the dividend yield  
21 (the dividend divided by market price), and g is the expected rate of growth in the dividend.  
22 Depending on the nature of the assumptions and mathematical procedures employed in the  
23 derivation of the model, the dividend yield portion of the total return is variously represented  
24 as  $D_0/P_0$  or  $D_1/P_0$  where  $D_0$  and  $D_1$  represent the "current dividend" and the "next period  
25 dividend," respectively. Depending further on what is assumed about the frequency of the  
26 dividend payout and the compounding of intra-period retained earnings, as an annual yield

1  $D_0/P_0$  will tend to understate the effective yield, while  $D_1/P_0$  will tend to overstate it. A valid  
2 conceptual argument can be made for using an average of the two, sometimes presented in  
3 the form  $D_0(1+.5g)/P_0$ . This is the general form of the constant growth model I used in my  
4 initial DCF analysis.

5 **Q. WHAT OTHER STEPS ARE INVOLVED IN IMPLEMENTING THE DCF METHODOLOGY?**

6 A. The principal steps in implementing the DCF approach are the selection of a sample of  
7 companies to which to apply the method, and the selection of measures of expected growth.  
8 On the selection of a sample of companies to which to apply the method, I will ordinarily rely  
9 on the sample used by the applicant's cost of capital witness unless there is a reason not to.  
10 Here, NSP's witness utilizes a sample of 10 electric utilities.<sup>26</sup> It should be noted that the  
11 relevant entity for "comparability of risk" here is NSP's parent company, Xcel, because it is  
12 Xcel that goes to the marketplace and issues common stock. The sample proposed by  
13 NSP's witness is sufficiently comparable to Xcel that it provides a reasonable basis for  
14 determining the cost of equity and fair rate of return on equity for NSP.

15 **Q. WHAT DATA DID YOU EXAMINE IN ORDER TO ESTIMATE THE INVESTOR EXPECTED**  
16 **GROWTH RATE FOR YOUR DCF ANALYSIS?**

17 A. For my constant growth DCF study, I utilized the Zacks consensus estimate of projected  
18 growth in earnings per share ("EPS"), and Value Line estimates of growth in dividends per  
19 share ("DPS"), growth in book value per share ("BVPS"), and the Value Line estimate of "%  
20 Retained to Common Equity" (a measure of long term sustainable growth).<sup>27</sup> Theoretically, if  
21 the constant growth assumptions are valid, earnings, dividends, and book value per share

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<sup>26</sup> Note that this is the same sample used by NSP (and Staff) in Docket No. EL11-019. This makes possible more direct comparison between the two filings as to probable changes in the cost of equity and required rate of return.

<sup>27</sup> Zacks and Value Line are sources of financial data widely used by investors. Besides basic financial data, Zacks surveys institutional investors to collect data on expected earnings growth (referred to as "consensus" estimates of expected earnings growth). "% Retained to Common Equity" is a measure of the ratio of retained earnings to common equity, or the "plowback ratio." It is equivalent to the "br" measure of expected dividend growth used in some presentations of the DCF model.

1 should all grow at approximately the same rate. Where this is the case, it is sometimes  
2 possible to derive reasonable and accurate estimates of the cost of equity using only one of  
3 these growth measures as a "proxy" for the expected rate of growth in dividends. But if the  
4 payout ratio is not constant, using just projected earnings or dividend growth can result in  
5 distorted estimates of the DCF cost of equity.

6 **Q. WHAT ARE YOUR ESTIMATES OF THE PROJECTED GROWTH RATES FOR THESE**  
7 **MEASURES?**

8 A. The projected growth rates used in my constant growth DCF study for the sample of 10  
9 combination utilities are shown on Exhibit \_\_ (BLC-1), Schedule 3. As can be seen from  
10 Columns F and G, there is some disparity between the EPS growth rates projected by Zacks  
11 and the DPS growth rates projected by Value Line, especially in median (which is a better  
12 measure of central tendency for a sample this small). The median projected EPS growth  
13 rate, 5.70 percent, is substantially higher than the median DPS growth rate of 3.75 percent.  
14 The median % Return to Common Equity in Column I, 3.75 percent, is also well below the  
15 median Zacks forecast of 5.70 percent, implying that the projected earnings growth rate is  
16 unsustainable for the long term. But the constant growth DCF model is a model of investors'  
17 long-term dividend growth expectations. Consequently, based on current projections, relying  
18 solely upon projected EPS growth rates will overstate the investors' long-term growth  
19 expectations. Similarly, relying solely upon projected DPS growth rates would understate the  
20 investors' long-term growth expectations.

21 **Q. UNDER THESE CONDITIONS, WHAT IS THE BEST WAY TO ESTIMATE THE**  
22 **CONSTANT GROWTH DCF COST OF EQUITY TO AVOID OVERSTATING OR**  
23 **UNDERSTATING INVESTORS LONG TERM GROWTH EXPECTATIONS?**

24 A. Under these conditions, the best way to estimate the constant growth DCF cost of equity is to  
25 rely upon an average of the EPS, DPS, and BVPS projections, along with the "% Return to  
26 Common Equity" measure of growth. Short-run or near-term changes in payout ratio do not

1 impact BVPS growth as significantly as they do EPS and DPS growth, and over time EPS  
2 and DPS growth rates will always revert to the rate of growth in BVPS.<sup>28</sup> For this reason, an  
3 average of these various growth rate measurements is required to reasonably estimate  
4 investors' long-term growth expectations. Averaging them in the way I do in Schedule 3, the  
5 median expected growth rate (Column J) is 4.42 percent, and the mean is 4.67 percent.  
6 Lower than either the mean or median based on Zacks (projected EPS) alone, this is a more  
7 reasonable estimate of the expected growth rate for a constant growth form of the DCF  
8 model.

9 **Q. PLEASE DESCRIBE THE RESULTS OF YOUR CONSTANT GROWTH DCF STUDY.**

10 **A.** The results are shown on Exhibit \_\_ (BLC-1), Schedule 3, Column K. Column K is the sum of  
11 Column E and the average of Columns F, G, H and I (the average is shown in Column J).  
12 Column E is the dividend yield portion of the DCF cost of equity, and is computed using a  
13 180-day moving average stock price.<sup>29</sup> By averaging the growth rates in Columns F, G, H  
14 and I, we avoid the bias that arises from relying solely upon a single measure of expected  
15 growth. The mean and median estimate of "k" are 8.89 percent and 8.99 percent,  
16 respectively. The difference between the median and the mean reflects the impact of  
17 "outliers," or atypical observations, in the calculation of the mean. For that reason the  
18 median is the more reliable measure of central tendency, especially for small samples. Here,

---

<sup>28</sup> A trend in the payout ratio faces two limits – a payout ratio of 100 percent if the payout ratio is rising, and a payout ratio of zero if the payout ratio is declining. At these limits growth in dividends or earnings becomes equal to the rate of growth in book value per share. If the trend in payout ratio levels off, so that payout ratio stabilizes, growth in dividends and earnings will equal growth in book value per share. So regardless of the trend in payout ratio, growth in dividends and earnings will always, ultimately, revert to growth in book value per share.

<sup>29</sup> However, I compare the 180 day moving average to "Bollinger Bands" around the recent stock price. Bollinger Bands are bands used in charting stock prices, and plot a range of two standard deviations around a 20 day moving average. If the 180 day moving average is outside the Bollinger Band, I use the price indicated by the Bollinger Band in the place of the 180 day moving average. Thus the stock price I use is always within two standard deviations of a 20 day moving average, answering any concern that use of a 180 day moving average represents stale price data. While "Bollinger Bands" are most commonly associated with "technical" analysis of stock price movements, their use here implies no agreement with the theory or practice of technical analysis. They simply provide a readily available means of adjusting for the effect of dramatic short term price movements in developing an "average" price for DCF analysis.

1           though, the two are close enough to conclude that, using the constant growth form of the  
2           DCF model, the cost of equity appears to be about 9 percent.

3   **Q.   DID YOU UNDERTAKE ANY ADDITIONAL DCF ANALYSIS?**

4   **A.**   Yes, I did. In addition to the more traditional form of the DCF methodology, I developed DCF  
5           estimates using a “dividend discount model” (“DDM”). DDMs are more general forms of the  
6           DCF methodology, which embody less restrictive assumptions than the traditional  
7           methodology. The traditional methodology is sometimes referred to as the “constant growth  
8           model,” and assumes that dividends, earnings, book value per share, and share price all  
9           grow at the same uniform rate of growth into perpetuity. While this is rarely the case in  
10          actuality, it is not an unreasonable assumption if the differences are small, a condition which  
11          implicitly requires a relatively constant dividend payout ratio. Where dividend payout ratios  
12          are expected to trend upward or downward over extended periods of time, use of five-year  
13          earnings growth projections of the type published by Zacks, Value Line, or other investment  
14          services in a constant growth form of the DCF model can produce distorted and unreliable  
15          results. Multiple-period dividend discount models provide more reliable and accurate  
16          measures of the expected DCF return under such conditions.

17 **Q.   PLEASE EXPLAIN IN FURTHER DETAIL HOW THE MULTIPLE PERIOD DIVIDEND**  
18 **DISCOUNT MODEL IS DERIVED.**

19 **A.**   Multiple period dividend discount models are based on finite horizon DCF models of the form:

$$P_0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_t}{(1+k)^t} + \frac{P_t}{(1+k)^t}$$

21          Where

$$P_t = \frac{D_t(1+g)}{(k-g)}$$

23          Here  $t$  is a finite time period at the end of which the stock would be sold for  $P_t$ . By postponing  
24          the period of constant growth to some finite point of time in the future, dividends can be

1 projected during the interim that follow any pattern consistent with expected earnings growth  
2 and dividend payout ratios.

3 **Q. ARE SUCH DDM MODELS ACTUALLY USED BY INVESTORS TO ESTIMATE**  
4 **EXPECTED RETURNS?**

5 **A.** Yes. Firms such as Prudential-Bache and Merrill Lynch have used such models to develop  
6 expected returns, which are then used by their investment analysts in making stock buy-hold-  
7 sell recommendations. Standard textbooks also present them along with constant growth  
8 models.

9 **Q. PLEASE DESCRIBE IN FURTHER DETAIL YOUR IMPLEMENTATION OF THIS**  
10 **METHODOLOGY.**

11 **A.** The basic data employed in my implementation of this methodology is presented, for the 10  
12 company sample of combination utilities, in Exhibit\_\_\_\_(BLC-1), Schedule 4. This is a  
13 summary sheet with input data and the resulting DDM estimates of the cost of equity. The  
14 basic input data consists of the current dividend yield, an estimated EPS projection for 2012,  
15 the current Zacks consensus EPS growth projection, an estimate of long-term growth into  
16 perpetuity, and estimated retention ratios for 2012, 2016, and 2031. The DDM analysis  
17 assumes that earnings grow from 2012 to 2016 at the indicated Zacks consensus EPS  
18 growth rate (as noted for each company), and at the long-term growth rate (3.75 percent, the  
19 median value of Value Line's "% Retained to Common Equity") in perpetuity after 2041. The  
20 period from 2016 to 2031 is a transition period during which the retention ratio changes from  
21 the value projected by Value Line in the year 2016 to a common value of 0.39 (the median  
22 Value Line estimate for 2016) for all companies in the sample in the year 2031. The use of a  
23 common retention rate or payout ratio, and growth rate, reflect the statistical property of  
24 "mean reversion," that statistical observations tend to revert, or regress, toward the sample  
25 mean over time. Constant growth assumptions — long-term growth of 3.75 percent, and a  
26 retention ratio of 0.39 percent — apply after the year 2031, allowing the determination of a

1 terminal share price for the year 2031.<sup>30</sup> These long-term conditions after 2031 are applied  
2 to all the companies in the sample. Having generated a series of cash flows, the model  
3 generates an expected return,  $k$ , by solving the following equation:

$$0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_t}{(1+k)^t} + \frac{P_t}{(1+k)^t} - P_0$$

4  
5 The solution to this equation is the value of  $k$  which makes the right hand side of the equation  
6 zero. This can only be done by trial and error. However, there are generally available  
7 computer algorithms for finding the solution to such formulas automatically. The DDM  
8 returns shown on Exhibit\_\_\_\_(BLC-1), Schedule 4, were developed using the "Goal Seek"  
9 option in an Excel spreadsheet. I calculated the mean DDM return for the 10 company  
10 sample at 8.08 percent, and the median DDM return at 8.09 percent.

11 **Q. PLEASE RECONCILE THE RESULTS OF YOUR TWO DCF APPROACHES.**

12 **A.** The DDM returns are nearer to 8 percent than to the 9 percent obtained for the constant  
13 growth DCF. This implies that the constant growth DCF approach may substantially  
14 overstate the actual cost of equity at the present time. In Docket EL11-019, my median DCF  
15 and DDM estimates were 8.95 and 8.42 percent. Here they are 8.99 percent and 8.09  
16 percent. Giving greater weight to the DDM results, I would conclude that the cost of equity  
17 has decreased at least 25-50 basis points. Here I reason as follows. If I gave no weight to  
18 the DDM results, I would conclude that the cost of equity has not fallen since I testified in  
19 Docket No. EL11-019. If I relied exclusively on the DDM results, I would conclude that the  
20 cost of equity had declined 90 basis points since I testified in Docket No. EL11-019. Simply  
21 "splitting the difference" would imply a decline of 45 basis points. So to conclude that the  
22 decline is at least 25-50 basis points is plausible, or even conservative. A decline of this

---

<sup>30</sup> To determine the terminal sale price, the final year's dividend is adjusted for half a year's growth beyond the terminal year, equivalent to a  $(1 + 0.5g)$  adjustment to the dividend yield.

1 order of magnitude is also indicated by other evidence I will present in connection with my  
2 review of NSP's rate of return testimony.

3  
4 **B. CAPM ANALYSIS**

5  
6 **Q. DID YOU UNDERTAKE A SUPPLEMENTAL ANALYSIS OF THE COST OF EQUITY FOR**  
7 **THE SAMPLE OF COMPARABLE COMPANIES TO VALIDATE YOUR DCF RESULTS?**

8 **A.** Yes, I did. I used the Capital Asset Pricing Model ("CAPM") to develop a third estimate of the  
9 cost of equity. CAPM is a risk premium methodology based on the principle that the cost of  
10 equity capital equals the cost of a risk-free investment, plus a "risk premium" to compensate  
11 investors for the risks associated with a specific equity investment. Under the CAPM  
12 methodology, the overall market risk premium for common stock is adjusted to reflect the risk  
13 of a specific stock or sample of stocks using the stock's beta coefficient. A beta coefficient is  
14 a financial market measure used in developing a risk-adjusted risk premium that reflects the  
15 market risk of an individual stock (sometimes referred to as its "systematic risk") relative to  
16 the risk of the market as a whole. This stock-specific risk premium is then added to an  
17 appropriate "risk-free" rate to yield a total required rate of return. Mathematically, the CAPM  
18 methodology can be stated as:

19 
$$k = r_f + \beta r_p$$

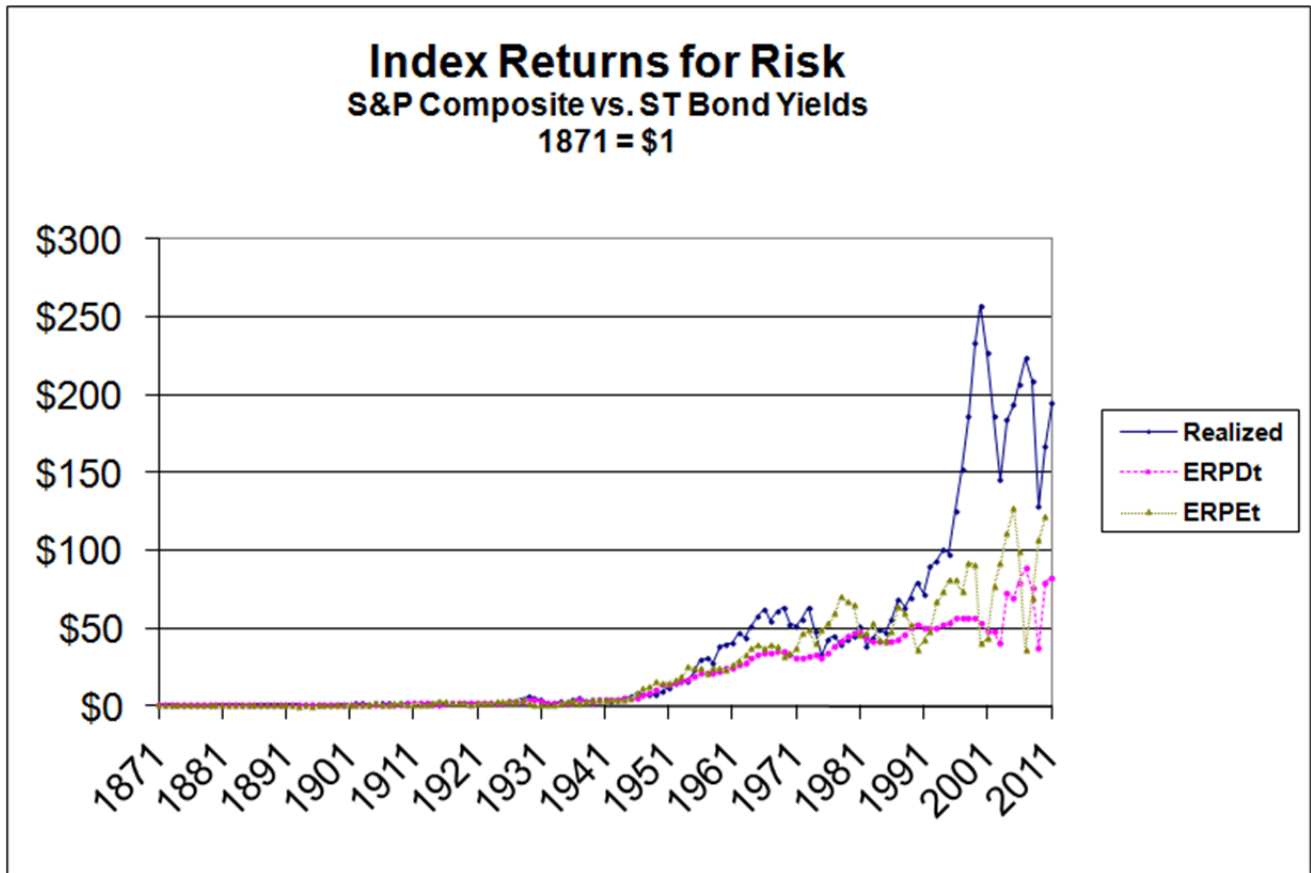
20 where  $r_f$  is the risk-free rate,  $\beta$  is the stock's beta coefficient, and  $r_p$  is the market risk  
21 premium. For an estimate of the required return on stock, the yield on long-term government  
22 bonds is conventionally used to estimate the risk-free rate. More problematic is the estimate  
23 of the market risk premium.

24 **Q. HOW DID YOU ESTIMATE THE MARKET RISK PREMIUM?**



1 **A.** My estimate of the market risk premium, or ERP, is based on an analysis of historical data  
2 from 1872 to 2008. Using that data, I take the historical return on stocks relative to a yield on  
3 bonds and deconstruct the returns to remove the effect of changes in valuation or cost of  
4 capital. In effect, I am creating a “supply-side” estimate of the historical ERP. Unlike  
5 Ibbotson and Chen, who just adjust for changes in P/E ratios, I adjust for changes both in  
6 earnings (“ERP-Et”) and dividend yields (“ERP-Dt”). I then construct index series which show  
7 what \$1.00 invested in stock in 1871 has returned relative to bonds, i.e. what has been the  
8 compounded return for bearing risk. The following chart compares the two series with actual  
9 realized returns:

10



11

12

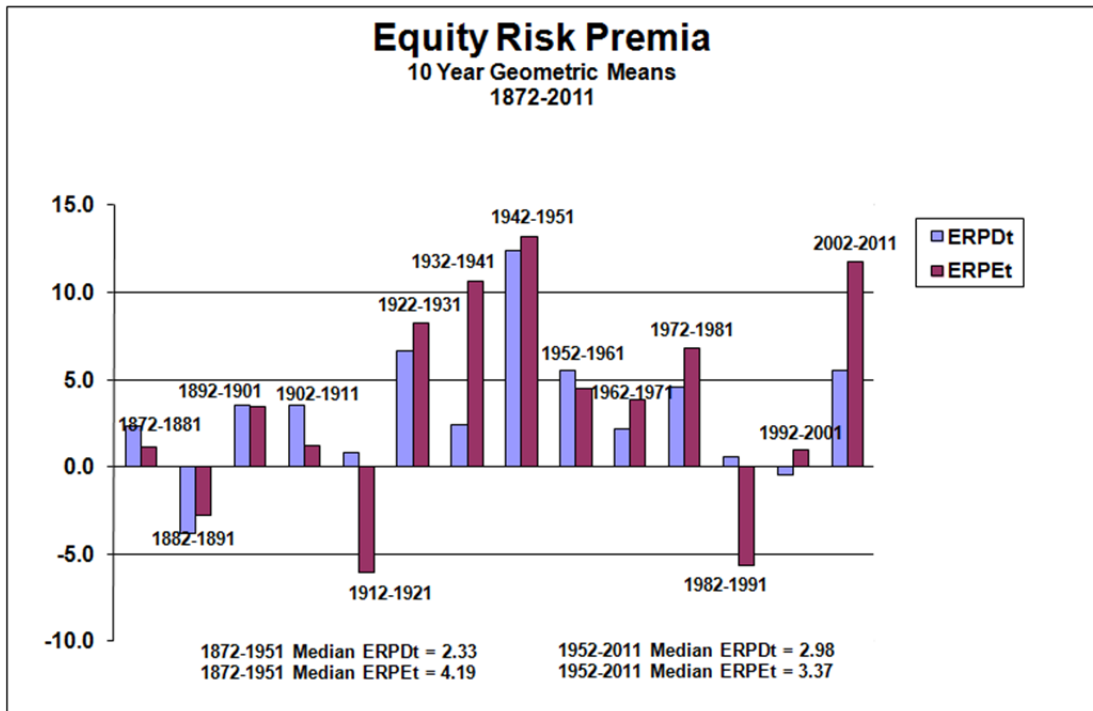
1 The three series do not begin to diverge until the early 1950's. In other words, until the early  
2 1950's, there were no significant trends or changes in dividend yields or P/E ratios that would  
3 cause the historically realized risk premium to be significantly different than the expected risk  
4 premium. Since the early 1950's, however, there have been significant secular (long term)  
5 changes in P/E ratios and dividend yields that indicate an overall downward trend in the cost  
6 of equity capital. This downward trend in the cost of equity capital has produced significant,  
7 and frequently large, unanticipated capital gains. The "ERP-Dt" and "ERP-Et" series quantify  
8 these unanticipated capital gains and remove them from the realized returns to derive implied  
9 estimates of the expected ERP.

10 Geometric mean risk premiums for selected holding periods from the series depicted  
11 in the charts are shown in the following table:

<b><u>Geometric Mean Risk Premia for Selected Holding Periods</u></b>			
<b>Period</b>	<b>ERPR<sub>t</sub></b>	<b>ERPD<sub>t</sub></b>	<b>ERPE<sub>t</sub></b>
1872-2011	4.14	3.46	3.77
1872-1950	2.85	3.40	3.58
1926-2011	5.27	4.21	4.59
1951-1981	4.89	4.09	5.05
1951-2011	5.15	3.23	3.89
1981-2011	5.26	2.12	2.52

12  
13 For the period 1951-2011, the ERP based on dividends is 3.23 percent, while for the period  
14 1981-2011, the ERP based on dividends was 2.12 percent.

15 The following figure presents another way of looking at the historical ERP, with non-  
16 overlapping 10 year geometric averages:  
17  
18  
19  
20



1  
2 As shown in the figure, the median 10 year average geometric risk premium using dividends  
3 for 1872-1951 was 2.33 percent, while from 1952-2011 it was 2.98 percent. Using earnings,  
4 the median geometric risk premium for 1872-1951 was 4.19 percent, while for 1952-2011 the  
5 median was 3.37 percent.

6 **Q. BASED ON THE EVIDENCE YOU HAVE PRESENTED, WHAT IS YOUR CONCLUSION**  
7 **ABOUT THE CURRENT ERP?**

8 **A.** I believe that a reasonable estimate of the current ERP is on the order of 3.0 to 3.5 percent.

9 **Q. THE DIFFERENCE BETWEEN GEOMETRIC AND ARITHMETIC MEANS CAN**  
10 **SOMETIMES MAKE A LARGE DIFFERENCE IN THE RESULTING ESTIMATE OF THE**  
11 **COST OF EQUITY. WHICH IS THE CORRECT ONE TO USE?**

12 **A.** There is far more controversy over this issue than there should be. That is because many  
13 practitioners and even some “authorities” make broad and sweeping generalizations that  
14 ignore or gloss over relevant evidence and considerations. The best known examples of this  
15 are the Morningstar/Ibbotson Associate annual yearbooks. But there have been several  
16 challenges to their assertion that the arithmetic mean is the only relevant measure of the

1 historic ERP, and it is notable that many of the authorities who have done recent work in this  
2 area present evidence of the geometric mean.<sup>31</sup> In any case, I think the best, relatively non-  
3 technical summary of the issue here is that of Professor Aswath Damodaran:

4 *Geometric versus Arithmetic Risk Premiums: Which is better?*

5 The conventional wisdom is that the arithmetic mean is the better estimate. This is true if  
6 (1) you consider each year to be a period (and the CAPM to be a one-period model)  
7 (2) annual returns in the stock and bond markets are serially uncorrelated  
8

9 As we move to longer time horizons, and as returns become more serially correlated (and  
10 empirical evidence suggests that they are), it is far better to use the geometric risk premium. In  
11 particular, when we use the risk premium to estimate the cost of equity to discount a cash flow  
12 in ten years, the single period in the CAPM is really ten years, and the appropriate returns are  
13 defined in geometric terms.  
14

15 In summary, the arithmetic mean is more appropriate to use if you are using the Treasury bill  
16 rate as your riskfree rate, have a short time horizon and want to estimate expected returns  
17 over that horizon.  
18

19 The geometric mean is more appropriate if you are using the Treasury bond rate as your  
20 riskfree rate, have a long time horizon and want to estimate the expected return over that long  
21 time horizon.<sup>32</sup>

22  
23 In estimating a market cost of equity for NSP, we are not estimating a short-term, one-year  
24 rate of return. If we were doing that, then a case could be made for using the arithmetic  
25 mean with a short term treasury bill rate.

26 **Q. WHAT IS THE RESULTING CAPM ESTIMATE OF THE COST OF EQUITY?**

27 **A.** As shown on Schedule 5 of Exhibit\_\_\_\_(BLC-1), using CAPM with a risk premium of 3.50  
28 percent, and a current long term treasury bond rate of 3.0 percent, the average cost of equity  
29 for the 10 company sample is 5.45 percent.

---

<sup>31</sup>For challenges, see Russell J. Fuller and Kent A. Hickman, "A Note on Estimating the Historical Risk Premium," Financial Practice and Education, Fall/Winter 1991, pp. 45-48; George G. Cassiere, "Geometric Mean Return Premium Versus the Arithmetic Mean Return Premium – Expanding on the SBBI 1995 Yearbook Examples," Business Valuation Review, March 1996, Pp. 20-23; and most recently and notably, Eric Jacquier, Alex Kane, and Alan J. Marcus, "Geometric or Arithmetic Mean: A Reconsideration," Financial Analysts Journal, November/December 2003, pp. 46-52.

<sup>32</sup> Aswath Damodaran, Applied Corporate Finance: A User's Manual, online version, [http://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/AppldCF/derivn/ch4deriv.html#ch4.1](http://pages.stern.nyu.edu/~adamodar/New_Home_Page/AppldCF/derivn/ch4deriv.html#ch4.1)

1 **Q. THE CAPM RESULT IS CONSIDERABLY LOWER THAN THE DCF RESULTS. WHY IS**  
2 **THAT?**

3 **A.** CAPM was not originally proposed as a model of long-term investor expectations. Strictly  
4 speaking, it was initially developed as a theory of relative rates of return using short-term  
5 investor expectations. In the purest application of it, the risk free rate is the 90 day return on  
6 Treasury bills, not long term Treasury bonds. But utility ratemaking envisions setting rates  
7 that will be in place for an indefinite period of time, and thus a longer investor return horizon  
8 is required. In my opinion, CAPM is not as accurate in estimating long term expectations as  
9 the DCF methodology. While it can be useful for comparison, primary reliance should be  
10 given to results obtained using the DCF methodology.

11 But even acknowledging that primary reliance should always be given to the DCF  
12 approach over the CAPM methodology, here the results seem particularly low. That owes,  
13 not to any deficiency in the risk premium estimate employed, but to abnormalities in the  
14 Treasury bill and bond market that probably makes the 30 year Treasury bond yield, here 3.0  
15 percent, a poor estimate of the "risk free" rate in the current market environment. As I will  
16 note again later, in my review of the testimony of NSP's witness on cost of capital, the current  
17 yield on the one month Treasury bill is zero, and yields on the 5-year Inflation Indexed  
18 Treasury bond are actually negative. These low yields imply that currently investors are  
19 more worried about default risk than they are about inflation (and given the current economy,  
20 that is understandable). But this has the unusual effect (compared to a more normal  
21 economic environment) of driving up, or sustaining, higher prices on Treasury bills and bonds  
22 than would otherwise be the case. Now this "flight to safety" comes at the expense of other  
23 investment choices, such as common stock. So while the yield on the "risk free rate" as  
24 measured by the 30 year Treasury bond has been driven down, this doesn't mean that the  
25 real risk free rate for equities has fallen. Whatever decline in Treasury rates and yields as  
26 occurred with this flight to safety is probably offset by a corresponding rise, currently, in the

1 premium for default risk reflected in equity returns. The bottom line, here, is that current  
2 Treasury rates and yields are probably a poor guide to the risk free rate for equities,  
3 implicating the negative utility of the CAPM methodology for determining a cost of equity at  
4 the present time.

5 These low yields also reflect the significant degree of "quantitative easing" present in  
6 current Federal Reserve monetary policy. Given the present state of the economy, and fears  
7 of a "double dip" recession, the Federal Reserve is keeping yields on treasury bills and bonds  
8 at historically low levels (essentially zero, in real terms). While other interest rates have  
9 fallen, they have not fallen as much, and it is probably fair to question to what extent long-  
10 term treasury yields are a true measure of the long term risk free rate. Should the economy  
11 start to grow more significantly, and the Federal Reserve reverse the present course of  
12 quantitative easing, long-term treasury yields would probably rise, bringing CAPM results  
13 back in line with historical trends. Whatever the case, the current low treasury yields are  
14 further reason not to place any direct reliance upon the CAPM methodology.

15 One final thought here, on all of this, is to call attention to the fact that utility stocks  
16 have something of the same utility (value) as Treasuries as a safe haven in the kind of "flight  
17 to safety" that we are seeing with Treasury rates and yields. While not the same safe haven  
18 for "widows and orphans" they were once considered, they still attract investors who see their  
19 steady dividend streams, coupled with some prospects for growth, as an alternative between  
20 Treasuries and other equities with less attractive dividend prospects. This helps to explain  
21 why, even in the current market environment, where default risk has probably risen above  
22 historical norms, investors are content with equity returns on utility stock that are in the single  
23 digits.

24  
25 **C. SUMMARY**  
26

1 **Q. CONSIDERING THE EVIDENCE YOU PRESENT, WHAT IS YOUR ESTIMATE OF THE**  
2 **REASONABLE COST OF EQUITY FOR NSP?**

3 **A.** Based on the DCF results presented on Schedules 3 and 4, I believe that the best estimate  
4 of NSP's cost of equity at the present time is about 8.5 to 8.75 percent. Using 8.75 as a point  
5 estimate, and reflecting the uncertainty involved in estimating the cost of equity, I believe that  
6 a reasonable range for the rate of return on equity is 8.25 to 9.25. Absent other  
7 considerations, the fair rate of return on equity is at the midpoint of the range. Thus I  
8 recommend a rate of return on equity of 8.75 percent.

9

10 **VI. CAPITAL STRUCTURE, COST OF DEBT, AND OVERALL RATE OF RETURN**

11

12 **Q. WHAT CAPITAL STRUCTURE AND COST OF DEBT DO YOU PROPOSE FOR**  
13 **DETERMINING THE OVERALL RATE OF RETURN?**

14 **A.** The capital structure and cost of debt I propose is shown in Exhibit\_\_\_\_(BLC-1), Schedule 1.  
15 This is the capital structure at 12-31-2011, and not a 13 month average, as presented in  
16 NSP's Statement G, Page 2 of 8. This capital structure consists of 47.22 percent long term  
17 debt, 52.67 percent common equity, and the embedded cost of debt is 6.03 percent. With my  
18 recommended return on equity of 8.75 percent, the overall rate of return is 7.46 percent.

19

20

21 **VII. ANALYSIS OF COMPANY TESTIMONY ON RATE OF RETURN ON EQUITY**

22

23 **Q. PLEASE DESCRIBE YOUR ANALYSIS OF NSP'S TESTIMONY ON RATE OF RETURN**  
24 **ON EQUITY.**

25 **A.** NSP's testimony on rate of return on equity is presented by James M. Coyne. Mr. Coyne  
26 provided updated testimony, and rebuttal to my testimony, in Docket No. EL-019, and I filed

1 rebuttal testimony as well. In this case, Mr. Coyne essentially reprises the methods of  
2 analysis he employed in Docket No. EL-019. Consequently, much of what follows will be a  
3 reprisal of arguments I made in Docket No. EL-019, but which must be undertaken again to  
4 have a complete record. However, before getting to specifics, I wish to begin with simply  
5 comparing Mr. Coyne's overall conclusions in this case with his overall conclusions in Docket  
6 No. EL-019.

7 In Docket No. EL-019, Mr. Coyne concluded:

8 Based on the results of my updated analysis, I recommend a revised ROE range to  
9 between 10.40 percent and 10.90 percent, with an ROE recommendation of 10.65  
10 percent. [Coyne Rebuttal Testimony, Page 48, Lines 8-10.]  
11

12 In this docket, Mr. Coyne testifies:

13 ... I conclude that the range of a reasonable ROE for the Company is 10.40 percent to  
14 10.90 percent. I recommend an ROE of 10.65 percent... [Coyne Direct Testimony,  
15 Page 50, Line 27 to Page 51, Line 2.]  
16

17 Mr. Coyne's conclusions in this case are the same as what he filed in Docket No. EL11-019.

18 However, the cost of equity has declined since Mr. Coyne testified in Docket No. EL11-019,  
19 and his own data show this.

20 **Q. PLEASE ELABORATE.**

21 **A.** Exhibit\_\_\_(BLC-1), Schedule 7, compares the DCF results Mr. Coyne presented in Docket  
22 No. EL11-019 with the DCF results presented in this docket. The mean change for the three  
23 different DCF estimates (30 Day, 90 Day, and 180 Day Constant Growth DCF) is -0.27  
24 percent, or 27 basis points. This is corroborative of my conclusion that the DCF cost of  
25 equity has declined by 25 to 50 basis points. The decline indicated by Mr. Coyne's results is  
26 only at the low end of the range of 25 to 50 basis points because only two months elapsed  
27 between the time of the study performed by Mr. Coyne in Docket No. EL11-019 and this  
28 docket, whereas about eight months elapsed between the time of my analyses in the two  
29 dockets. Where we to compare the results filed by Mr. Coyne in this case with what was  
30 originally filed in Docket No. 11-019 by Mr. Dane, the indicated decline in the cost of equity



1 would be 66 basis points.<sup>33</sup> However, my main point here is to show that despite evidence of  
2 a decline in the cost of equity, Mr. Coyne's recommendation is still the same as what he  
3 recommended in Docket No. 11-019.

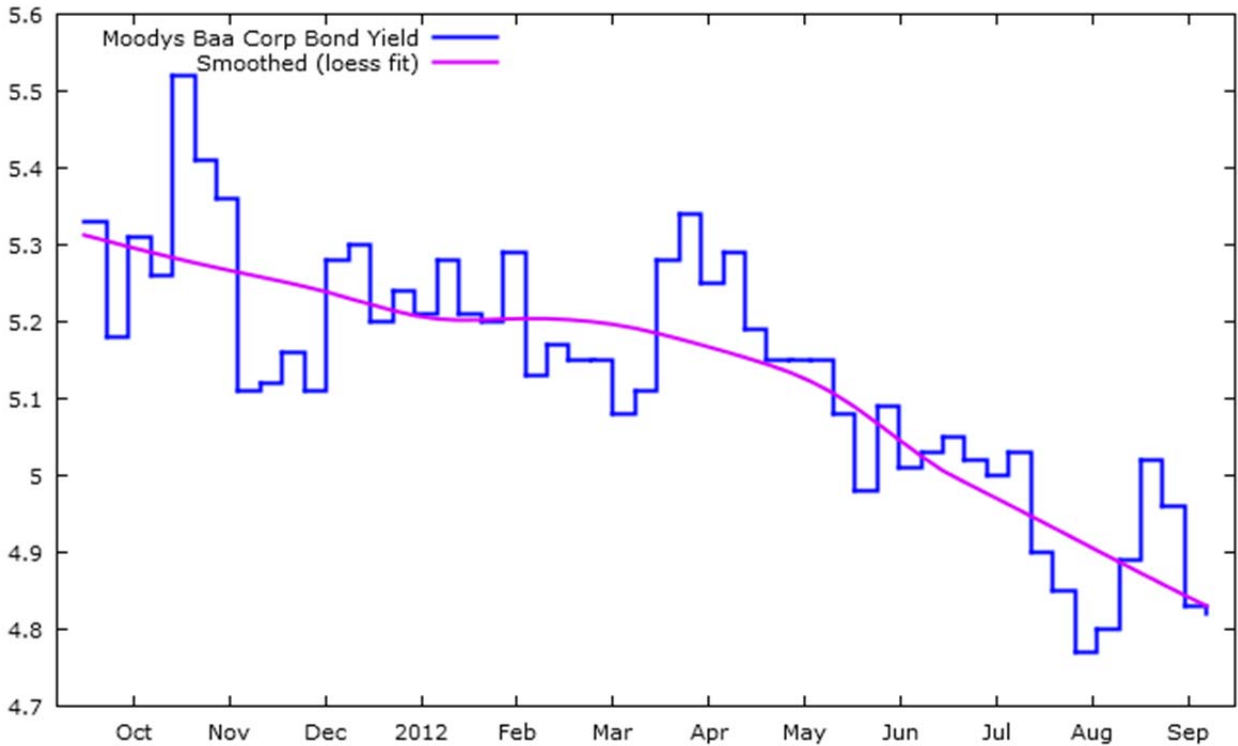
4 **Q. IS THERE OTHER EVIDENCE OF A DECLINE IN THE COST OF CAPITAL SINCE THE**  
5 **PREVIOUS DOCKET?**

6 **A.** Yes, there is. For instance, the following is a chart of the VIX volatility index:



7  
8 Mr. Coyne makes certain assertions about risk trends based on the VIX index, and I will have  
9 more to say about the index in that connection later in my testimony, but here I simply wish to  
10 note that historically, the index shows declining risk through September 2012 (as indicated by  
11 the red line, which is a 180 day moving average). Corporate Baa bond yields, as shown in  
12 the following graph, also indicate a recent decline in capital costs:

<sup>33</sup> In Docket No. EL11-019, the average of the three DCF results (before flotation costs) presented by Mr. Dane was 10.84 percent. In this case, the average of the three (again, before flotation costs) is 10.18 percent. The difference indicates a decline of 0.66 percent in the DCF cost of capital.



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Based on the decline in yields shown in this chart, capital costs have declined. So we have four indications of declining capital costs (my DCF results, Mr. Coyne's DCF results, the VIX index, and interest rates). Yet Mr. Coyne's recommendation remains the same.

**Q. IS THE DCF METHODOLOGY UTILIZED BY MR. COYNE IN THIS CASE THE SAME AS WHAT HE UTILIZED IN DOCKET NO. EL11-019?**

**A.** Yes, it is. And thus my principle criticism, that it is flawed because it relies solely upon near term analysts' earnings (EPS) projections, remains valid. Indeed, it is the same method that the Commission considered and rejected in Docket No. EL11-019. The reasons for rejecting it in that docket are as valid now as they were then. In Docket No. EL11-019, the I pointed out the disparity between Zacks' EPS median projections -- 5.70 percent -- and Value Line's DPS median projections -- 3.68 percent -- as evidence that the strict assumptions of the constant growth model were not valid in the current market. In this case, as shown on Exhibit\_\_\_\_(BLC-1), Schedule 2, the disparity remains: 5.70 percent for Zack's EPS, vs.

1 3.75 percent for Value Line DPS. All the reasons for rejecting exclusive reliance upon  
2 projected analysts' EPS growth rates in Docket No. EL11-019 remain valid.

3 **Q. HAS MR. COYNE INTRODUCED ANY NEW EVIDENCE TO JUSTIFY KEEPING HIS**  
4 **RECOMMENDATION THE SAME AS IN DOCKET NO. EL11-019?**

5 **A.** He seems to be placing more weight this time on his CAPM analysis. In Docket No. EL11-  
6 019 he justified his range of 10.40 to 10.90 percent explicitly on the basis of his DCF results  
7 (and added that it was corroborated by his Bond Yield Plus Risk Premium analysis). In this  
8 case, he has placed additional emphasis upon CAPM, making the determination of the  
9 market risk premium (or equity risk premium, ERP) an explicit issue. Specifically, Mr. Coyne  
10 utilizes both the 6.60 percent historical premium published by Morningstar, and his own  
11 derived estimate of 8.09 percent as the expected market risk premium. The latter is not even  
12 plausible, and the former flies in the face of abundant evidence that the expected risk is less  
13 than the risk premium earned historically.

14 **Q. WHAT IS WRONG WITH THE WAY IN WHICH MR. COYNE DERIVES HIS ESTIMATE OF**  
15 **8.09 PERCENT AS THE EXPECTED MARKET RISK PREMIUM?**

16 **A.** Mr. Coyne derives this number by subtracting the treasury yield from a constant growth DCF  
17 analysis of the individual companies that make up the S&P 500 using analysts' EPS  
18 forecasts. If the constant growth DCF based on analysts' EPS forecasts is biased for utilities,  
19 it is particularly biased when applied to most unregulated companies. In contrast to regulated  
20 utilities, which tend to pay out a substantial portion of earnings in dividends, and tend to  
21 pursue stable dividend payout policies (notwithstanding some decline in payout ratios in  
22 recent years), companies which compete in unregulated markets tend to pay out a much  
23 smaller fraction of earnings as dividends. They tend go through a life-cycle in which they  
24 start out paying no dividend at all, retaining all earnings for reinvestment. During the early  
25 phase of this life cycle, they grow rapidly, as they retain all earnings and reinvest them.  
26 Eventually, growth begins to slow down, and they start to pay dividends. At first, they will be

1 conservative in paying dividends, i.e. the payout ratio will be low, and the dividend yield will  
2 be low. As they mature, the payout ratio increases, the dividend yield component of the total  
3 return increases, and the growth component of the total return decrease.

4 The bottom line here is that the cost of equity for companies going through the early  
5 stages of this life cycle simply cannot be reliably estimated using a constant growth DCF  
6 model. Such companies are almost the epitome of a candidate for application of the non-  
7 constant growth form of the DCF model. While they pay dividends, the dividend payout ratio  
8 is systematically changing over time, from a very low value, in which the dividend yield may  
9 only be one or two percent (or less), to something greater, as they saturate their markets and  
10 transition to a more mature and stable rate of growth. The constant growth model simply  
11 cannot be used to provide a reliable estimate of the cost of equity for many, if not most, of the  
12 companies in the S&P 500. For this reason, the Commission should place no reliance upon  
13 the results obtained by Mr. Coyne for a risk premium derived by applying a constant growth  
14 model to companies in the S&P 500.

15 **Q. IS THE BOND YIELD PLUS RISK PREMIUM APPROACH USED BY MR. COYNE THE**  
16 **SAME THAT YOU CRITICIZED IN DOCKET NO. EL11-019?**

17 **A.** Yes. It is based on the same flawed method of statistical regression in which a "risk  
18 premium" derived from allowed rates of return on equity is regressed against treasury bond  
19 yields. All of the conceptual and structural issues I pointed out in Docket No. EL11-019 apply  
20 here as well.

21 **Q. MR. COYNE HAS REINTRODUCED HIS VERSION OF THE NON-CONSTANT GROWTH**  
22 **MODEL IN THIS DOCKET. HAS HIS IMPLEMENTATION IMPROVED?**

23 **A.** No. He still uses an estimate of GDP growth for his terminal growth rate. My criticisms of  
24 this approach in Docket No EL11-019 remain valid. Unless utilities adopt even lower payout  
25 ratios, and higher earnings retention, than what are current and likely industry practices,  
26 there is absolutely no way that they will ever experience long term growth equal to the rate of

1 growth in GDP. However, even with an inflated terminal growth rate, it produces results --  
2 9.81 percent to 9.88 percent -- too low for Mr. Coyne's range, so he declined to give it any  
3 reliance. Since he declines to give it any credence, I recommend that the Commission do the  
4 same.

5 **Q. YOU HAVE INTRODUCED EVIDENCE SHOWING A DECLINING COST OF EQUITY**  
6 **BASED ON THE "VIX" VOLATILITY INDEX. MR. COYNE CITES FUTURES QUOTES ON**  
7 **THE VIX INDEX TO CLAIM THAT INVESTORS ARE EXPECTING EQUITY MARKET**  
8 **RISKS TO RISE. WHAT IS YOUR RESPONSE?**

9 **A.** According to Mr. Coyne, "current forward-looking estimates of volatility (as measured by  
10 futures prices on the VIX) are approximately 25.55, a level that is well above both the  
11 average since 1990 and the pre-recession period." (Coyne Direct Testimony, Page 19, Lines  
12 21-23.) The problem with Mr. Coyne's conclusion here is that he's assuming (in referring to  
13 an "average since 1990") that the VIX follows a normal distribution (like the typical "bell  
14 shaped curve"), when that is decidedly not the case. With a normal distribution, it is common  
15 to describe a "normal" range by a 95 percent probability distribution, i.e. in the range between  
16 2.5% at one end, and 97.5% at the other. As shown in the graph and frequency distribution  
17 data presented in Schedule 7 of Exhibit\_\_\_\_(BLC-1), the distribution is not "normal," and  
18 based on the frequency distribution there shown, 94.87% of the time the VIX index is below  
19 32. Thus given the actual frequency distribution, a forward projection 25.55 falls well within  
20 what should be considered "normal" for market volatility. Stating it a little differently, about 5  
21 percent of the time, market volatility rises dramatically, ranging anywhere from 33 to 60. Only  
22 when VIX is in this elevated range would there be reason to concerned about above normal  
23 market risk and the effect that would have only equity returns. There is nothing in Mr.  
24 Coyne's analysis suggesting that kind of uncertainty in equity capital markets at the present  
25 time.

1 **Q. MR. COYNE HAS ESSENTIALLY REPEATED HIS METHODOLOGY AND ANALYSIS OF**  
2 **FLOTATION COSTS AS PRESENTED IN DOCKET NO. EL11-019. WOULD YOUR**  
3 **TESTIMONY ON FLOTATION COSTS AT THIS TIME BE THE SAME AS PRESENTED IN**  
4 **THAT DOCKET?**

5 **A.** Yes, it would be. My Schedule 6 of Exhibit\_\_\_\_(BLC-1) in this docket, consisting of two  
6 pages, reprises the methodology and results I presented Docket No. EL11-019. For an  
7 explicit estimate of flotation costs, I calculate the appropriate adjustment to be only 6 basis  
8 points, not the 25 basis points proposed by Mr. Coyne. And as last time, I propose to ignore  
9 this small of an adjustment because it is offset by consideration of the double leverage  
10 impact of Xcel preferred stock not explicitly reflected in the proposed capital structure.

11 **Q. DO YOU HAVE ANY OTHER OBSERVATIONS WITH RESPECT TO MR. COYNE'S**  
12 **RECOMMENDED RETURN ON EQUITY AND NSP'S REQUEST BASED UPON HIS**  
13 **RECOMMENDATION?**

14 **A.** Yes, I do. Mr. Coyne's recommendation, and NSP's request based on that recommendation,  
15 are out of touch with the assumptions built into Xcel's pension fund projections. In a sense,  
16 this is a matter that goes back to my previous discussion of current expectations regarding  
17 the ERP (equity risk premium). There I alluded to how such expectations factor into to  
18 macroeconomic policy considerations such as social security and health care reform. Here,  
19 they factor, at least implicitly, into corporate pension plan projections. These pension plan  
20 projections embody expectations of rates of return from various asset classes, such as  
21 stocks and bonds (with further classification between domestic and international markets). In  
22 reviewing such plans, I've noticed two things, in particular, of interest. The first is that  
23 expected rates of return built into pension plan forecasts have been declining (and thus we  
24 should expect utility rate of return requests to be declining, also). The second is that  
25 expected equity returns, at least for "large cap" U.S. equities, are in the single digits. The  
26 latter is consistent with my ERP analysis, and in particular with the total equity return

1 projections implied by the CFO surveys I reviewed earlier. Mr. Coyne's testimony, and his  
2 recommended rate of return on equity of 10.65 percent, is completely out of touch with this  
3 financial reality, as if it were prepared in a vacuum isolated from such inconvenient truths.

4 **Q. ARE THE RETURN PROJECTIONS BUILT INTO XCEL'S PENSION PLAN FORECASTS**  
5 **COMPARABLE TO WHAT YOU'VE SEEN IN OTHER UTILITY PENSION PLAN**  
6 **FORECASTS?**

7 **A.** Yes, they are. The overall rate of return expectation is reported in Xcel's 2010 SEC 10-K  
8 show a steady decline year by year from 8.75 percent in 2008 to 7.50 percent for 2011, and  
9 now 7.10 percent for 2012. This is a weighted overall return. But embedded in the 7.50  
10 percent expected return for 2011 was an expected return of 8.9 percent on "large cap"  
11 equities such as would dominate an overall market index such as the S&P 500, and in the  
12 7.10 percent expected return for 2012, the expected return on "large cap" equities has fallen  
13 to 8.3 percent. These single digit ROE's are comparable to what I've seen in other utility  
14 pension plan projections, and are in line with what can be inferred from the CFO projections I  
15 discussed earlier. Moreover, the decline from 8.9 percent to 8.3 percent, from 2011 to 2012,  
16 is consistent and corroborative of all the other evidence I've presented of a decline in the cost  
17 of equity since Docket No. EL11-019 was adjudicated. Xcel's pension plan forecasts  
18 reflected an expected return on equity more in line with my recommended return of 8.75  
19 percent, than Mr. Coyne's recommended rate of return on equity of 10.65 percent, and the  
20 8.3 percent pension plan "large cap" ROE projection is at the low end of my 8.25 to 9.25  
21 percent ROE range.

22 **Q. ARE THE EXPECTED RETURNS REFLECTED IN PENSION FORECASTS**  
23 **COMPARABLE TO THE REQUIRED RETURN ON EQUITY OR COST OF EQUITY?**

24 **A.** Yes, they are. Some would argue otherwise, in order to diminish the value of such  
25 information to the task of estimating the cost of equity, but to argue otherwise is to ignore  
26 simple economics. The market clearing price for an asset is always one which brings

1 expected and required returns into balance. If the expected return is less than the required  
2 return, investors will sell the asset, driving down its price, and driving up the marginal  
3 (expected) return on the asset. Conversely, if the expected return is greater than the  
4 required return, investors will bid up the price of the asset, driving down its marginal  
5 (expected) return, until the two are equal again. We should presume that the managers of  
6 the portfolios of securities in which pension funds are invested are prudent, and will  
7 periodically review expected returns on the assets they hold in relation to required returns,  
8 and will periodically buy or sell assets as appropriate to make sure the portfolio is earning an  
9 appropriate -- i.e. required -- rate of return.

10 **Q. ARE THERE NOT SOME CONCERNS ABOUT HOW REALISTIC ARE THE**  
11 **EXPECTATIONS BUILT INTO PENSION FUND PROJECTIONS?**

12 **A.** Yes, especially with respect to public sector pensions. The issue here is one of making sure  
13 that future liabilities are accurately reported in financial statements, so that investors can  
14 accurately assess whether or not pension obligations are adequately funded. It is important  
15 to understand that the issue of adequate funding is inversely related to expected returns.  
16 That is, if pension fund managers are overstating the expected return, they will be  
17 understating whether the pension obligations are adequately funded. Especially in the public  
18 sector, there is growing concern that the expected returns reflected in pension fund  
19 projections are overstated, thus understating the degree to which future liabilities may be  
20 underfunded. While there may be less concern on this matter with respect to private  
21 corporations (which are not constrained by inherent limits on tax bases as are public sector  
22 enterprises), pension fund managers still have a fiduciary responsibility not to overstate  
23 expected returns and understate potential liabilities. As a result, they have been reducing  
24 expected returns steadily in the past few years as investors and financial analysts adjust to  
25 the realization that equity returns and equity return premia are not, for the near future, likely  
26 to equal the robust returns and premia enjoyed during portions of the last century. So the



1 bottom line here is that if there are concerns about the reasonableness of these pension  
2 plans return projections, it is that they may be too high, not too low.  
3

4 **VIII. CONCLUSION**

5  
6 **Q. BASED ON YOUR REVIEW OF THE COMPANY'S TESTIMONY, AND YOUR**  
7 **INDEPENDENT ANALYSIS OF THE COST OF EQUITY FOR NSP, WHAT IS YOUR**  
8 **CONCLUSION REGARDING A FAIR RATE OF RETURN ON EQUITY FOR THE**  
9 **COMPANY, AND A FAIR AND OVERALL RATE OF RETURN?**

10 **A.** My independent analysis of the cost of equity for NSP shows that it is in the range of 8.25 to  
11 9.25 percent. I have shown that when adjusted for obvious biases, Mr. Coyne's DCF  
12 analysis supports a rate of return on equity within this range as well. I believe that the  
13 evidence is substantial and compelling that such a rate of return is a fair and reasonable rate  
14 of return on equity. Combining this with my proposed capital structure of 52.73 percent  
15 common equity and 47.27 percent long term debt, and an embedded cost of debt of 6.02  
16 percent, the overall rate of return would be 7.46 percent. This is more than adequate to  
17 preserve NSP's financial integrity and its access to capital, and satisfies the requirement for a  
18 rate of return that adequately balances consumer and investor interests.

19 **Q. DOES THAT COMPLETE YOUR ANALYSIS OF THE COMPANY'S TESTIMONY, AND OF**  
20 **YOUR TESTIMONY AS A WHOLE?**

21 **A.** Yes, it does.