BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA

DOCKET NO. 2011-271-E

In the Matter of:	)	
	)	**CORRECTED**
Application of Duke Energy Carolinas,	)	**DIRECT TESTIMONY OF**
LLC for Authority to Adjust and Increase	)	**ROBERT B. HEVERT FOR**
Its Electric Rates and Charges	)	**DUKE ENERGY CAROLINAS, LLC**
	)	
	)	

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, AFFILIATION AND BUSINESS ADDRESS.

A. My name is Robert B. Hevert. I am President of Concentric Energy Advisors, Inc. ("Concentric"), located at 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?

A. I am submitting this direct testimony ("Direct Testimony") before the Public Service Commission of South Carolina ("Commission") on behalf of Duke Energy Carolinas, LLC ("Duke Energy Carolinas", or the "Company").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE IN THE ENERGY AND UTILITY INDUSTRIES.

A. I received my Bachelors of Science degree in Finance from the University of Delaware, my Master's degree in Business Administration from the University of Massachusetts, and hold the Chartered Financial Analyst designation. I began my career as a Revenue Requirements Analyst with General Telephone Company of the South, located in Durham, North Carolina. Since then, I have served as an executive and manager with other consulting firms (REED Consulting Group and Navigant Consulting, Inc.), and as a financial officer of Bay State Gas Company. I have provided testimony regarding strategic and financial matters, including the cost of capital, before several state utility regulatory agencies as well as the Federal Energy Regulatory Commission on over 70 occasions, and have advised

numerous energy and utility clients on a wide range of financial and economic issues including both asset and corporate-based transactions. Many of those assignments have included the determination of the cost of capital for valuation purposes. A summary of my professional and educational background, including a listing of my testimony in prior proceedings, is included as Attachment A.

Q. PLEASE DESCRIBE CONCENTRIC'S ACTIVITIES IN ENERGY AND UTILITY ENGAGEMENTS.

A. Concentric provides financial and economic advisory services to a large number of energy and utility clients across North America. Our regulatory economic and market analysis services include utility ratemaking and regulatory advisory services; energy market assessments; market entry and exit analysis; corporate and business unit strategy development; and energy contract negotiations. Our financial advisory activities include merger, acquisition and divestiture assignments, due diligence and valuation assignments, project and corporate finance services, and transaction support services. In addition, we provide litigation support services on a wide range of financial and economic issues for clients throughout North America.

II. PURPOSE AND OVERVIEW OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding the Company's return on equity ("ROE").[1] My analysis and conclusions are supported by the data presented in Exhibit No. RBH-1 through Exhibit No. RBH-6, which have been prepared by me or under my direction in connection with my Direct Testimony.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE APPROPRIATE COST OF EQUITY AND CAPITAL STRUCTURE FOR THE COMPANY?

A. My analyses indicate that the Company's cost of equity currently is in the range of 11.00 percent to 11.75 percent. Based on the quantitative and qualitative analyses discussed throughout my Direct Testimony, I conclude that an ROE of 11.50 percent is reasonable and appropriate.

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE ANALYSES THAT LED TO YOUR ROE RECOMMENDATION.

A. As discussed in more detail in Section VI, in light of recent market conditions, and given the fact that equity analysts and investors tend to use multiple methodologies in developing their return requirements, it is important to consider the results of several analytical approaches in determining the Company's ROE. In order to develop my ROE recommendation, I therefore applied the Constant Growth Discounted Cash Flow ("DCF") model and the Capital Asset Pricing

[1] Throughout my testimony, I interchangeably use the terms "ROE" and "cost of equity".

Model ("CAPM") approach. As discussed later in my testimony, it is important to consider a range of factors, both quantitative and qualitative, in arriving at an ROE determination. Consequently, while I have continued to include both models in my testimony, as explained later, I have given more weight to the DCF model.

In addition to the methodologies noted above, my recommendation also takes into consideration: (1) the level of coal-fired generation owned and operated by the Company and the risk of retirement and costly capital improvements due to more stringent environmental regulations (which I discuss in further detail later in my testimony); (2) the level of nuclear generation owned by the Company and the impacts that the recent events in Japan may have on the Company's nuclear units going forward; (3) the incremental risks associated with the Company's need to fund substantial capital expenditures; and (4) flotation costs associated with equity issuances. While I did not make any explicit adjustments to my ROE estimates for those factors, I did take them into consideration when determining where the Company's cost of equity falls within the estimated range.

Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY ORGANIZED?

A. The remainder of my Direct Testimony is organized as follows:

<u>Section III</u> – Provides a summary of my conclusions and recommendations;

Section IV – Discusses the regulatory guidelines and financial considerations pertinent to the development of the cost of capital;

Section V – Briefly discusses the current capital market conditions and the effect of those conditions on the Company's cost of equity;

Section VI – Explains my selection of the proxy group of electric utilities used to develop my analytical results;

Section VII – Explains my analyses and the analytical bases for my ROE recommendation;

Section VIII – Provides a discussion of specific business risks that have a direct bearing on the Company's cost of equity; and

Section IX – Provides conclusions and recommendations.

III. SUMMARY OF CONCLUSIONS

Q. WHAT ARE THE KEY FACTORS CONSIDERED IN YOUR ANALYSES AND UPON WHICH YOU BASE YOUR RECOMMENDED ROE?

A. My analyses and recommendations considered the following:

- The *Hope* and *Bluefield* decisions[2] that established the standards for determining a fair and reasonable allowed return on equity including; consistency of the allowed return with other businesses having similar risk; adequacy of the return to provide access to capital and support credit quality; and that the end result must lead to just and reasonable rates.
- The effect of the current capital market conditions on investors' return requirements, and in particular, the fact that risk aversion and investor

[2] *Bluefield Waterworks & Improvement Co., v. Public Service Commission of West Virginia,* 262 U.S. 679 (1923); *Federal Power Commission v. Hope Natural Gas Co.,* 320 U.S. 591 (1944).

uncertainty remain at elevated levels when compared to market conditions preceding the recent economic recession.

- The Company's business risks relative to the proxy group of comparable companies and the implications of those risks in arriving at the appropriate ROE.

Q. WHAT ARE THE RESULTS OF YOUR ANALYSES?

A. The results of my analyses are summarized in Table 1 on the following page.

Table 1: Summary of Analytical Results[3]

Constant Growth DCF Results			
	Low Growth Rate[4]	*Mean Growth Rate*[5]	*High Growth Rate*[6]
Proxy Group Mean			
30-day Average Stock Price	9.21%	10.31%	11.40%
90-day Average Stock Price	9.35%	10.45%	11.54%
180-day Average Stock Price	9.44%	10.54%	11.64%
Proxy Group Median[7]			
30-day Average Stock Price	9.87%	10.41%	11.88%
90-day Average Stock Price	10.02%	10.56%	12.05%
180-day Average Stock Price	10.07%	10.59%	12.14%

Supporting Methodologies ***Ex-Ante CAPM Results***		
	Twelve-month Beta Coefficient	
	Sharpe Ratio Derived Market Risk Premium	*Market Derived Market Risk Premium*
30 Day Average 30 Year Treasury Yield	9.58%	10.34%
Near Term Forecast 30 Year Treasury Yield	10.13%	10.89%
	Average Bloomberg and Value Line Beta Coefficient	
	Sharpe Ratio Derived Market Risk Premium	*Market Derived Market Risk Premium*
30 Day Average 30 Year Treasury Yield	9.67%	10.44%
Near Term Forecast 30 Year Treasury Yield	10.22%	10.99%

3 Excludes flotation costs.

4 The "Low Growth Rate" results are calculated using the lowest of the three earnings growth rate estimates for each proxy group company.

5 The "Mean Growth Rate" results are calculated using an average of the three earnings growth rate estimates for each proxy group company.

6 The "High Growth Rate" results are calculated using the highest of the three earnings growth rate estimates for each proxy group company.

7 The median results have been presented as a method of taking into account the effect of outlying observations. For example, as shown in Exhibit No. RBH-1, certain of the DCF results (mean growth rate) are less than 200 basis points above the 30-day average yield on the Moody's Baa Utility Bond Index (*i.e.*, 5.79 percent as of May 31, 2011).

Based on the analytical results presented in Table 1, and in light of the considerations discussed throughout the balance of my Direct Testimony regarding the Company's business risks relative to the proxy group, it is my view that a reasonable range of estimates is from 11.00 percent to 11.75 percent, and within that range, an ROE of 11.50 percent is reasonable and appropriate.

IV. REGULATORY GUIDELINES AND FINANCIAL CONSIDERATIONS

Q. ARE THE ECONOMIC PRINCIPLES REGARDING THE FAIR RETURN FOR CAPITAL RECOGNIZED IN ANY SUPREME COURT CASES?

A. Yes. These United States Supreme Court has set out the guiding principles for establishing a fair return for capital in two cases: (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. ("*Bluefield*");[8] and (2) *Federal Power Comm'n v. Hope Natural Gas Co*. ("*Hope*").[9] In *Bluefield*, the Court stated:

> A public utility is entitled to such rates as will permit it to earn a return upon the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit,

[8] *Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. 262 U.S. 679, 692 (1923).

[9] *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944)

> and enable it to raise the money necessary for the proper discharge of its public duties.[10]

The Court therefore clearly recognizes here that: (1) a regulated company cannot remain financially sound unless the return it is allowed to earn on its invested capital is at least equal to the cost of capital (the principle relating to the demand for capital); and (2) a regulated company will not be able to attract capital if it does not offer investors an opportunity to earn a return on their investment equal to the return they expect to earn on other investments of the same risk (the principle relating to the supply of capital).

In *Hope*, the Court reiterates the financial integrity and capital attraction principles of the *Bluefield* case:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock... By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[11]

The Court clearly has recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

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[10] *Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. 262 U.S. 679, 692 (1923).

[11] *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944)

Q. IS IT IMPORTANT FOR A UTILITY TO BE ALLOWED THE OPPORTUNITY TO EARN A RETURN THAT IS ADEQUATE TO ATTRACT EQUITY CAPITAL AT REASONABLE TERMS?

A. Yes. A return that is adequate to attract capital at reasonable terms will enable the subject utility to provide safe, reliable electric service while maintaining their financial integrity. While the "capital attraction" and "financial integrity" standards are important principles in normal economic conditions, the practical implications of those standards are even more pronounced in the current financial environment. As discussed in more detail in Section V, continued equity market volatility, together with sustained increases in the incremental spread on utility debt (*i.e.*, the difference in debt yields of utilities varying credit ratings) have intensified the importance of maintaining a strong financial profile.

V. CAPITAL MARKET ENVIRONMENT

Q. DO ECONOMIC CONDITIONS INFLUENCE THE REQUIRED COST OF CAPITAL AND REQUIRED RETURN ON COMMON EQUITY?

A. Yes. The required cost of capital, including the ROE, is a function of prevailing and expected financial market conditions. During times of capital market instability, risk aversion increases, which causes investors to seek the relative safety of U.S. Treasury debt, resulting in lower Treasury yields. At the same time, current and expected market volatility, as measured by indicators such as the Chicago Board Options Exchange ("CBOE") Volatility Index ("VIX"), increase. A direct result of elevated volatility is a corresponding increase in the risk

premium required by investors as compensation for taking on the risks associated with equity ownership. To the extent that observable measures of instability and risk aversion remain elevated relative to historical norms, it would be incorrect to conclude that the cost of equity has materially decreased. While there is little question that the capital market dislocation that began in late 2008 has moderated somewhat over the past year, market instability and investor risk aversion remain at comparatively high levels. That is especially true when viewed relative to the conditions that existed prior to the recent financial market dislocation.

Q. WHAT ANALYSIS HAVE YOU CONDUCTED TO ASSESS CURRENT CAPITAL MARKET CONDITIONS?

A. As discussed below, I considered several widely-recognized measures of investor risk perceptions, including: (1) incremental credit spreads; (2) the relationship between the dividend yields of the proxy companies and Treasury yields; and (3) equity market volatility. Except where noted, I compared current market conditions to the two-year period prior to the 2007-2009 recession, and the capital market contraction period of 2002-2003. As shown in Table 2, those metrics indicate that current levels of risk aversion are higher than the levels observed prior to the recent recession, and are much closer to the levels experienced during the 2002-2003 capital market contraction.

Table 2: Risk Sentiment Indicators[12]

	May 31, 2011[13]	Pre-recession (Jan-2006 through Nov-2007)	Jan-2002 through Dec-2003
Incremental Credit Spreads (*Moody's Utility Bond Index*)[14] Baa-rated bond to A rated bond	0.42%	0.25%	0.46%
Dividend Yield Spreads 10-year Treasury to Proxy Group	-1.10%	0.39%	-1.81%
Market Volatility CBOE VXV and CBOE VIX Futures[15]	21.87	14.90[16]	24.64[17]

1. Incremental Credit Spreads

Q. HOW HAVE CREDIT SPREADS BEEN AFFECTED BY CURRENT MARKET CONDITIONS?

A. The "credit spread" is the incremental return required by debt investors to take on the default risk associated with securities of differing credit quality. As shown in Table 2, and as Chart 1 demonstrates, the current 90-day moving average spread of the Moody's Baa-rated utility bond index to the Moody's A-rated utility bond index is 17 basis points above, or approximately 68.00 percent higher than, the comparable average credit spread immediately prior to the onset of the recent recession.

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12 Bloomberg Professional Service.

13 Represents the 90-trading day average as of May 31, 2011, except as noted otherwise

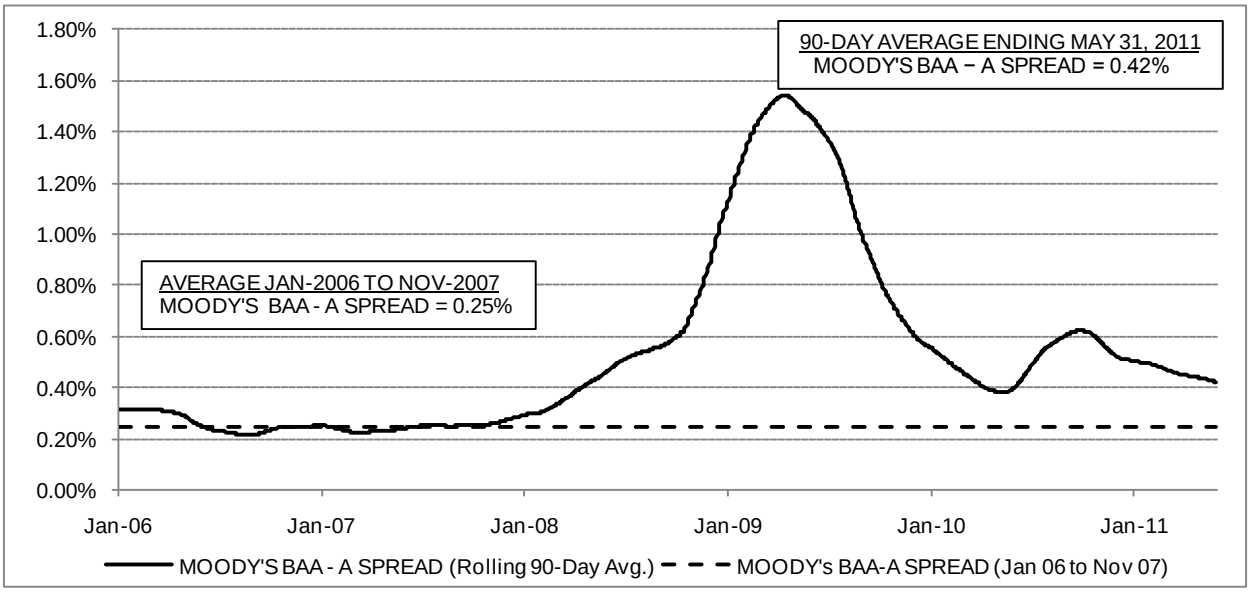
14 Represents an unsecured yield.

15 Represents the 30-trading day average pricing of six-month forward volatility. Please note that the VIX is a one-month measure of volatility, while the VXV is a three-month measure.

16 Represents the average VIX measured from January 2006 to November 2007.

17 Represents the average VIX, measured from January 2002 to December 2003.

Chart 1: Moody's Utility Bond Index Baa-A Credit Spread



Q. WHAT ARE THE IMPLICATIONS OF HIGHER CREDIT SPREADS AS COMPARED TO THE LONG-TERM AVERAGE?

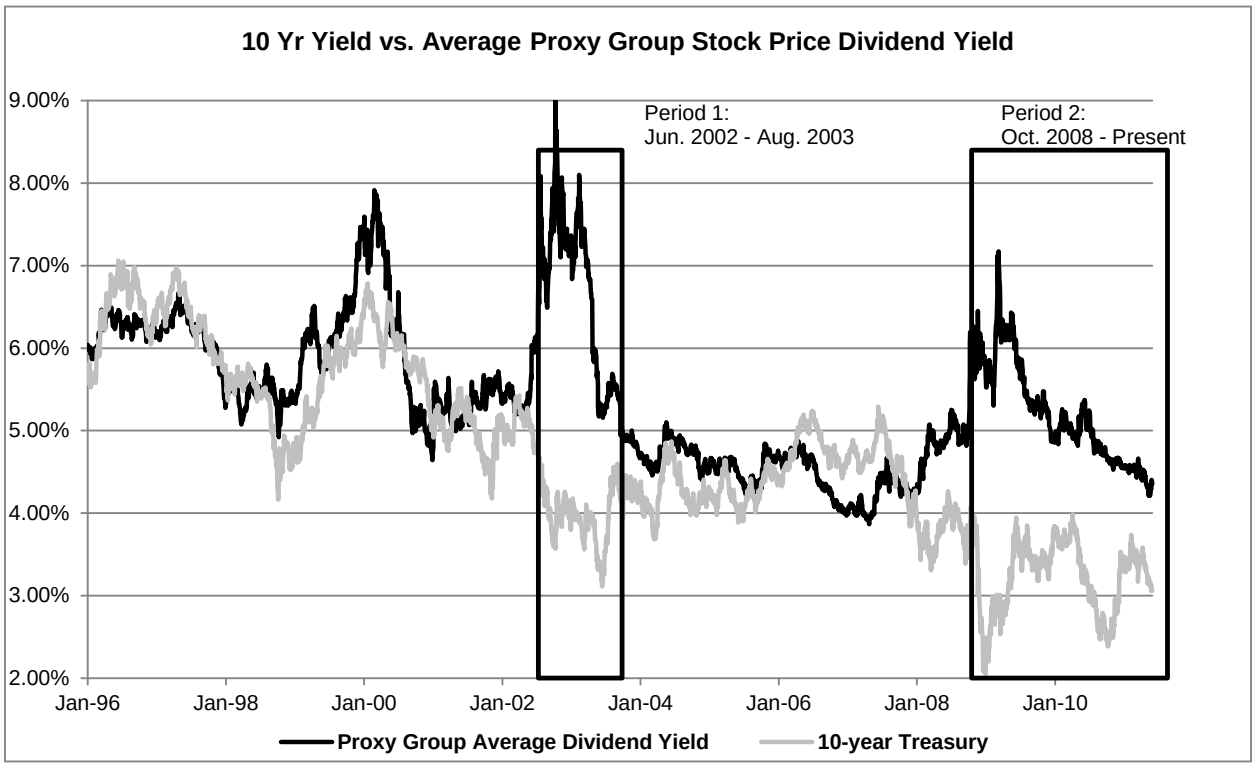
A. To the extent that credit spreads have increased, it is an observable measure of the capital markets' increased risk aversion; increased risk aversion by investors leads to an increased cost of equity. In addition, there is a clear and well-established inverse relationship between the level of interest rates and the equity risk premium. Consequently, lower utility bond yields, which are a function of lower Treasury yields, do not necessarily imply a correspondingly lower cost of equity, particularly considering the current level of credit spreads that are relatively higher than the long-term average.

2. Yield Spreads

Q. PLEASE DISCUSS YOUR ANALYSIS OF THE RELATIONSHIP BETWEEN DIVIDEND YIELDS AND TREASURY YIELDS.

A. As a preliminary matter, the "yield spread" is the difference between long-term Treasury yields and dividend yields. Investors often consider yield spreads in their assessment of security valuation and capital market conditions. As shown in Chart 2 on the following page, the 2008 – 2009 financial dislocation created the first significant widening of the yield spread (based on the proxy group average dividend yield) in five years. Prior to that time, the most recent period during which these yields were significantly divergent was from mid-2002 through mid-2003, which itself was a period of credit and equity valuation contraction.

Chart 2: Treasury Yield/Dividend Yield Divergence
(January 1, 1996 – May 31, 2011)



A 2009 article in *The Wall Street Journal* noted this same relationship between utility dividend yields and the ten-year Treasury yield, observing that, "dividend yields have tended to track the yield on 10-year Treasurys closely."[18] The article went on to note that:

> Regulated utilities' dividend yields decoupled from Treasury yields in December 2007, as the U.S. recession began. After the initial flight to quality cut yields on Treasurys, particularly after Lehman Brothers collapsed in September 2008, the Federal Reserve's policy of buying up government debt has helped keep them low.[19]

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[18] Denning, Liam, "A Short Circuit in the Stock Market," *The Wall Street Journal*, October 23, 2009, at C10.

[19] *Ibid. See, also,* Credit Suisse, "A Thought...Regulated Utilities = Investment Opportunity?", March 10, 2009, at 30.

There are several reasons why the continued divergence is relevant in determining the Company's cost of equity. First, as suggested by *The Wall Street Journal*, investors often look to the relationships among financial metrics to assess current and expected levels of market stability. To the extent that such relationships materially and persistently deviate from long-term norms, it may be an indication of continuing or expected instability. In the case of the yield spread, the fact that continued Federal intervention in the capital markets has been required to maintain relatively low Treasury yields introduces yet another significant element of capital market uncertainty. Again, investors require increased returns to be compensated for taking on such risk.

The widened yield spread, which began in 2008, has continued since that article was published. From January 2000 through September 15, 2008 (*i.e.*, the time of the Lehman Brothers bankruptcy filing), the average yield spread between ten-year Treasury securities and the proxy group average dividend yield was negative 55 basis points. Considering the two-year period[20] prior to the recession, the average yield on ten-year Treasury securities exceeded the proxy group average dividend yield by approximately 39 basis points. As Chart 3 indicates, the 90-day average yield spread as of May 31, 2011 was negative 110 basis points.

[20] This analysis includes the 23 months beginning January 2006 and ending November 30, 2007, just prior to the start of the recent recession, as defined by the National Bureau of Economic Research.

Chart 3: Proxy Company Yield Spread

3. Equity Market Volatility

Q. PLEASE DISCUSS CHANGES IN EQUITY MARKET VOLATILITY.

A. A directly observable measure of market volatility is the VIX. The VIX represents the implied (one month) volatility on the S&P 500 Index and as such, is an observable measure of investors' expectations of volatility and, therefore, risk. Since the inception of the VIX in 1990, its average has been approximately 20.35.[21] In contrast, forward-looking estimates of volatility as of May 31, 2011 (as measured by futures prices on the VIX index and the CBOE S&P 500 VXV index, which are one-month and three-month volatility indices, respectively) are approximately 21.87. The currently anticipated level of volatility is measurably above the pre-recessionary period (*i.e.*, January 2006 to November 2007) during which the VIX averaged 14.90, and more consistent with the volatility

[21] As discussed in Section VII, the 20.35 percent average volatility is approximately equal to the long run (*i.e.*, 1926-2010) market volatility reported by Morningstar, Inc.

experienced in the previous market contraction in 2002 and 2003, during which the VIX averaged 24.64. As discussed earlier, there is a direct relationship between market volatility and the equity risk premium and, as such, the comparatively high forward-looking volatility measures indicate higher, not lower required equity returns.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM THOSE ANALYSES?

A. First, these data clearly demonstrate that the current capital market continues to experience levels of risk aversion, volatility and instability that exceed their long-term averages. The result, of course, is an increased, not a decreased cost of equity. As noted in the June 2010 Federal Reserve Open Market Committee ("FOMC") Minutes, during the period from April to June 2010, "[t]he spread between the staff's estimate of the expected real return on equities over the next 10 years and an estimate of the expected real return on a 10-year Treasury note—a measure of the equity risk premium—*increased from its already elevated level*."[22] The December 2010 FOMC minutes noted that "the spread between staff's estimate of the expected real return on equity for S&P 500 firms and the real 10-year Treasury yield – a rough measure of the equity risk premium – narrowed a bit, although it remained elevated relative to longer-run norms".[23] The March 2011 FOMC minutes observed "the spread between the expected real equity return for S&P 500 firms and the real 10-year Treasury yield – a measure

[22] Federal Reserve, "Minutes of the Federal Open Market Committee", June 22-23, 2010, at 6. (*Emphasis added)*.

[23] Federal Reserve, "Minutes of the Federal Open Market Committee", December 14, 2010, at 5.

of the equity risk premium – narrowed a bit more over the intermeeting period *but continued to be quite elevated relative to longer-term norms*."[24]

In summary, while there are some signs of improvement over recent months, market instability and measures of risk aversion remain above historical norms. While certain capital market indices have moderated since the height of the financial crisis, both debt and equity investors are concerned with the potential that rising interest rates and persistently wide incremental credit spreads could result in a diminished financial profile for utility companies. This concern is especially relevant given that interest rates are projected to increase, thereby placing additional pressure on cash flow metrics and credit quality, and is particularly an issue for Duke Energy Carolinas given its heavy capital expenditure program discussed in more detail later in my Direct Testimony.

VI. PROXY GROUP SELECTION

Q. PLEASE EXPLAIN WHY YOU HAVE USED A GROUP OF PROXY COMPANIES TO DETERMINE THE COST OF EQUITY FOR DUKE ENERGY CAROLINAS.

A. First, it is important to bear in mind that the cost of equity for a given enterprise depends on the risks attendant to the business in which the company is engaged. According to financial theory, the value of a given company is equal to the aggregate market value of its constituent business units. The value of the individual business units reflects the risks and opportunities inherent in the

[24] Federal Reserve, "Minutes of the Federal Open Market Committee", March 15, 2011, at 4. (*Emphasis added*).

business sectors in which those units operate. In this proceeding, we are focused on estimating the cost of equity for Duke Energy Carolinas, which is an operating subsidiary of Duke Energy Corp. ("Duke Energy"). Since the ROE is a market-based concept and Duke Energy Carolinas is not a publicly traded entity, it is necessary to establish a group of companies that are both publicly traded and comparable to the Company in certain fundamental business and financial respects to serve as its "proxy" in the ROE estimation process.

Even if Duke Energy Carolinas were a publicly traded entity, it is possible that transitory events could bias its market value in one way or another over a given period of time. A significant benefit of using a proxy group, therefore, is that it serves to moderate the effects of anomalous events that may be associated with any one company. The proxy companies used in my analyses all possess a set of operating and risk characteristics that are substantially comparable to the Company, and thus provide a reasonable basis for the derivation and assessment of ROE estimates.

The importance of selecting a proxy group that is similar in overall financial and business risk to the subject company was endorsed by the United States Court of Appeals for the District of Columbia (the "Court of Appeals") in the *Petal Gas Storage* decision. The Court of Appeals acknowledged that the goal of a proxy group is to rely on companies that are of similar risk to the subject company for the determination of cost of equity:

> That proxy group arrangements must be risk-appropriate is the common theme in each argument. The principle is well-established. *See Hope Natural Gas Co*., 320 U.S. at 603 ("[T]he

> return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."); *CAPP I*, 254 F.3d at 293 ("[A] utility must offer a risk-adjusted expected rate of return sufficient to attract investors."). The principle captures what proxy groups do, namely, provide market-determined stock and dividend figures from public companies comparable to a target company for which those figures are unavailable. *CAPP I*, 254 F.3d at 293–94. Market determined stock figures reflect a company's risk level and, when combined with dividend values, permit calculation of the "risk-adjusted expected rate of return sufficient to attract investors."
>
> *****
>
> What matters is that the overall proxy group arrangement makes sense in terms of relative risk and, even more importantly, in terms of the statutory command to set "just and reasonable" rates, 15 U.S.C. § 717c, that are "commensurate with returns on investments in other enterprises having corresponding risks" and "sufficient to assure confidence in the financial integrity of the enterprise . . . [and] maintain its credit and . . . attract capital," *Hope Natural Gas Co.*, 320 U.S. at 603.[25]

Thus, regulatory commissions and analysts alike recognize the importance of developing a proxy group that adequately represents the ongoing risks and prospects of the subject company.

Q. DOES THE SELECTION OF A PROXY GROUP SUGGEST THAT ANALYTICAL RESULTS WILL BE TIGHTLY CLUSTERED AROUND AVERAGE (*I.E.*, MEAN) RESULTS?

A. Not necessarily. The DCF approach is based on the theory that a stock's current price represents the present value of its future expected cash flows. The Constant Growth form of the DCF model is defined as the sum of the expected dividend yield and projected long-term growth. Notwithstanding the care taken to ensure risk comparability, market expectations with respect to future risks and growth

[25] *Petal Gas Storage v. FERC*, 496 F.3d 695, 699 (D.C. Cir. 2007), at 5, 7.

opportunities will vary from company to company. Therefore, even within a group of similarly situated companies, it is common for analytical results to reflect a seemingly wide range. At issue, then, is how to select an ROE estimate, and that determination necessarily must be based on the informed judgment and experience of the analyst.

Q. PLEASE PROVIDE A SUMMARY PROFILE OF DUKE ENERGY CAROLINAS.

A. Duke Energy Carolinas is a wholly-owned subsidiary of Duke Energy that provides electric generation, transmission and distribution services in western South Carolina and in central and western North Carolina to approximately 2.4 million retail customers. Duke Energy's current issuer credit rating[26] from S&P is A- (outlook: Stable) and from Moody's is Baa2 (outlook: Stable).[27] Duke Energy Carolinas' current issuer credit rating from S&P is A- (outlook: Stable) and from Moody's is and A3 (outlook: Stable).[28] Table 3 provides summary financial and operating statistics for Duke Energy Carolinas for the most recent three years.

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[26] A long-term *issue* rating evaluates the issuing company's ability to meet its financial obligations on a timely basis with respect to a specific financial obligation, class of obligations, or financial program, and may address issues such as collateral security and subordination. A long-term *issuer* credit rating is an opinion of the subject company's overall financial capacity to pay its financial obligations, and does not apply to a specific financial obligation. (Standard & Poor's, Standard & Poor's Ratings Definitions, *Ratings Direct*, August 20, 2010, at 3, 9).

[27] SNL Energy, as of April 22, 2011.

[28] *Ibid*.

Table 3: Duke Energy Carolinas Operating and Financial Results - 2008 to 2010[29]

(*in $Millions*)	2010	2009	2008
Operating Income	$1,445	$1,287	$1,295
Net Income	$838	$702	$690
Net Property, Plant and Equipment	$20,065	$19,225	$17,258
Capital Expenditures	$2,280	$2,236	$2,410
Average Electric Sales Customers	2,388,611	2,376,889	2,364,469
Total Sales of Electricity (GWh)	85,443	79,830	85,476

Q. HOW DID YOU SELECT THE COMPANIES INCLUDED IN YOUR PROXY GROUP?

A. With the objective of selecting a proxy group that is highly representative of the risks and prospects faced by Duke Energy Carolinas, I used the following criteria:

- I began with the universe of companies that Value Line classifies as Electric Utilities, which includes a group of 53 domestic U.S. utilities;
- I excluded companies that do not consistently pay quarterly cash dividends;
- All of the companies in my proxy group have been covered by at least two utility industry equity analysts;
- All of the companies in my proxy group had investment grade senior bond and/or corporate credit ratings from Standard and Poor's;
- I selected proxy companies that are vertically integrated utilities (*i.e.*, utilities that own and operate regulated generating assets);

[29] Duke Energy Corp., SEC Form 10-K, February 25, 2011, at 76-79; Duke Energy Carolinas, LLC, SEC Form 10-K, March 12, 2010, at 17; Duke Energy Carolinas, LLC, FERC Form No. 1, April 15, 2010, at 301; Duke Energy Carolinas, LLC, FERC Form No. 1, April 18, 2011, at 301.

- I excluded companies whose regulated operating income in 2008, 2009 and 2010 comprised less than 60.00 percent of the respective totals for the company;
- I excluded companies whose regulated electric operating income in 2008, 2009 and 2010 represented less than 90.00 percent of total regulated operating income;
- I excluded companies whose coal-fired generation constituted less than 10.00 percent of their net generation; and
- Finally, I eliminated companies that are currently known to be party to a merger, or other significant transaction.

Q. DID YOU INCLUDE DUKE ENERGY IN YOUR ANALYSIS?

A. No, I did not. Duke Energy is the subject of a merger with Progress Energy and therefore did not meet my screening criteria.

Q. WHAT COMPANIES MET YOUR SCREENING CRITERIA?

A. The criteria discussed above resulted in a proxy group of the following twelve companies:

Table 4: Initial Screening Results

Company	Ticker
American Electric Power	AEP
Cleco Corp.	CNL
Edison International	EIX
Empire District Electric	EDE
Great Plains Energy Inc.	GXP
IDACORP, Inc.	IDA
Integrys/WPS Resources	TEG
Otter Tail Corp.	OTTR
Pinnacle West Capital	PNW
Portland General	POR
Southern Company	SO
Westar Energy	WR

Q. IS THIS YOUR FINAL PROXY GROUP?

A. No, it is not. My initial set of screening criteria produced a group of 12 potential proxy companies. I then examined the operating profile of each of those 12 companies to be certain that none displayed characteristics that were inconsistent with my intent to produce a proxy group that is fundamentally similar to the Company. As a result of that examination, I have made three modifications to the initial screening results.

First, Otter Tail Corp. ("Otter Tail") reported significant losses in the operating income of several non-regulated business segments in 2009 and 2010 that were the result of recessionary market conditions in those segments. As a consequence, operating income from regulated operations constituted the majority of the reported operating income in those years. However, since the process of

estimating the ROE necessarily is forward looking, it is important to consider whether the company's electric utility operations will continue to be the majority of operating income in the future. Reviewing Otter Tail's Securities and Exchange Commission ("SEC") Form 10-K, the $14.7 million loss experienced in 2010 in the "Manufacturing" segment was due to economic conditions and a $15.6 million net-of-tax asset impairment.[30] In addition, the "Wind Energy" segment experienced a loss of $21.2 million in 2010.[31] Looking forward, Value Line projects a significant increase in the earnings from the "Manufacturing" subsidiary in 2011, noting that the backlog for this business is 37.00 percent higher than the year prior.[32] Value Line also projects growth in Otter Tail's "Construction" segment. Given the extent of the 2010 losses, and analyst projections for 2011, it is difficult to assess the degree to which regulated electric utility operations would be expected to contribute to the company's consolidated financial performance in the near and longer terms. Therefore, I have excluded Otter Tail from my final proxy group.

Second, Edison International ("EIX") reported significant unregulated losses in 2009 in excess of 45.00 percent of EIX's regulated utility operating income. According to EIX's 2009 SEC Form 10-K, those significant operating losses were the result of a global tax settlement with the Internal Revenue Service and termination of cross-border leases, which caused EIX's unregulated competitive

[30] Otter Tail Corporation, SEC Form 10-K, February 28, 2011, at 43, 85.

[31] *Ibid*., at 85.

[32] Value Line Report on Otter Tail Corp, March 25, 2011.

power and financial services segment to record an approximately $920 million pre-tax loss.[33] Given the extent of those losses, it is difficult to assess the degree to which regulated electric utility operations would be expected to contribute to the company's consolidated financial performance in the near and longer terms. Consequently, I have excluded EIX from my final proxy group.

Finally, similar to Otter Tail and EIX, Integrys Energy Group, Inc. ("Integrys") experienced significant operating losses during the 2008 to 2010 period. In 2008, the company posted operating losses of $118.30 million in Integrys Energy Services Non-regulated Segment Operations.[34] In 2009, the Natural Gas Utility Segment experienced an operating loss of $114.6 million primarily as a result of a non-cash goodwill impairment loss of $284.6 million.[35] In that regard, the company noted that:

> [k]ey factors contributing to the impairment charge included disruptions in the global credit and equity markets and the resulting increase in the weighted-average cost of capital used to value the natural gas utility operations, and the negative impact that the global decline in equity markets had on the valuation of natural gas distribution companies in general.[36]

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33 Edison International, SEC Form 10-K, March 1, 2010, at 71, 104.

34 Integrys Energy Group, Inc., SEC Form 10-K, February 23, 2011, at 40.

35 Integrys Energy Group, Inc., SEC Form 10-K, February 26, 2010, at 35.

36 *Ibid*., at 107.

Since the reported operating results may not necessarily reflect the company's future operations, I have excluded Integrys from the proxy group.

Q. BASED ON THE CRITERIA AND ISSUES DISCUSSED ABOVE, WHAT IS THE COMPOSITION OF YOUR PROXY GROUP?

A. The final proxy group is presented in Table 5:

Table 5: Initial Screening Results

Company	Ticker
American Electric Power	AEP
Cleco Corp.	CNL
Empire District Electric	EDE
Great Plains Energy Inc.	GXP
IDACORP, Inc.	IDA
Pinnacle West Capital	PNW
Portland General	POR
Southern Company	SO
Westar Energy	WR

Q. WHY DID YOU NOT INCLUDE A SCREEN REGARDING THE PRESENCE OF NUCLEAR GENERATION IN A COMPANY'S RESOURCE PORTFOLIO?

A. Imposing a screen for nuclear generation (similar to the coal generation screen) of 10.00 percent would have reduced the number of proxy companies from eleven to only four. In my judgment, rather than including a proxy group of four companies, it is more appropriate to adjust my recommended return on equity based on the incremental risks implicit in the construction and operation of

nuclear generating capacity. I discuss this incremental risk further in Section VIII.

VII. COST OF EQUITY ESTIMATION

Q. PLEASE BRIEFLY DISCUSS THE ROE IN THE CONTEXT OF THE REGULATED RATE OF RETURN.

A. Regulated utilities primarily use common stock and long-term debt to finance their permanent property, plant, and equipment. The overall rate of return ("ROR") for a regulated utility is based on its weighted average cost of capital, in which the cost rates of the individual sources of capital are weighted by their respective book values. While the costs of debt and preferred stock can be directly observed, the cost of equity is market-based and, therefore, must be estimated based on observable market information.

Q. HOW IS THE REQUIRED ROE DETERMINED?

A. The required ROE is estimated by using one or more analytical techniques that rely on market-based data to quantify investor expectations regarding required equity returns, adjusted for certain incremental costs and risks. By their very nature, quantitative models produce a range of results from which the market required ROE must be selected. As discussed throughout my Direct Testimony, that selection must be based on a comprehensive review of relevant data and information, and does not necessarily lend itself to a strict mathematical solution. As a general proposition, the key consideration in determining the cost of equity is to ensure that the methodologies employed reasonably reflect investors' view of

the financial markets in general, and the subject company (in the context of the proxy group) in particular.

Q. WHAT METHODS DID YOU USE TO DETERMINE THE COMPANY'S ROE?

A. I used the DCF model as the initial approach, and then considered the results of the CAPM in assessing the reasonableness of the DCF results and developing my ROE recommendation. A reasonable ROE estimate appropriately considers alternate methodologies and the reasonableness of their individual and collective results. As discussed in more detail below, the use of a historical market risk premium in the CAPM produces results that are entirely inconsistent with current market conditions. As a result, I have considered alternatives to determining the market risk premium in the CAPM.

Q. WHY DO YOU BELIEVE IT IS IMPORTANT TO USE MORE THAN ONE ANALYTICAL APPROACH?

A. It is important to use more than one approach because the cost of equity is not directly observable, and therefore must be estimated based on both quantitative and qualitative information. When faced with the task of estimating the cost of equity, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed. As a result, a number of models have been developed to estimate the cost of equity. As a practical matter, however, all of the models available for estimating the cost of equity are subject to limiting assumptions or other methodological constraints. Consequently, many finance texts recommend using multiple approaches when estimating the cost of equity.

For example, Copeland, Koller and Murrin,[37] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski,[38] recommend the CAPM, DCF and "bond yield plus risk premium" approaches.

In essence, analysts and academics understand that ROE models simply are tools to be used in the ROE estimation process and that strict adherence to any single approach or the specific results of any single approach can lead to flawed or irrelevant conclusions. That position is consistent with the *Hope* and *Bluefield* finding that it is the analytical result, as opposed to the methodology, that is controlling in arriving at ROE determinations. Thus, a reasonable ROE estimate appropriately considers alternate methodologies and the reasonableness of their individual and collective results.

Consequently, I believe it is both prudent and appropriate to use multiple methodologies in order to mitigate the effects of assumptions and inputs associated with relying exclusively on any single approach. Such use, however, must be tempered with due caution as to the results generated by each individual approach. Therefore, in light of the capital market conditions discussed earlier, I have relied primarily on the Constant Growth DCF model, and used the CAPM as a corroborating methodology.

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37 Copeland, Tom, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd ed. (New York: McKinsey & Company, Inc., 2000), at 214.

38 Brigham, Eugene and Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

A. Constant Growth DCF Model

Q. ARE DCF MODELS WIDELY USED TO DETERMINE THE ROE FOR REGULATED UTILITIES?

A. Yes. DCF models are widely used in regulatory proceedings and have sound theoretical bases, although neither the DCF model nor any other model can be applied without considerable judgment in the selection of data and the interpretation of results. In its simplest form, the DCF model expresses the cost of equity as the sum of the expected dividend yield and long-term growth rate.

Q. PLEASE DESCRIBE THE DCF APPROACH.

A. The DCF approach is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its most general form, the DCF model is expressed as follows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_\infty}{(1+k)^\infty} \quad [1]$$

Where P_0 represents the current stock price, $D_1 \ldots D_\infty$ are all expected future dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present value calculation that can be simplified and rearranged into the familiar form:

$$k = \frac{D(1+g)}{P_0} + g \quad [2]$$

Equation [2] is often referred to as the "Constant Growth DCF" model in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

Q. WHAT ASSUMPTIONS ARE REQUIRED FOR THE CONSTANT GROWTH DCF MODEL?

A. The Constant Growth DCF model requires the following assumptions: (1) a constant average growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings multiple; and (4) a discount rate greater than the expected growth rate.

Q. WHAT MARKET DATA DID YOU USE TO CALCULATE THE DIVIDEND YIELD IN YOUR DCF MODEL?

A. The dividend yield component is based on the proxy companies' current annual dividend and average closing stock prices over the 30, 90, and 180-trading days ended May 31, 2011.

Q. WHY DID YOU USE THREE AVERAGING PERIODS?

A. I believe it is important to use an average of trading days to calculate the term P_0 in the DCF model to ensure that the calculated ROE is not skewed by anomalous events that may affect stock prices on any given trading day. In that regard, the averaging period should be reasonably representative of expected capital market conditions over the long term. At the same time, it is important to reflect the volatile conditions definitive of the financial markets over the recent past. In my view, the use of the 30-, 90- and 180-day averaging periods reasonably balances those concerns.

Q. DID YOU MAKE ANY ADJUSTMENTS TO THE DIVIDEND YIELD TO ACCOUNT FOR PERIODIC GROWTH IN DIVIDENDS?

A. Yes. Since utility companies tend to increase their quarterly dividends at different times throughout the year, it is reasonable to assume that dividend increases will be evenly distributed over calendar quarters. Given that assumption, it is reasonable to apply one-half of the expected annual dividend growth for purposes of calculating the expected dividend yield component of the DCF model. This adjustment ensures that the expected dividend yield is, on average, representative of the coming twelve-month period, and does not overstate the aggregated dividends to be paid during that time. Accordingly, the DCF estimates provided in Exhibit No. RBH-1 reflect one-half of the expected growth in the dividend yield component of the model.

Q. IS IT IMPORTANT TO SELECT APPROPRIATE MEASURES OF LONG-TERM GROWTH IN APPLYING THE DCF MODEL?

A. Yes. In its Constant Growth form, the DCF model (*i.e.*, as presented in Equation [2] above) assumes a single growth estimate in perpetuity. In order to reduce the long-term growth rate to a single measure, one must assume a constant payout ratio, and that earnings per share, dividends per share and book value per share all grow at the same constant rate. Over the long term, however, dividend growth can only be sustained by earnings growth. Consequently, it is important to incorporate a variety of measures of long-term earnings growth into the Constant Growth DCF model. This can be accomplished by averaging those measures of long-term growth that tend to be least influenced by capital allocation decisions

that companies may make in response to near-term changes in the business environment. Since such decisions may directly affect near-term dividend payout ratios, estimates of earnings growth are more indicative of long-term investor expectations than are dividend growth estimates. Therefore, for the purposes of the Constant Growth DCF model, growth in earnings per share represents the appropriate measure of long-term growth.

Q. PLEASE SUMMARIZE YOUR INPUTS TO THE CONSTANT GROWTH DCF MODEL.

A. I applied the DCF model to the proxy group of integrated electric utility companies using the following inputs for the price and dividend terms:

1. The average daily closing prices for the 30-trading days, 90-trading days, and 180-trading days ended May 31, 2011 for the term P_0; and
2. The annualized dividend per share as of May 31, 2011 for the term D_0.

I then calculated the DCF results using each of the following growth terms:

1. The Zacks consensus long-term earnings growth estimates;
2. The First Call consensus long-term earnings growth estimates; and
3. The Value Line long-term earnings growth estimates.

Q. HOW DID YOU CALCULATE THE HIGH AND LOW DCF RESULTS?

A. I calculated the proxy group mean and median high DCF result using the maximum EPS growth rate as reported by Value Line, Zack's, and First Call for each proxy group company in combination with the dividend yield for each of the proxy group companies. The proxy group mean and median high result then reflects the average maximum DCF result for the proxy group as a whole. I used

a similar approach to calculate the proxy group mean and median low results, but instead using the minimum growth rate as reported by Value Line, Zack's, and First Call for each proxy group company.

Q. WHAT ARE THE RESULTS OF YOUR DCF ANALYSIS?

A. The unadjusted (*i.e.*, prior to any adjustments for flotation costs) proxy group mean and median results of my DCF analysis are summarized in Table 6 and Exhibit No. RBH-1).

Table 6: DCF Results

	Low Growth Rate	***Mean Growth Rate***	***High Growth Rate***
Proxy Group Mean			
30-Day Average	9.21%	10.31%	11.40%
90-Day Average	9.35%	10.45%	11.54%
180-Day Average	9.44%	10.54%	11.64%
Proxy Group Median			
30-Day Average	9.87%	10.41%	11.88%
90-Day Average	10.02%	10.56%	12.05%
180-Day Average	10.07%	10.59%	12.14%

Q. DID YOU UNDERTAKE ANY ADDITIONAL ANALYSES TO SUPPORT YOUR DCF MODEL RESULTS?

A. Yes. As noted earlier, I also used the CAPM approach to assess the reasonableness of my DCF results.

B. CAPM Analysis

Q. PLEASE BRIEFLY DESCRIBE THE GENERAL FORM OF THE CAPM ANALYSIS.

A. The CAPM analysis is a risk premium approach that estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium (to compensate investors for the non-diversifiable or "systematic" risk of that security). As shown in Equation [3], the CAPM is defined by four components, each of which theoretically must be a forward-looking estimate:

$$K_e = r_f + \beta(r_m - r_f) \quad [3]$$

where:

K_e = the required market ROE;

β = Beta coefficient of an individual security;

r_f = the risk free rate of return; and

r_m = the required return on the market as a whole.

In this specification, the term ($r_m - r_f$) represents the market risk premium. According to the theory underlying the CAPM, since unsystematic risk can be diversified away, investors should be concerned only with systematic or non-diversifiable risk. Non-diversifiable risk is measured by the Beta coefficient, which is defined as:

$$\beta = \frac{Covariance(r_e, r_m)}{Variance(r_m)} \quad [4]$$

The variance of the market return, noted in Equation [4], is a measure of the uncertainty of the general market, and the covariance between the return on a specific security and the market reflects the extent to which the return on that security will respond to a given change in the market return. Thus, the Beta coefficient represents the risk of the security relative to the market.

Q. HAS THE CAPM ANALYSIS BEEN AFFECTED BY RECENT ECONOMIC CONDITIONS?

A. Yes. Recent market conditions have affected the CAPM model in a number of important ways. First, as noted above, the risk free rate, *"r_f"*, in the CAPM formula is represented by the interest rate on long-term U.S. Treasury securities. During the financial dislocation, investors reacted to the extraordinary levels of market volatility discussed earlier by investing in low-risk securities such as Treasury bonds. Consequently, the first term in the model (*i.e.*, the risk-free rate) is lower than it would have been absent the elevated degree of risk aversion that has, at least in part, resulted in historically low Treasury yields.

In addition, as a result of the extraordinary loss in equity values during 2008, the market risk premium, when measured on a historical basis, actually decreased from the prior year, even though other measures of investor sentiments, in particular market volatility, indicated extremely high levels of risk aversion. That result is, of course, counter-intuitive. While the 2009 market rally resulted in a somewhat higher historical market risk premium, it still remains below its pre-financial crisis level.

Finally, Beta coefficient estimates reported by Value Line and Bloomberg calculate the Beta coefficient for each company over historical periods of 60 and 24 months, respectively. As noted earlier, during the recent financial market dislocation, the relationship between the returns of the proxy group companies and the S&P 500 Index was considerably different than had been experienced prior to the market dislocation. Both the Value Line and Bloomberg Beta coefficient estimates are calculated over longer historical time periods that include the effects of the financial market dislocation, resulting in Beta coefficient estimates that are much lower than what has been experienced historically in markets similar to the current market environment. For example, in September 2007, one year prior to the Lehman Brothers bankruptcy filing, the average Beta coefficient for my proxy group was 0.99. As shown in Exhibit No. RBH-2, the average of the Value Line and Bloomberg Beta coefficient estimates for the proxy group is currently 0.739, which would suggest a lower CAPM estimate notwithstanding the continued volatility in the capital markets.

Q. WHAT ASSUMPTIONS DID YOU USE IN YOUR CAPM MODEL?

A. Since both the DCF and CAPM models assume long-term investment horizons, I used two different specifications of the risk-free rate as my estimate of the risk-free rate: the current 30-day average yield on 30-year Treasury bonds (*i.e.*, 4.34 percent) and the near-term projected 30-year Treasury yield (*i.e.*, 4.88 percent).

Q. WHAT MARKET RISK PREMIA DID YOU USE IN YOUR CAPM MODEL?

A. For the reasons discussed above, I did not use a historical average; rather, I developed two forward-looking (*ex-ante*) estimates.

Q. PLEASE DESCRIBE YOUR FIRST APPROACH TO ESTIMATING THE MARKET RISK PREMIUM.

A. The first approach is based on the required return on the S&P 500 Index, less the current 30-year Treasury bond yield. The required return on the S&P 500 is calculated using the constant growth DCF model discussed earlier in my testimony for the companies in the S&P 500 Index.

Q. PLEASE DESCRIBE THE SECOND APPROACH USED TO ESTIMATE THE *EX-ANTE* MARKET RISK PREMIUM.

A. The second approach assumes a constant Sharpe Ratio, which is the ratio of the risk premium relative to the risk, or standard deviation of a given security or index of securities. The Sharpe Ratio is relied upon by financial professionals to assess the incremental return received for holding a risky (*i.e.*, more volatile) asset rather than a risk-free (*i.e.*, less volatile) asset. The formula for calculating the Sharpe Ratio is expressed as follows:

$$S(X) = (R_x - R_f)/Std\ Dev\ (X) \quad [5]$$

where:

X = the investment;

R_x = the average return of X;

R_f = the rate of return of a risk free security; and

Std Dev = the standard deviation of r_x.

As shown in Exhibit No. RBH-3, the constant Sharpe Ratio is the ratio of the historical market risk premium of 6.70 percent (the numerator of Equation [5] above) and the historical market volatility of 20.28 percent (the denominator of Equation [5]).[39] The expected market risk premium is then calculated as the product of the Sharpe Ratio and the expected market volatility. For the purpose of that calculation, I used the thirty-day average of the CBOE's three-month volatility index (*i.e.*, the VXV) and the average of settlement prices over the same thirty-day period of futures on the CBOE's one-month volatility index (*i.e.*, the VIX) for September through November 2011.

Q. HOW DID YOU APPLY YOUR EXPECTED MARKET RISK PREMIUM ESTIMATES?

A. I relied on each of the projected market risk premia, and, as discussed, the current and near-term projected 30-year Treasury bond yields as inputs to my CAPM analyses. As noted in Exhibit No. RBH-3, the use of current and projected market risk premia and risk-free rates produces a range of results that substantially overlaps the range of results produced by the other cost of equity estimation methodologies.

[39] The standard deviation is easily calculated from data provided by Morningstar in its annual Valuation Yearbook. (*See*, Morningstar Inc., Ibbotson SBBI 2011 Valuation Yearbook, Large Company Stocks: Total Returns Table B-1, at 162-163).

Q. WHAT BETA COEFFICIENT DID YOU USE IN YOUR CAPM MODEL?

A. With respect to the Beta coefficient, I considered two methods of calculation. My first approach simply employs the average reported Beta coefficient from Bloomberg and Value Line for each of the proxy group companies. While both of those services adjust their calculated (or "raw") Beta coefficients to reflect the tendency of the Beta coefficient to regress to the market mean of 1.00, Value Line calculates the Beta coefficient over a five-year period, while Bloomberg's calculation is based on two years of data. For my second approach, I calculated Beta coefficients calculated over a more recent time period provide a more current view as to investors' perspectives with respect to "systematic" risk.

Q. PLEASE DESCRIBE HOW YOU CALCULATED THE MEAN ADJUSTED BETA COEFFICIENT FOR YOUR PROXY GROUP.

A. As noted in Equation [4] discussed earlier, the Beta coefficient is calculated as the ratio of the covariance between the individual security returns and the market returns, to the variance of the market returns. To arrive at a single estimate of the Beta coefficient for the proxy group, I first averaged the weekly returns of the companies in the proxy group. Calculating the covariance between the proxy group's mean weekly returns and the weekly returns of the S&P 500 for the most recent twelve months produces the numerator of the Beta coefficient calculation for the proxy group. As noted above, the denominator in the calculation is the

variance of weekly returns for the S&P 500.[40] As shown in Exhibit No. RBH-4, this methodology results in a proxy group mean raw Beta coefficient of 0.589. Adjusting the raw Beta coefficient for the tendency to regress toward the market Beta coefficient of 1.0 results in an adjusted Beta coefficient of 0.726.[41]

Q. HOW AND WHY DID YOU ADJUST THE RAW BETA COEFFICIENT?

A. I adjusted my raw Beta coefficient consistent with the methodology used by Bloomberg. This approach multiplies the raw Beta coefficient by 0.67, and adds 0.33 to that product. The purpose of such adjustments is to reflect the results of substantial academic research indicating that, over time, raw Beta coefficients tend to regress to the market mean of 1.00.[42]

Q. PLEASE EXPLAIN WHY YOU RELIED ON A TWELVE-MONTH ESTIMATE OF THE PROXY GROUP MEAN ADJUSTED BETA COEFFICIENT.

A. As noted earlier, Beta coefficient estimates reported by Value Line and Bloomberg calculate the Beta coefficient for each company over historical periods of 60 and 24 months, respectively. Chart 4 illustrates the relationship between the covariance of average weekly returns for the proxy group and the variance in the returns of the S&P 500, the two components of the Beta coefficient calculation.

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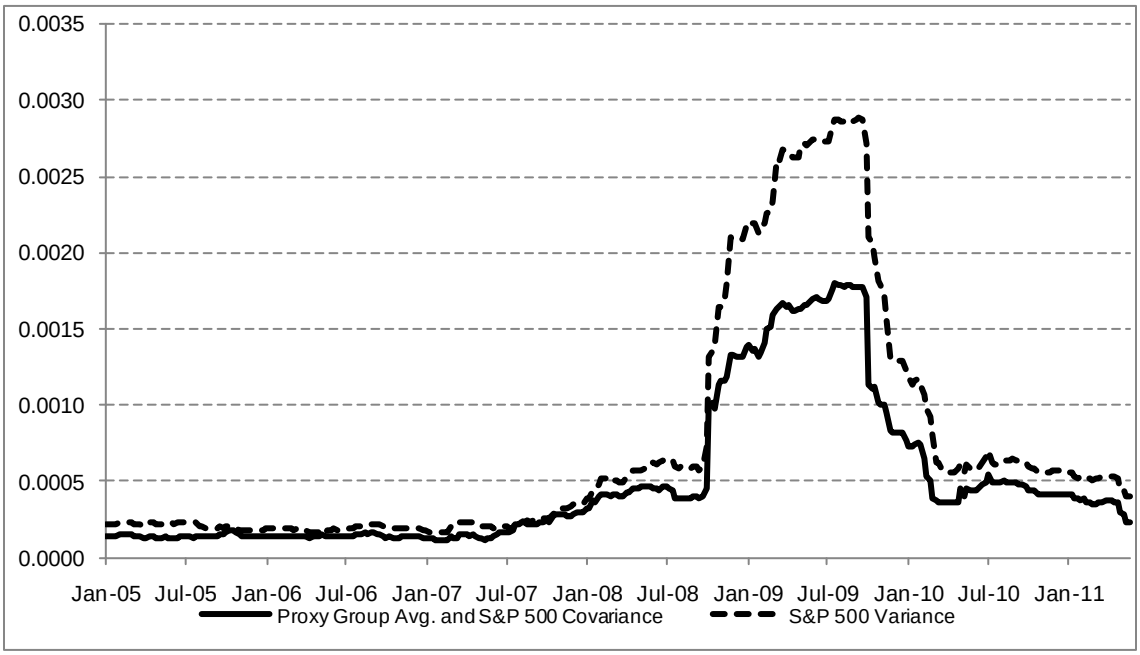
[40] It is worthwhile noting that averaging individual Beta coefficients for each of the proxy group companies would produce the same result as calculating a single beta based on the average of the proxy group companies' weekly returns.

[41] The raw and adjusted Beta coefficients calculated using this approach are identical to the Beta coefficients calculated by Bloomberg when assuming the identical holding period.

[42] The regression tendency of Beta coefficients to converge to 1.0 over time is well known and widely discussed in financial literature. (*See, e.g.*, Blume, Marshall E., "On the Assessment of Risk", *The Journal of Finance*, Vol. 26, No. 1, March 1971, at 1-10).

As shown in Chart 4, during the recent financial market dislocation, the relationship between the returns of the proxy group companies and the S&P 500 was considerably different than has been experienced in the current market environment or immediately preceding the financial crisis. Therefore, in order to capture a more current period than the Bloomberg two-year calculation period, I based my analysis on a twelve-month calculation period.

Chart 4: Proxy Group Average Covariance and S&P 500 Variance (Moving 12-Month Calculation)



Q. IS YOUR TWELVE-MONTH BETA COEFFICIENT REASONABLE RELATIVE TO LEVELS THAT WERE OBSERVED PRIOR TO THE FINANCIAL MARKET CRISIS?

A. Yes. Prior to the financial market crisis, the average Beta coefficient for my proxy group companies, as reported by Value Line, was considerably higher than what I have calculated using the most recent 12 months of market data. For

example, as noted earlier, in September 2007, one year prior to the Lehman Brothers bankruptcy filing, the average Beta coefficient for my proxy group was 0.99. As of June 30, 2008, the Beta coefficient for this same group was 0.85. Based on those historical measures, it is my view that the 12-month average Beta coefficient of 0.73 is reasonable compared to levels observed prior to the financial market crisis.

Q. WHAT ARE THE RESULTS OF YOUR CAPM ANALYSES?

A. As shown in Table 7 on the following page, (*see, also*, Exhibit No. RBH-3), the results of my CAPM analysis, using the current Beta coefficient estimate suggest a mean ROE of 10.24 percent based on a range of returns from 9.58 percent to 10.89 percent. Relying on an average of the Value Line and Bloomberg estimates of the Beta coefficient (which, as noted, are based over a five-year and two-year historical period, respectively), the results of my CAPM analysis suggest a mean return of 10.33 percent based on a range of returns of 9.67 percent to 10.99 percent.

Table 7: *Ex-Ante* CAPM Results

	Sharpe Ratio Derived Market Risk Premium	Market Derived Market Risk Premium
Twelve-month Beta Coefficient		
Current 30-Year Treasury (4.34%)	9.58%	10.34%
Near Term Projected 30-Year Treasury (4.88%)	10.13%	10.89%
Average Bloomberg and Value Line Beta Coefficient		
Current 30-Year Treasury (4.34%)	9.67%	10.44%
Near Term Projected 30-Year Treasury (4.88%)	10.22%	10.99%

Q. DOES YOUR RECOMMENDATION SUBSTANTIALLY RELY ON ANY OF THE CAPM MODELS YOU PRESENTED IN EXHIBIT NO. RBH-3?

A. No, it does not. While I have calculated the CAPM using the approaches and assumptions discussed above, I did not give any specific weight to those results. Rather, I used the CAPM results to assess the DCF results discussed earlier.

VIII. BUSINESS RISKS

Q. DO THE MEAN DCF AND CAPM RESULTS FOR THE PROXY GROUP PROVIDE AN APPROPRIATE ESTIMATE OF THE COST OF EQUITY FOR THE COMPANY?

A. No, the mean results do not necessarily provide an appropriate estimate of the Company's cost of equity. In my view, there are additional factors that must be taken into consideration when determining where the Company's cost of equity falls within the range of results, including (1) the level of coal-fired generation

owned and operated by the Company and the risk of retirement and costly capital improvements due to more stringent environmental regulations; (2) the level of nuclear generation owned by the Company and the impacts that the recent events in Japan may have on the Company's nuclear units going forward; (3) the incremental risks associated with the Company's need to fund substantial capital expenditures; and (4) flotation costs associated with equity issuances.

A. Coal-Fired Generation Portfolio

Q. DOES THE COMPANY'S GENERATION PORTFOLIO INCLUDE COAL-FIRED GENERATING ASSETS?

A. Yes. Duke Energy Carolinas' operations are heavily dependent on coal-fired generation, representing approximately 40.00 percent of the Company's owned installed capacity.[43] In general, capital-intensive baseload generation assets such as coal-fired plants face risks associated with capital recovery in the event of market structure changes or plant failure, or replacement cost recovery in the event of extended or unplanned outages. Expected changes in the U.S. Environmental Protection Agency's ("EPA") regulation of water quality, mercury, SOx, and NOx (*i.e.*, stricter standards) are likely to force owners of coal-fired generation to make large capital investments in emission control technologies or to prematurely retire otherwise reliable capacity.

[43] Duke Energy Carolinas owns 7,654 MW of coal-fired capacity out of a total capacity of 19,112 MW. *See*, Duke Energy Corp., SEC Form 10-K, February 25, 2011, at 27.

Q. WHAT SPECIFIC CHANGES ARE EXPECTED TO DISPROPORTIONATELY AFFECT OWNERS OF COAL-FIRED GENERATION?

A. Federal court rulings in 2007 and 2008 required the EPA to develop new regulations relating to the Clean Air Act Amendments of 1990 and the Clean Water Act governing the emissions of sulfur dioxide ("SOx"), nitrogen oxide ("NOx"), mercury and also regulate water intake from rivers and lakes. The EPA's new regulations are expected to be stricter than the existing environmental policies. As noted in a recent report by Standard & Poor's:

> The EPA expects compliance [with the stricter emissions and water intake rules] by early 2015. Utilities will have to decide whether to install control equipment and continue to operate the coal plants under increasingly stringent regulations or avoid the capital expenditures by retiring the marginally economic plants before the regulations take effect.
>
> *****
>
> On Aug. 2, 2010, the EPA published its draft Clean Air Transport Rules to regulate emissions in 31 eastern states and the District of Columbia. These rules aim to replace the Clean Air Interstate Rules, which the DC Court of Appeals remanded to the EPA in December 2008. The EPA proposes to implement these rules on Jan. 1, 2012. In addition, the court requires the EPA to issue final MACT ["Maximum Available Control Technology"] standards to regulate HAPs from electric generators.[44]

In addition, James Wood, the deputy assistant secretary for the U.S. Department of Energy recently stated that "new regulations from the Environmental Protection Agency mean a lot of coal-fired power plants will shut down soon" and that "approval of new rules for air pollution, water pollution and waste disposal

[44] Standard & Poor's, "Abundant Natural Gas and Looming Regulations Have U.S. Unregulated Coal-Fired Power Generation on the Ropes", *Global Credit Portal*, January 31, 2011, pp.8-9.

could result in the retirement of between 35 and 70 gigawatts of coal-fired power generation nationwide, with the EPA predicting much less and some analysts predicting much more."[45] Mr. Wood also noted that "some units could be shut down simply because it's not possible to find the materials and skilled labor to complete upgrades by tight EPA deadlines."[46]

Q. IS THERE EVIDENCE THAT DEMONSTRATES THE EFFECT OF STRICTER ENVIRONMENTAL REGULATIONS ON DUKE ENERGY CAROLINAS?

A. Yes. The effects of stricter regulations are reflected in Duke Energy Carolina's resource planning process. As noted in its 2010 Integrated Resource Plan ("IRP"):

> Additionally, multiple environmental regulatory issues are presently converging as the EPA has proposed new rules to regulate multiple areas relating to generation resources. These new rules, if implemented, will increase the need for the installation of additional control technology or retirement of coal fired generation in the 2014 to 2018 timeframe. Anticipating that there will be increased control requirements, the Carolinas 2010 IRP incorporates a planning assumption that all coal-fired generation that does not have an installed SO2 scrubber will be retired by 2015. This planning assumption accelerates the retirement of approximately 890 MWs of coal generation capacity as compared to the 2009 Carolinas IRP.[47]

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45 McCown, D., "EPA Regulations For Coal-Fired Power Plants Could Force Shut Downs", *Bristol Herald Courier (VA)*, May 25, 2011.

46 *Ibid*.

47 Public Service Commission of South Carolina, Duke Energy Carolinas, LLC's 2010 Integrated Resource Plan, Docket No. 2010-10-E, September 1, 2010, at 60.

In addition to premature retirements, Duke Energy Carolinas expects to commit significant capital over the next ten years to ensure compliance with anticipated environmental regulations.

Q. ARE THERE OTHER ENVIRONMENTAL REGULATIONS THAT ARE LIKELY TO AFFECT DUKE ENERGY CAROLINAS' COAL FLEET?

A. Yes. On December 7, 2009 the EPA classified carbon dioxide as a danger to public health in an "endangerment finding" under the Clean Air Act, creating the potential for additional litigation and regulatory uncertainty. Mr. Wood, the deputy assistant secretary for the U.S. Department of Energy, also recently stated that the burden of the costs and risks associated with the EPA's new environmental regulations concerning emissions and water quality "doesn't even take into account greenhouse gases and the possibility that carbon dioxide emissions could also be regulated in the future."[48]

With respect to financial disclosures, on January 27, 2010, the SEC voted to provide companies with "interpretive guidance" regarding disclosure requirements relating the issue of climate change. More specifically, the SEC's guidance provides examples of areas in which issues may "trigger" disclosure requirements as they relate to climate change. Among those areas are: (1) Impact of Legislation and Regulation; and (2) Indirect Consequences of Regulation or Business Trends. Regarding the former, the SEC noted that:

> [w]hen assessing potential disclosure obligations, a company should consider whether the impact of certain existing laws and

[48] McCown, D., "EPA Regulations For Coal-Fired Power Plants Could Force Shut Downs", *Bristol Herald Courier (VA)*, May 25, 2011.

> regulations regarding climate change is material. In certain circumstances, a company should also evaluate the potential impact of pending legislation and regulation related to this topic.[49]

With respect to Indirect Consequences, the SEC noted that:

> [l]egal, technological, political and scientific developments regarding climate change may create new opportunities or risks for companies. For instance, a company may face decreased demand for goods that produce significant greenhouse gas emissions or increased demand for goods that result in lower emissions than competing products. As such, a company should consider, for disclosure purposes, the actual or potential indirect consequences it may face due to climate change related regulatory or business trends.[50]

Q. ARE THERE EXAMPLES IN THE INDUSTRY OF THE RISK THAT ENVIRONMENTAL REGULATIONS ARE IMPOSING ON OWNERS OF COAL-FIRED GENERATION?

A. Yes. As a result of the increased likelihood of carbon emissions regulation, investors see coal generation as taking on even greater risk. For example:

- Louisville Gas and Electric Co. and Kentucky Utilities Co. recently announced their intent to retire six coal units totaling 797 MW by 2016 due to "high capital costs for coal options…due to proposed environmental regulations", and selected 2016 as the retirement year

[49] Securities and Exchange Commission, "SEC Issues Interpretive Guidance on Disclosure Related to Business or Legal Developments Regarding Climate Change", Release 2010-15, January 27, 2010.

[50] *Ibid.*

"because that is expected to be the year that the most stringent new federal emissions regulations take effect".[51]

- The Tennessee Valley Authority's ("TVA's") board of directors also recently approved a settlement with the EPA, environmental groups and four states, which required, among other things, the retirement of 18 coal-fired generating units no later than 2018 and that TVA to invest $350 million in the four states on additional pollution reduction projects over the next five years.[52]
- American Electric Power Co., Inc. recently stated that it has 5,480 MW of coal-fired capacity that are at-risk of being shut down over the next few years as a result of EPA's air, water and coal ash rules, and another 8,888 MW that would require capital investments ranging between $2.23 billion and $6.42 billion through 2020 to meet EPA's proposed clean air rules.[53]
- Dominion Resources, Inc. recently indicated that it will retire Salem Harbor station, a 747 MW coal and oil-fired generating facility in Salem, Massachusetts "given the significant costs required to keep the station in compliance with pending environmental regulations and the

[51] Cassell, Barry, "LG&E, Kentucky Utilities Target 6 Coal Units For Retirement in 2016", *SNL Financial*, April 25, 2011; Sierra Club, "Blockbuster Agreement Takes 18 Dirty TVA Coal-Fired Power Plant Units Offline", April 14, 2011.

[52] Bandyk, Matthew, "TVA To Retire 18 Coal Generating Units in Settlement With EPA, States", *SNL Financial*, April 14, 2011; Sierra Club, "Blockbuster Agreement Takes 18 Dirty TVA Coal-Fired Power Plant Units Offline", April 14, 2011.

[53] Cassell, Barry, "Morris: 5,480 MW of AEP Coal Capacity 'Fully Exposed' to EPA Rules", *SNL Financial*, April 25, 2011.

> falling margins for coal stations selling electricity in New England."[54] Dominion intends to retire two coal-fired units totaling 160 MW by the end of 2011, and the 150 MW coal and the 437 MW oil-fired units at the station by June 2014.[55]

Duke Energy also has highlighted such risks to investors regarding the Company:

> Compliance with environmental laws and regulations can require significant expenditures, including expenditures for clean-up costs and damages arising out of contaminated properties, and failure to comply with environmental regulations may result in the imposition of fines, penalties and injunctive measures affecting operating assets. The steps Duke Energy Carolinas could be required to take to ensure that its facilities are in compliance could be prohibitively expensive. As a result, Duke Energy Carolinas may be required to shut down or alter the operation of its facilities, which may cause Duke Energy Carolinas to incur losses. Further, Duke Energy Carolinas' regulatory rate structure and Duke Energy Carolinas' contracts with clients may not necessarily allow Duke Energy Carolinas to recover capital costs Duke Energy Carolinas incurs to comply with new environmental regulations.[56]

Given the increasing regulatory and legislative focus on, and the costs associated with, environmental compliance for companies such as Duke Energy Carolinas that are dependent on coal-fired generation, it is important to acknowledge the additional risk such companies carry.

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54 Harrington, Kelly, "Dominion To Retire All Units At Salem Harbor Plant in Massachusetts by 2014", *SNL Financial*, May 11, 2011.

55 *Ibid.*

56 Duke Energy Carolinas, LLC, SEC Form 10-K, March 12, 2010, at F6.

B. Nuclear Generation Portfolio

Q. DOES THE COMPANY'S GENERATION PORTFOLIO INCLUDE NUCLEAR GENERATING ASSETS?

A. Yes. Duke Energy Carolinas' generation portfolio includes 5,173 MW of owned nuclear generating capacity. Specifically, the Company owns 2,538 MW at the Oconee facility in South Carolina (which is 100 percent of the capacity at that site), 435 MW at the Catawba facility in South Carolina (which is 19.25 percent of the capacity at that site), and 2,200 MW at the McGuire facility in North Carolina (which is 100 percent of the capacity at the site).[57]

Q. HAVE THE RECENT EVENTS IN JAPAN AFFECTED NUCLEAR OWNERS GENERALLY?

A. Yes. The March 11, 2011 earthquake and tsunami caused significant damage to Fukushima Daiichi nuclear complex and threatened the public health. This incident has affected, and is likely to continue to affect, the nuclear industry, both internationally and in the United States.

Q. HAS THE FUKUSHIMA DAIICHI NUCLEAR INCIDENT CHANGED INVESTORS' PERCEPTION OF NUCLEAR OWNERSHIP?

A. Much is yet to be determined regarding the long-term effects of the disaster on the U.S. nuclear industry. Reviews of safety standards currently are underway, with a possible result being mandated investments in additional safety equipment. As noted by UBS Investment Research:

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[57] Duke Energy Carolinas owns 5,173 MW of nuclear capacity out of a total owned capacity of 19,112 MW, or 27.1 percent of the total. *See*, Duke Energy Corp., SEC Form 10-K, February 25, 2011, at 27.

> …the scale of the financial effect of a tail risk event such as the one at Fukushima Daiichi is probably not fully considered in costs of capital…But if liability will be wholly or partly with the operators, we think discounts rates will likely need to be higher.[58]

UBS further stated that it expects "a host of yet-to-be determined regulations that will emanate from the final Fukushima assessment."[59] Clearly, UBS has recognized the potential increased cost of capital associated with nuclear operations in a post-Fukushima environment.

Q. HAVE THE CREDIT RATING AGENCIES COMMENTED ON THE ADDITIONAL RISK PRESENTED BY THE RECENT EVENTS?

A. Yes. As S&P noted immediately after the earthquake and tsunami in Japan that devastated the Fukushima nuclear units:

> …the damage to several nuclear plants in Japan following Friday's earthquake and tsunami has no immediate effect on the credit quality of U.S. nuclear plant operators. However, this incident raises the probability of greater costs and oversight for existing nuclear plants located in the U.S. We expect that generators would be able to recover any incremental costs associated with fully regulated nuclear plants through state regulatory proceedings. Merchant operators would have to absorb any potential mandated costs at a time of low power prices, which would further squeeze cash flows. Heightened public awareness of nuclear power risks and requirements for greater safety provisions may also affect relicensing efforts and new nuclear plant construction.[60]

Moreover, in a special report issued shortly after the incident occurred, S&P noted that while the specific consequences have yet to be determined, the effect on the nuclear industry will be long-standing:

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58 UBS Investment Research, "Can nuclear power survive Fukushima," April 4, 2011, at 3.

59 *Ibid.*, at 106.

60 Standard & Poor's, "Bulletin: Japanese Disaster Doesn't Immediately Affect U.S. Nuclear Plant Operators' Credit Quality", *Ratings Direct*, March 14, 2011.

> The problems at the Fukushima Daiichi nuclear complex in Japan that have resulted from the March 11 earthquake and tsunami will no doubt increase public concern and regulatory scrutiny of nuclear power in the U.S., in our view. However, because these events are still unfolding, the exact responses of U.S. nuclear operators and regulators remain uncertain, although delays in approval and construction are likely results. Any credit implications for U.S. operators will depend on where companies operate or plan to build plants and the particulars of their plans. But one thing is certain: Events in Japan will have a profound affect [*sic*] on the nuclear power industry in the U.S. and throughout the world for some time to come.[61]

Q. WHAT DO YOU CONCLUDE FROM THIS INFORMATION?

A. While it is difficult to quantify at this point given the recent timing of the incident, it appears that investors perceive greater risk related to nuclear ownership and development as a result of the potential for increased costs in the future. Therefore, the cost of, and potentially the risk associated with, the nuclear portion of the Company's generation portfolio likely have increased as a result of recent events.

C. Capital Expenditures

Q. DOES THE COMPANY INTEND TO MAKE SIGNIFICANT CAPITAL EXPENDITURES IN THE NEXT FEW YEARS?

A. Yes. Duke Energy Carolinas will have approximately $7 billion of capital needs over 2011 – 2013.[62] A primary focus of Duke Energy's capital expenditure program in the near-term is modernization of its generating fleet "in preparation

[61] Standard & Poor's, "The U.S. Nuclear Power Industry Looks at Japan and Awaits More Scrutiny", *Ratings Direct*, March 16, 2011, at 6.

[62] Direct Testimony of Stephen G. De May.

for a low carbon future", which includes certain regulated facilities of Duke Energy Carolinas.[63] For example, construction currently is underway on the new Cliffside Unit 6, a 825 MW state-of-the-art coal-fired generating facility at the Company's existing Cliffside generation site in North Carolina. Cliffside Unit 6 was approximately 80 percent complete as of December 31, 2010 and is projected to be in-service in 2012.[64] In addition, Duke Energy Carolinas is also constructing a 620 MW natural gas-fired combined-cycle facility at each of its existing Buck and Dan River generating sites in North Carolina.[65] The new Buck facility is scheduled to be in-service in 2011, and as of December 31, 2010, was approximately 74 percent complete. The new Dan River facility was in the early stages of construction as of December 31, 2010, but is expected to be in-service in 2012. In addition, the Company continues to evaluate the potential construction of the William States Lee III nuclear power plant in Cherokee County, South Carolina.[66]

Once the major generation fleet modernization projects are complete in 2012, it is projected that the primary focus of the Company's capital expenditure program will be on compliance with the more stringent environmental regulations that are expected over the next decade.

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63 Duke Energy Corp., SEC Form 10-K, February 25, 2011, at 34.

64 *Ibid.*

65 *Ibid.*

66 *Ibid.*

Q. DO CREDIT RATING AGENCIES RECOGNIZE RISKS ASSOCIATED WITH INCREASED CAPITAL EXPENDITURES?

A. Yes, they do. From a credit perspective, the additional pressure on cash flows associated with high levels of capital expenditures exerts corresponding pressure on credit metrics and, therefore, credit ratings. Standard and Poor's has noted several long-term challenges for utilities' financial health including: heavy construction programs to address demand growth; declining capacity margins; and aging infrastructure and regulatory responsiveness to mounting requests for rate increases. S&P further noted that:

> To sustain their current credit quality in the face of these long-lived challenges, utilities need to have established—and be able to maintain—a firm credit foundation. This will require a strong and effective working relationship among management, regulators, and increasingly legislators and governors, in the planning and execution of strategies. A comprehensive vetting and understanding of the risks associated with the regulatory mechanisms under which the utility will recover its investment, which could include a cash return during construction and timely recognition of volatile costs, will be paramount in preserving creditworthiness.[67]

In fact, in its recent report on Duke Energy Carolinas, S&P specifically noted the risks associated with the Company's and Duke Energy's significant capital expenditure plan. Specifically, S&P indicated that "[s]ignificant capital spending to address environmental and growth needs will pressure the parent's financial

[67] Standard & Poor's, "Industry Report Card: Utility Sectors In the Americas Remain Stable, While Challenges Beset European, Australian, and New Zealand Counterparts", *RatingsDirect*, June 27, 2008, at 4.

profile and necessitate complete and timely recovery of expenses to support credit quality."[68] S&P further explained that:

> The capital spending program is large, will necessitate additional debt issuance to fund, and will require regular base rate increases to incorporate the new generation assets into rate base. As a result, ongoing effective management of regulatory risk that produces improving regulatory returns will be very important to support credit quality.[69]

Therefore, to the extent that the Company's current regulatory structure cannot meet the Company's objectives, the Company will face increased recovery risk and thus increased pressure on its credit metrics.

Q. ARE EQUITY INVESTORS ALSO CONCERNED WITH COMPARATIVELY HIGH LEVELS OF CAPITAL EXPENDITURES?

A. Yes, equity investors also recognize the pressure on cash flows associated with relatively high levels of capital expenditures. For example, KeyBanc Capital Markets ("KeyBanc") conducts a quarterly review of the electric utility industry. In a recent report, KeyBanc noted that:

> Although capital markets have improved since early 2009, liquidity and capital costs remain a concern, as costs for credit have generally become more expensive and available durations have shrunk. Higher interest costs will likely continue to pressure earnings until regulatory lag is better addressed. In 2010 we saw a large number of new bond issuances, long-term refinancing, and the terming out of higher cost short-term debt by utilities attempting to take advantage of record low long-term Treasury rates. The compression of stock price valuation multiples in the sector has also negatively impacted the equity financing of capital expenditures, as some names are trading below book value. Credit and liquidity concerns have driven many companies to revisit capital spending plans and reassess operational efficiencies. The

[68] Standard & Poor's, "Duke Energy Carolinas LLC", *RatingsDirect*, January 31, 2011, at 2.

[69] *Ibid*., at 3.

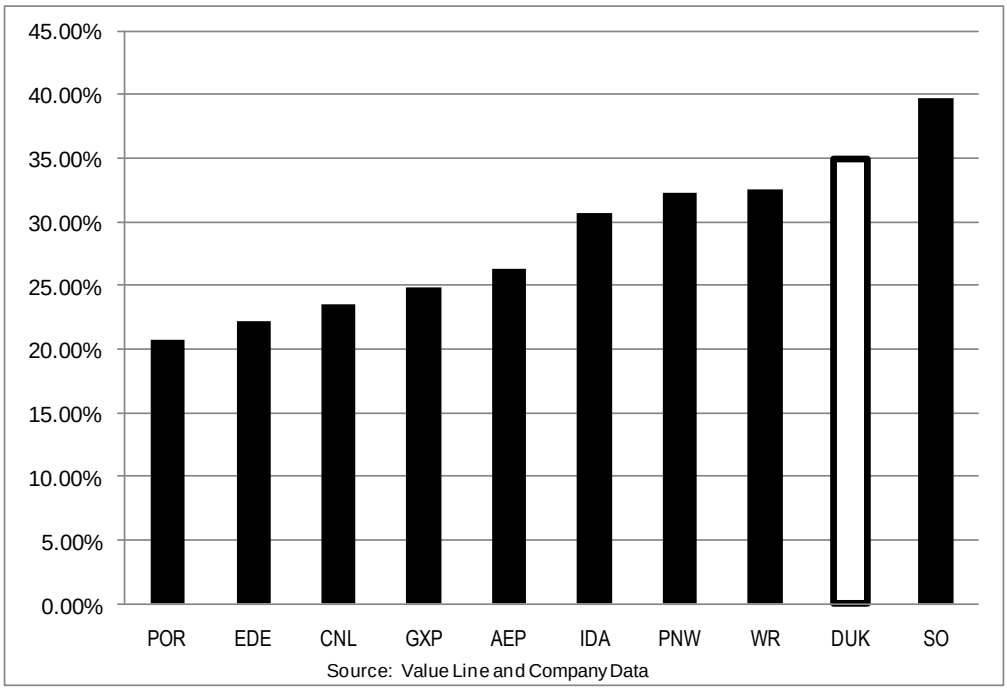
> primary response has generally been to delay projects, as opposed to outright cancellation. Initially, reductions in capital programs were a function of lower growth, which eliminated the need for growth-related capital spending on items such as line extensions and new substations. However, as difficult economic conditions persist, the cuts have grown more extensive, with deferrals in non-core maintenance spending, reevaluating the cost-effectiveness of running older inefficient power plants and pursuing company restructurings or mergers.[70]

Q. HOW DOES THE LEVEL OF THE COMPANY'S EXPECTED CAPITAL EXPENDITURES COMPARE TO THE PROXY GROUP?

A. In order to reasonably make that comparison, as shown in Exhibit No. RBH-5, I calculated the ratio of expected capital expenditures to net assets for each of the companies in the proxy group. For the projected period from 2011-2013, I performed that calculation using the Company's projected capital expenditures over this period as compared to its total net assets as of December 31, 2010. As shown in Chart 5 (*see, also*, Exhibit No. RBH-5), relative to the proxy group, there is only one company, *i.e.*, Southern Company, that has a higher ratio of projected capital expenditures to net plant.

[70] KeyBanc Capital Markets Inc., *Electric Utilities Quarterly 4Q10*, March 2011, at 7.

Chart 5: Comparison of Projected Capital Expenditures



Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE EFFECT OF COMPANY'S CAPITAL SPENDING PLANS ON ITS RISK PROFILE?

A. It is clear that on a relative basis, the Company's capital expenditure program is significant. This program, which is necessary to maintain system reliability, improve environmental performance, and support future growth, could materially dilute the Company's current earnings and cash flows. It also is clear that the financial community recognizes the additional risks associated with substantial capital expenditures and that those risks are reflected in market valuation multiples. In my view, these factors suggest a comparatively high level of risk relative to the proxy group.

D. Flotation Cost Adjustment

Q. WHAT ARE FLOTATION COSTS?

A. Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing, underwriting, and other costs of issuance of common stock.

Q. WHY IS IT IMPORTANT TO RECOGNIZE FLOTATION COSTS IN THE ALLOWED RETURN ON EQUITY?

A. In order to attract and retain new investors, a regulated utility must have the opportunity to earn a return that is both competitive and compensatory. To the extent that a company is denied the opportunity to recover prudently incurred flotation costs, actual returns will fall short of expected (or required) returns, thereby diminishing its ability to attract adequate capital on reasonable terms.

Q. ARE FLOTATION COSTS PART OF THE UTILITY'S INVESTED COSTS OR PART OF THE UTILITY'S EXPENSES?

A. Yes. Flotation costs are part of the invested costs of the utility, which are properly reflected on the balance sheet of the utility under "paid in capital." They are not current expenses, and therefore, are not reflected on the income statement. Rather, like investments in rate base or the issuance costs of long-term debt, flotation costs are incurred over time. As a result, the great majority of a utility's flotation cost is incurred prior to the test year, but remain part of the cost structure that exists during the test year and beyond, and as such, should be recognized for ratemaking purposes. Therefore, this adjustment is appropriate even if no new issuances were planned in the near future because failure to allow such an

adjustment may deny the Company the opportunity to earn its required rate of return in the future.

Q. IS THE NEED TO CONSIDER FLOTATION COSTS ELIMINATED BECAUSE THE COMPANY IS A SUBSIDIARY OF DUKE ENERGY?

A. No. Although the Company is a wholly-owned subsidiary of Duke Energy, it is appropriate to consider flotation costs. Wholly-owned subsidiaries receive equity capital from their parents and provide returns on that capital that roll up to the parent, which is designated to attract and raise capital based upon the returns of those subsidiaries. To deny recovery of issuance costs associated with the capital that is invested in the subsidiaries ultimately will penalize the investors that fund the utility operations and will inhibit the utility's ability to obtain new equity capital at a reasonable cost.

Q. DO THE DCF AND CAPM MODELS ALREADY INCORPORATE INVESTOR EXPECTATIONS OF A RETURN THAT COMPENSATES FOR FLOTATION COSTS?

A. No. All the models used to estimate the appropriate ROE assume no "friction" or transaction costs, as these costs are not reflected in the market price (in the case of the DCF model) or risk premium (in the case of the CAPM). Therefore, it is appropriate to consider flotation costs in determining where within the range of reasonable returns the Company's return should fall.

Q. IS THE NEED FOR A FLOTATION COST ADJUSTMENT RECOGNIZED BY THE ACADEMIC AND FINANCIAL COMMUNITIES?

A. Yes. Several economists have recognized that the flotation cost adjustment is made not to reflect current or future financing costs, but rather to compensate investors for costs incurred for all past issuances comprising the total equity portion of the Company's capitalization. An article in *The Journal of Finance*, for example, observed that:

> Under the conventional approach, in other words, the flotation cost adjustment is not made to reflect current or future financing costs … it is made to compensate investors for costs incurred in preceding stock issues.[71]

The need to reimburse investors for equity issuance costs is justified by the academic and financial communities in the same spirit that investors are reimbursed for the costs of issuing debt. This treatment is consistent with the philosophy of a fair rate of return. According to Dr. Shannon Pratt:

> Flotation costs occur when new issues of stock or debt are sold to the public. The firm usually incurs several kinds of flotation or transaction costs, which reduce the actual proceeds received by the firm. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the firm's required returns on these proceeds equate to a higher return to compensate for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the cash flow to discount, or by incorporating the cost into the cost of capital. Because flotation costs are not typically applied to operating cash flow, one must incorporate them into the cost of capital.[72]

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[71] Patterson, Cleveland S., "Flotation Cost Allowance in Rate of Return Regulation: Comment", *The Journal of Finance*, Vol. XXXVIII, No. 4, September 1983, at 1337.

[72] Pratt, Shannon P. , Cost of Capital Estimation and Applications, Second Edition, at 220-221.

Q. HOW DID YOU CALCULATE THE FLOTATION COST RECOVERY ADJUSTMENT?

A. I modified the DCF calculation to provide a dividend yield that would reimburse investors for issuance costs. My flotation cost adjustment recognizes the costs of issuing equity that were incurred by the proxy group companies in their most recent two common equity issuances. Based on the issuance costs provided in Exhibit No. RBH-6, an adjustment of 0.16 percent (*i.e.*, 16 basis points) reasonably represents flotation costs for the Company.

Q. ARE YOU PROPOSING TO ADJUST YOUR RECOMMENDED ROE BY 16 BASIS POINTS TO REFLECT THE EFFECT OF FLOTATION COSTS ON THE COMPANY'S ROE?

A. No, I am not. Rather, I have considered the effect of flotation costs, in addition to the Company's other business risks, in determining where its ROE falls within the range of results.

IX. CONCLUSIONS AND RECOMMENDATION

Q. WHAT IS YOUR CONCLUSION REGARDING THE ROE AND CAPITAL STRUCTURE FOR THE COMPANY?

A. I believe that a rate of return on common equity in the range of 11.00 percent to 11.75 percent represents the range of equity investors' required rate of return for investment in integrated electric utilities similar to Duke Energy Carolinas in today's capital markets. Within that range, I recommend an ROE of 11.50 percent. My recommended ROE, which is above the midpoint of the range of

results, considers the Company's risk profile relative to the proxy group analytical results with respect to: (1) the level of coal-fired generation owned and operated by the Company and the associated risk of retirement and costly capital improvements due to more stringent environmental regulations; (2) the level of nuclear generation owned by the Company and the impacts that the recent events in Japan may have on the Company's nuclear units going forward; (3) the incremental risks associated with the Company's need to fund substantial capital expenditures; and (4) flotation costs associated with equity issuances. Based on those factors, it is appropriate to establish an ROE that is above the proxy group mean results. As such, a rate of return on common equity of 11.50 percent reasonably represents the return required to invest in a company with a risk profile comparable to Duke Energy Carolinas. Table 8 on the following page summarizes my analytical results.

Table 8: Summary of Analytical Results

Constant Growth DCF Results			
	Low Growth Rate	*Mean Growth Rate*	*High Growth Rate*
Proxy Group Mean			
30-day Average Stock Price	9.21%	10.31%	11.40%
90-day Average Stock Price	9.35%	10.45%	11.54%
180-day Average Stock Price	9.44%	10.54%	11.64%
Proxy Group Median			
30-day Average Stock Price	9.87%	10.41%	11.88%
90-day Average Stock Price	10.02%	10.56%	12.05%
180-day Average Stock Price	10.07%	10.59%	12.14%

Supporting Methodologies ***Ex-Ante CAPM Results***		
	Twelve-month Beta Coefficient	
	Sharpe Ratio Derived Market Risk Premium	*Market Derived Market Risk Premium*
30 Day Average 30 Year Treasury Yield	9.58%	10.34%
Near Term Forecast 30 Year Treasury Yield	10.13%	10.89%
	Average Bloomberg and Value Line Beta Coefficient	
	Sharpe Ratio Derived Market Risk Premium	*Market Derived Market Risk Premium*
30 Day Average 30 Year Treasury Yield	9.67%	10.44%
Near Term Forecast 30 Year Treasury Yield	10.22%	10.99%

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.