BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 080317-EI

IN RE: TAMPA ELECTRIC COMPANY'S
PETITION FOR AN INCREASE IN BASE RATES
AND MISCELLANEOUS SERVICE CHARGES

REBUTTAL TESTIMONY AND EXHIBIT
OF
DR. DONALD A. MURRY, PH.D.
ON BEHALF OF TAMPA ELECTRIC COMPANY

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TABLE OF CONTENTS

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REBUTTAL TESTIMONY

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Q. Please state your name, business address, occupation, and employer.

A. My name is Donald A. Murry. My business address is 5555 North Grand Blvd., Oklahoma City, Oklahoma 73112. I am employed by C. H. Guernsey & Company as a Vice President and Economist.

Q. Did you previously submit direct testimony in this proceeding?

A. Yes.

Q. What is the purpose of your rebuttal testimony?

A. My testimony is rebuttal testimony of the other three witnesses that pre-filed cost of capital testimony in this proceeding, namely Dr. J. Randall Woolridge, Mr. Kevin O'Donnell, and Mr. Tom Herndon. These witnesses

have a common fundamental flaw in their testimony; they did not sufficiently adjust their testimonies for the current financial market turmoil to compensate for the changed and changing costs of common equity. For this reason, I evaluated how the financial market turmoil would have affected their calculations if they had considered it in their testimonies. These witnesses inadequately recognized the market changes, thereby ignoring the *Hope Natural Gas* principle of determining the alternative, competitive cost of investments of similar risk. Additionally, each of these witnesses independently made methodological errors that resulted in recommending a cost of common equity for Tampa Electric in this proceeding that is lower than current, alternative investments.

Q. Have you prepared an exhibit supporting your rebuttal testimony?

A. Yes I have. My Rebuttal Exhibit No.___ (DAM-2) was prepared under my direction and supervision. It consists of the following eight documents:

Document No. 1 Historical Interest Rate Trends

Document No. 2 Annual Yields of Baa-Rated Corporate Bonds, 1983 to Current

Document No. 3	2008 Ibbotson SBBI Valuation Yearbook, Table 7-14: Size Effect within Industries
Document No. 4	2008 Ibbotson SBBI Valuation Yearbook, Chapter 4: CAPM Modified for Firm Size
Document No. 5	Woolridge Electric Proxy Group, Comparison of As-Filed Growth Rates to ValuePro Growth Rates
Document No. 6	Woolridge Electric Proxy Group, Calculation of Discounted Cash Flow Analysis
Document No. 7	Comparison Group of Kevin O'Donnell, Comparison of DCF Results
Document No. 8	Comparable Electric Companies, Updated Summary of Financial Analysis

CURRENT MARKET CONDITIONS

Q. Can you characterize the salient changes to the financial markets that Dr. Woolridge, Mr. O'Donnell, and Mr. Herndon have not adequately recognized?

A. Yes. The recent and ongoing breakdown of the U.S. and global financial markets is of a magnitude unseen since the 1930's. The impacts of the breakdown include: the

meltdown of the housing and mortgage markets; a significant slowdown in economic activity; a significant reduction in stock values - the index of S&P Electric Utilities is down 30 percent since June 30, 2008; a significant increase in the cost of debt for corporations including utilities; unprecedented intervention by the Federal Reserve to increase liquidity in funding markets by hundreds of billions of dollars to stave off financial and economic catastrophe; the complete restructuring of the investment banking industry; an internationally coordinated emergency rate cut by the Federal Reserve on October 8th of 50 basis points to both the federal funds rate and the discount rate and on October 29th, an additional 50 basis point reduction to both the federal funds rate and the discount rate; the nationalization of the cornerstones of the U.S. mortgage market, Fannie Mae and Freddie Mac; the bankruptcy (the largest in history) of Lehman Brothers, a major investment bank; a $700 billion bailout of Wall Street; the seizure or managed liquidation of several of the nation's largest banking institutions; and, the $150 billion bailout of AIG, one of the nation's largest insurance companies.

Q. Can you put the implications of these events into a broad perspective?

A. To put the magnitude of the calamity in perspective, it is unclear, even after the extraordinary historic actions taken by the Federal Reserve and U.S. Treasury, whether such actions will be sufficient to restore confidence in the financial markets and reestablish functional efficiency in the near-term. Regardless, taken together, these changing circumstances all point to current and future stringent credit terms and increases in the cost of debt and common equity. The current and forthcoming markets are, and will be, structurally changed, and undoubtedly, of higher risk for investors than the market environment upon which Dr. Woolridge, Mr. O'Donnell, and Mr. Herndon based their analyses and recommended returns.

Q. You mentioned "extraordinary" actions by the Federal Reserve. To what actions were you referring?

A. I was referring to actions that have occurred this fall, including the following:

- On September 7th, through unprecedented interventions, the federal government effectively nationalized Fannie Mae and Freddie Mac in an attempt to strengthen the housing market and stabilize the financial system.

- On September 14th, the Federal Reserve announced

initiatives to provide financial support and liquidity to the markets by expanding the collateral eligible for the Primary Dealer Credit Facility and the Term Securities Lending Facility.

- On September 16th, the Federal Reserve Board ("FRB") authorized the Federal Reserve Bank of New York to lend up to $85 billion to AIG so it could sell certain parts of its businesses in an orderly fashion with less disruption to the economy. The amount for AIG was later increased an additional $65 billion.

- On September 18th and 19th, the Federal Reserve announced programs to inject hundreds of billions of dollars of liquidity into the financial system to alleviate pressures in the term funding markets.

- On September 21st, the FRB approved applications to allow Goldman Sachs and Morgan Stanley, both investment banks, to become bank holding companies.

- On September 22nd, the FRB announced the approval of a policy statement regarding "investments in banks and bank holding companies, minority interests, and control" for purposes of the Bank Holding Company Act.

- On September 25th, the Federal Deposit Insurance Corporation ("FDIC") seized Washington Mutual Inc. ("WaMu"), the nation's largest savings and loan institution and sold its assets to J.P. Morgan. This was the largest bank seizure in U.S. history.

- On October 6th, the FRB announced it will pay interest on depository institutions' required and excess reserves and announced further substantial increases in the Term Auction Facility auctions. It also announced an exemption to allow limited bank purchases of assets from money market mutual funds.

- On October 8th, the Federal Open Market Committee ("FOMC") announced an emergency reduction in the federal funds rate of 50 basis points to 1.5 percent coordinated with other central banks. The Board of Governors approved a cut of 50 basis points in the discount rate to 1.75 percent. It was the first time in history that the FOMC coordinated a rate cut with other central banks.

- On October 29th, the FOMC lowered the federal funds rate an additional 50 basis points to 1.0 percent, and the Board of Governors lowered the discount rate an

additional 50 basis points to 1.25 percent.

- On November 25th, the FRB announced approval for American Express Company and American Express Travel Related Services Company, Inc. to become bank holding companies.

- On November 23rd, the U.S. Treasury, the Federal Reserve, and the FDIC issued a joint statement announcing an agreement to provide Citigroup with protection against unusually large losses on $306 billion of loans and securities backed by residential and commercial real estate and other such assets.

- On November 25th, the FRB announced the creation of the Term Asset-Backed Securities Loan Facility under which the Federal Reserve Bank of New York will lend up to $200 billion to facilitate the issuance of asset-backed securities collateralized by student loans, auto loans, credit card loans, and loan guarantees by the Small Business Administration.

- Most recently, on November 26th, the FRB announced approval for Bank of America to acquire Merrill Lynch & Company.

Q. How have these efforts by the federal government affected the financial markets to date?

A. So far, the consequences have shown up primarily in the stabilization of the financial system (i.e. avoidance of complete collapse), and in providing more liquidity to the banking system and in lower costs for short-term investment vehicles and Treasury securities. A "flight-to-quality" has lowered the yields on Treasury securities to historically low levels. For example, the yields on Treasury bills currently are below one-half of one percent (on December 9th the Treasury sold $30 billion of 4-week bills at zero percent interest for the first time ever) and the yield on the 30-year Treasury is 3.06 percent. Unfortunately, access to credit remains difficult for many borrowers and long-term corporate rates have skyrocketed. The average yield on BBB corporate bonds for the week ending November 21st was 9.25 percent.

Q. In your opinion, what is the significance of these events to this proceeding?

A. Initially, and in the near term, the credit problems exacerbate capital formation, access to capital, and add

to the operating costs of utilities. For example, several major electric utilities have announced they are drawing down on lines of credit to have more cash on hand because of "uncertain market conditions". However, for determining the cost of common equity in this proceeding, the significant events and extraordinary actions undertaken by the federal government underscore the increase in risk to participants in the capital markets. In just a few weeks, utilities' access to capital has become a significant risk from the standpoint of utility investors. These events and actions highlight the increased risk to investors and demonstrate that the cost of permanent capital has risen. In an October 30, 2008 utility industry report, Sanford C. Bernstein & Co. analyst Hugh Wynne stated,

> While the industry is hungry for cash, the costs of new debt issuance have increased markedly this year and spiked in the past month – potentially putting pressure on earnings until these higher capital costs can be recovered in future rate cases.[1]

Q. Can you explain further the relationship between the consequences of the government effort to increase liquidity in the short-term market and the cost of capital to utilities?

[1] Hugh Wynne, "U.S. Utilities: Which Utilities Will Be Most Adversely Affected by the Credit Crisis," Sanford C. Bernstein & Co., LLC, October 30, 2008.

A. Long-term corporate bond rates, which are the competitive securities for utility bonds and common stock, have risen despite a drop in treasury yields. I have illustrated the recent changes between short-term and the long-term security costs in Document No. 1 of my rebuttal exhibit. This schedule clearly shows the changed relationship between long-term and short-term rates. As the graph in my schedule also shows, the spread between corporate bonds and 30-year U.S. Treasuries has approximately tripled since the beginning of the year.

Q. Although the cost of short-term debt has declined because of federal action, how has that affected the cost of permanent capital for electric utilities?

A. The decline in the cost of short-term debt has had no direct impact on electric utilities' cost of permanent capital. Instead, recent debt offerings by electric utilities reflect the higher capital costs of long-term securities. For example, on October 20th, Illinois Power issued $400 million of 9.75 percent 10-year secured debt securities rated Baa3 by Moody's and BBB by Standard & Poor's. On October 16th, Pacific Gas and Electric offered $600 million of 8.25 percent senior notes, due October 15, 2018, rated A3 by Moody's and BBB+ by Standard &

Poor's. On October 15th, Ohio Edison Co. issued $275 million of 8.25 percent first mortgage bonds due October 15, 2038, rated BBB+ by Standard & Poor's and Baa1 by Moody's. On October 14th and 15th, PPL Electric Utilities Corp. entered into underwriting agreements with a consortium of banks for the sale of $400 million of 7.125 percent senior secured bonds, due 2013 and rated A- by Standard & Poor's and A3 by Moody's. Corporate industrial bonds, rated BBB, are trading well over 9.00 percent. These capital costs are significantly higher than issues in previous months. Although these increased capital costs are obvious market signals, none of the testimonies that I am rebutting took them into account. The cost of these utility issues is consistent with the sharp increase in corporate bond rates illustrated previously in Document No. 1 of my rebuttal exhibit.

Q. Did you put the current corporate bond rates into a historical prospective of interest rates?

A. Yes, as I have illustrated in Document No. 2 of my rebuttal exhibit, the current corporate bond rates have returned to the levels that they were in the 1989-90 period.

Q. How are the bond market rates relevant to the cost of capital of Tampa Electric?

A. The interest rates of the BBB-rated, higher-cost bonds are relevant to the determination of the cost of equity in this proceeding; Tampa Electric carries a Standard & Poor's bond rating of BBB-, which is the bottom of the investment grade range. Consequently, there is little room for error regarding Tampa Electric's allowed return on common equity and the resulting coverage ratios and financial metrics.

Q. What is the relationship between this cost of recent debt issues and the cost of utilities' common stock?

A. Common stock is of higher risk and higher cost than debt instruments, which have contractual interest payments and repayment of principal. A premium return over the cost of a utility's debt is a measure of the cost of a utility's common stock. The rising cost of debt puts upward pressure on the cost of equities and reveals higher equity costs.

Q. How will the market turmoil affect the common stock equity investors of electric utilities?

A. The financial market turmoil and credit risks are significant uncertainties that raise the perceived risks to utility common stock investors. Notably, this increase in risk is behind the sharp decline in utility common equity prices and equity prices in general. Of course, these perceived investor risks come through the well-documented uncertainties in the financial markets, and this raises the cost of common equity. Additionally, the market events have created uncertainties in utility operations, which also increase the risks to equity investors. For example, early in the market turmoil, spreads required by counterparties in the commodity markets increased, raising utilities' transaction costs. To equity investors, this is a risk of timely cost recovery. Entergy Services, Inc., for example, recognized this business risk in a policy announced on October 15th, as follows:

> In light of the current financial crisis, the potential effects on the overall economy, and the resulting uncertainty in our business and the related markets, all of which factors are likely to affect System resource needs and the evaluation of long-term resource acquisitions, Entergy Services Inc. … is terminating all long-term resource procurements efforts at this time.[2]

[2] "Entergy halts buying long-term resources citing financial and economic uncertainty." http://www.snl.com, October 16, 2008.

Together, the market uncertainties and operational implications increase equity investor risks, and this, in turn, increases the cost of attracting and maintaining investment in utility common equity.

Q. Do you expect longer-term consequences to the electric utility industry from the recent market turmoil?

A. Yes. The utility sector is the third largest issuer of debt behind governments and the finance industry. One indicator that regulated utilities may be having difficulty in raising permanent capital in the current markets is the drop in the volume of utility bond issuances. The volume has dropped by half, down from $20.1 billion in the second quarter of 2008 to $9.66 billion in the third quarter of 2008. The electric utility industry must raise capital to meet its service obligations. In a recent report by the NextGen Energy Council, dated September, 2008, and titled "Lights Out in 2009?" the authors noted, "…unless immediate and substantial investments are made in baseload generation and transmission systems, the reliability of the country's electrical system will be in jeopardy."[3] Additionally, electric utilities face increasing renewable and environmental compliance standards.

[3] *Lights Out in 2009?* NextGen Energy Council, Management Information Systems, Inc., September 2008, Page 6.

Without an adequate allowed return that covers the serious risks facing a utility such as Tampa Electric and its investors, market conditions could undermine the company's ability to finance its public service obligations at reasonable terms during a period of essential infrastructure expansion.

Q. Can you determine when investors' perceptions of risk will permit the price of utility common stock to return to levels that are closer to historical levels?

A. No. I think that the international financial markets and economies are currently unsettled, and it is too soon to predict future investor perceptions with any reliability. Many factors are still very significant market influencers. The level of confidence of borrowers and lenders is still not sufficient to increase trade, and all signs indicate that major world economies are in a recession. The outcomes of the federal programs to inject capital into banks or to backstop securities backed by non-performing mortgages and strengthen the balance sheets of the financial institutions are still uncertain. The internationalization of the financial crises may stifle foreign, as well as expatriate, capital from returning to the U. S. capital markets. These many

indeterminate factors affect equity investors' perceptions of risk, and this inevitably raises the cost of capital.

IMPLICATIONS OF CURRENT MARKET CONDITIONS

Q. You stated that Dr. Woolridge, Mr. O'Donnell, and Mr. Herndon each missed the obvious signs that their recommended allowed returns were inadequate in the current market circumstances. Can you explain what you meant by that statement?

A. The most obvious market signal that Dr. Woolridge's, Mr. O'Donnell's and Mr. Herndon's recommended allowed returns were inconsistent with current market conditions is the recent cost of long-term utility debt. As I stated previously, the coupon rates of recent electric utility bond issues generally have been approximately nine percent or more. Although the recent markets have been volatile, which makes a direct measure of the cost of common equity of utilities more difficult than in normal markets, the cost of these industrial and utility debt issues is a very reliable estimate of the cost of permanent utility capital. Surprisingly, none of these three cost of capital witnesses reported this fundamental, critical current market information. They

apparently ignored it.

Q. Why was the cost of these multiple utility bond issues important to Dr. Woolridge, Mr. O'Donnell, and Mr. Herndon?

A. The cost of these debt issues are reliable market estimates of the cost of permanent utility capital. Because common equity is relatively more risky than debt instruments, the cost of Tampa Electric's common equity must be somewhat greater than these debt costs. By ignoring this current market information, each of these witnesses' recommended allowed returns were either less than the cost of debt, as in Mr. Herndon's case, or illogically, similar to the cost of debt, as in the cases of Dr. Woolridge and Mr. O'Donnell. These recommendations are so low that they do not pass the first test of the *Hope* and *Bluefield* standard of setting a return "commensurate with returns on investments in other enterprises having corresponding risks".

REBUTTAL OF DR. J. RANDALL WOOLRIDGE

Q. You stated that Dr. Woolridge did not adequately address the changed market circumstances. Can you explain this statement?

A. Dr. Woolridge prepared direct testimony that did not adequately consider the consequences of the changed financial and economic circumstances of the financial market meltdown and the worldwide economic crises. In fact, significant portions of Dr. Woolridge's testimony are virtually verbatim from previous rate cases in other states. This only further indicates that he has not made any special effort to address specific issues in this docket.

Q. How do you know that Dr. Woolridge did not adequately consider the consequences of the changed financial and economic circumstances?

A. Although he dated his testimony November 26, 2008, the data that he used in his analysis primarily predate the recent economic turmoil. Updated data greatly alter the perspective, and I presume the conclusions, of his analysis.

Q. Can you provide any specific instances where Dr. Woolridge used data that predated the economic turmoil that might have altered the perspective of his analysis?

A. Without having access to his work papers, I cannot

identify the data that he used at every stage of his analysis. However, from the data and statements provided in his testimony, I can identify a number of significant instances when he relied on data that predate the economic turmoil. For example, at page 6, lines 11-12, he stated, "Long-term capital cost rates for U. S. corporations are currently at their lowest level in more than four decades." This is a major predicate throughout his testimony, and it is factually, remarkably wrong. As noted previously, the recent long-term bond rates have returned to levels where they were nearly two decades ago. Although he discussed risk premiums of common stock returns and government bond rates extensively, at no place in Dr. Woolridge's testimony did he review or consider the current utility market bond rates or current risk premiums. At several points in his testimony, the statements clearly represent an earlier period and are not relevant in this case.

Q. Can you be more specific regarding some of the instances when Dr. Woolridge's statements indicate that he used information that is no longer relevant to this proceeding?

A. At several places in his testimony, his statements reveal

clearly that they do not reflect current market conditions. For example, at page 53, lines 18-19, he stated, "First as discussed above, current capital costs are low by historical standards, with interest rates at a cyclical low not seen since the 1960s." This is incredibly wrong and misleading in several ways. First, industrial and corporate interest rates are not "low by historical standards." Instead of being low, they have substantially increased. Second, calling the current liquidity crisis "cyclical" implies that it is a segment of a predictable trend. This is a grossly inadequate description of the unexpected, historic current market conditions. Third, despite extensive federal government efforts to provide liquidity to the credit markets, many corporations have found capital access very difficult and expensive.

In yet another instance, at page 50, lines 14-16, when discussing a nine-year old study, he stated, "One implication of this development was that stock prices had increased higher than would be suggested by the historical relationship between valuation levels and interest rates." This is an incredible statement in light of the approximately 40 percent decline in common stock values over the past year; this statement is

clearly from an earlier era. Similarly, he quoted a six-year old McKinsey & Company study that applied to a much earlier, no longer relevant, economic period. He quoted from that study as follows:

> We attribute this decline [in equity risk premiums] not to equities becoming less risky (*the inflation-adjusted cost of equity has not changed*) but to investors demanding higher returns in real terms on government bonds after the inflation shocks of the late 1970s and early 1980s. [Emphasis added.]

The conclusions in this citation, which obviously predates the 40 percent decline in common equity values over the past year, have no relevance to the common equities market of the past year. Dr. Woolridge has no analytical basis for using these outdated risk premiums to current Treasury rates as a current measure of the cost of common equity. From the start, his methodology has technical flaws.

Q. Can you be more specific regarding Dr. Woolridge's use of virtually verbatim text from previous rate cases that would indicate he has not sufficiently considered current market conditions in this docket?

A. Yes. In previous testimonies, Dr. Woolridge has used virtually verbatim text regarding "Capital Costs in Today's Markets," analysis of "Market-to-Book Ratios," "Economic Factors that have Affected the Cost of Equity for Public Utilities," and "Equity Risk Premiums."[4] He filed these testimonies in October of 2006 and March of 2007. Obviously, market conditions have changed considerably since those dates. Dr. Woolridge's use of virtually verbatim analyses from earlier cases in regards to important issues in the determination of the current cost of equity for Tampa Electric is insufficient. He has not adequately incorporated the impacts of the extraordinary current market conditions into his analysis.

Q. Do you have any criticism of Dr. Woolridge's selection of his Electric Proxy Group as defined by his own selection criteria?

A. Yes. Based on Dr. Woolridge's own selection criteria, he appeared to exclude four companies that he should have included and included one company that he should have excluded. He apparently erroneously left out Allegheny Energy, Portland General Electric Company, Sierra Pacific Resources, and Westar Energy, and selected Ameren.

[4] For example, see "Application of Public Service Company of Oklahoma Corporation for an Adjustment in its Rates and Charges for Electric Service, Cause No. 200600285, filed March 2007, and Railroad Commission of Texas, Docket No. 9670, October 2006.

Q. Why should he have included Allegheny Energy?

A. Allegheny Energy appears to fit Dr. Woolridge's selection criteria. According to his source, AUS Utility Reports: *The Investor's Edge*, Allegheny Energy has electric revenues of $3.5 billion, and its regulated electric revenues are 78 percent of operating revenues. Its Standard & Poor's bond rating is BBB+ and Moody's bond rating is Baa2.

Q. Does Portland General Electric Company fit Dr. Woolridge's selection criteria?

A. Yes. According to his source, AUS Utility Reports, Portland General has revenues of $1.8 billion of which 98 percent come from regulated electric utility operations. Both Moody's and Standard & Poor's rate its bonds as investment grade.

Q. How does Sierra Pacific Resources fit his criteria?

A. Sierra Pacific has operating revenues of $3.5 billion of which 94 percent come from regulated electric utility operations. According to AUS, Standard & Poor's rates its bonds BBB and Moody's rates them Baa3. I examined

the corporate credit ratings of Sierra Pacific, now NV Energy. Both Moody's and Standard & Poor's rate it less than investment grade.

Q. Did Dr. Woolridge overlook Westar Energy?

A. Yes. He apparently excluded it because his source, AUS Utility Reports, incorrectly identified the ratio of regulated electric utility revenues of total revenues as 64 percent. Upon inspection of the latest Westar 10-Q, I measured it to be 89 percent.

Q. Why do you say that Dr. Woolridge should have excluded Ameren?

A. While AUS listed Ameren's bond rating as BBB (which is incorrect), Ameren's senior unsecured debt is BB+, below investment grade. Likewise, Moody's lists each of Ameren's regulated utility subsidiaries, Central Illinois Light Company, Central Illinois Public Service Company, and Illinois Power Company, at Ba1, or below investment grade. This appears to be in violation of Dr. Woolridge's standard, at page 11, lines 3 and 4 of his direct testimony. He stated that his proxy group must have, "… an investment grade bond rating by Moody's *and*

Standard & Poor's."

Q. Do you agree with Dr. Woolridge's recommendation for use of an average historical capital structure?

A. No. Rather than using the capital structure expected to be in place during the period rates set in this proceeding, Dr. Woolridge is recommending the average capital structure from the years 2007 and 2008 (Woolridge, pg.12, line 19). Dr. Woolridge gives four reasons why the average of the 2007 and 2008 capital structures should be used:

> 1.)much more accurately reflects how the Company has been financed in the past; 2)much more closely reflects the capitalizations of electric utility companies; 3)does not include a number of uncertain adjustments and equity injections, and; 4)much more reflects the company's capital structure as viewed by investors (Woolridge, Pg.13, line 5).

However, upon close examination, Dr. Woolridge's reasoning is without merit.

Q. How is Dr. Woolridge's reasoning regarding the proper capital structure without merit?

A. First, what is important is how the Company will finance the rate base during the period when rates will be in effect, and not how it financed the rate base in the past. Second, the Company's proposed capital structure is reasonable both in relation to other electric utility companies and in light of the increased risks associated with the global financial crises. The equity ratios for the proxy groups of electric utilities for 2007 and 2008 range up to 60.7 percent for Dr. Woolridge's proxy group and up to 55.6 percent for my proxy group, indicating the Company's proposed equity ratio falls within the range of both proxy groups.

Q. Does the literature for regulatory finance support your position?

A. Yes. In a report on capital structure prepared by the Public Utility Research Center ("PURC") at the University of Florida for the Commission, Brigham, Gapenski, and Aberwald concluded:

> Our major conclusion is that capital structure decisions, within the range over which most utilities operate, have negligible effects on revenue requirements. Operating decisions, on the other hand, can and do have major effects.

> Therefore, capital structure decisions should be focused on insuring that financial constraints do not hinder operations.[5]

Therefore, as described in the PURC report, it is important that capital structure constraints do not hinder financial flexibility. This is especially important during times of both financial market stress and access to capital constraints as is being currently experienced. Consequently, Dr. Woolridge's recommendation regarding the Company's proposed capital structure lacks merit, is ill advised, and should be rejected.

Q. In addition to Dr. Woolridge's use of outdated information because of the changing market circumstances, do you have any more technical concerns with his pre-filed testimony?

A. Yes, I do. Among these concerns are his use of geometric rather than arithmetic averages to represent expected returns, his miscomprehension of the importance of the size adjustment in a CAPM analysis, his misrepresentation of the market growth rates, and internally inconsistent, contradictory positions regarding market volatility and

[5] Brigham, Gapenski, and Aberwald, "*Effects of Capital Structure on Utilities' Costs of Capital and Revenue Requirements,* Public Utility Research Center, University of Florida, 1986.

risk. He also incorrectly interpreted several aspects of my testimony.

Q. What is wrong with using geometric means when calculating risk premiums, as Dr. Woolridge did in his testimony?

A. Although geometric means are appropriate growth measures when determining the necessary rate of growth from one level to another, Dr. Woolridge is wrong to use it to represent investor expectations. The arithmetic average is the unbiased measure of the expected value of repeated observations of a random variable: this is similar to the investors' expectations of future returns. In other words, an arithmetic average is an approximation of the probability distribution of return expectations of investors. However, the geometric average is the single constant rate measuring the difference in the actual returns over a period of time. This is obviously not the same thing as the returns that investors would expect when evaluating a prospective investment. Consequently, because he averaged these biased geometric mean estimates into his risk premium calculations, his entire risk premium analysis is biased and not useful for determining the cost of capital of a utility for purposes of ratemaking. In the same vein, at page 76, lines 13 to

15, he incorrectly criticized my use of the arithmetic mean in my CAPM analysis for precisely the same reason.

Q. Was Dr. Woolridge correct when he stated that a size adjustment was inappropriate for a CAPM analysis?

A. No. In fact, I was surprised that he would make this assertion after my explanation in my direct testimony, at page 55, line 11 to page 58, line 12, and additionally, my citation of some of the extensive literature regarding the empirical findings of a size bias in the CAPM. In light of the more recent findings regarding CAPM size bias, I was also surprised that Dr. Woolridge would cite Annie Wong's 1993 article from the *Midwest Journal of Finance*. She reported in this article that she failed to find a size bias in utilities. Document No. 3 of my rebuttal exhibit shows a table from Ibbotson verifying that more recent, reputable empirical studies show that smaller utilities generally earn returns on the order of 3.02 percent higher than larger utilities. These higher returns reflect the higher risk associated with smaller firms relative to larger firms. As I stated in my direct testimony, I applied the size adjustment as estimated by and in a manner consistent with, Ibbotson's recommendation for a CAPM analysis of an electric utility

to compensate for the bias inherent in this method. As an illustration that this CAPM size adjustment applies to calculations of cost of equity of regulated utilities, I have included, as Document No. 4 of my rebuttal exhibit, the example calculation from Ibbotson's extensive empirical work showing how to apply the size adjustment in a CAPM calculation for an electric utility. As I stated in my direct testimony, this is the size adjustment method that I followed.

Q. Dr. Woolridge claimed that you adjusted your cost of capital recommendation for flotation and market pressure. Is this correct?

A. No. In fact, at page 29, line 21, and page 30, line 22, I specifically stated that I did not apply these adjustments in my analysis. Dr. Woolridge apparently took my testimony out of context. In my direct testimony, I pointed out the importance of understanding the theoretical basis of the DCF methodology and noted that it produces a marginal cost of capital estimate. That is, it produces a marginal cost rather than an average estimate of the cost of capital. This becomes critically important when applying the DCF in a situation such as determining the cost of capital for setting

future utility rates. In my testimony, I noted that many analysts commonly apply such factors as flotation and market pressure adjustments in a real word situation to compensate, at least in part, for the marginal cost nature of the DCF. I did not apply such factors in my analysis, as I explained in my direct testimony; however, I took into account the theoretical, marginal cost basis of the DCF methodology.

Q. What is wrong with the growth rates Dr. Woolridge used in his DCF model?

A. His growth rate value of 4.5 percent for his comparable companies in Exhibit JRW-10, page 1 of 6, is low, especially when compared to other growth rates available to him for these companies. In fact, the growth rates that he used in his DCF are lower than the growth rates posted for the same companies on a website for which Dr. Woolridge identifies that he is the managing director, www.valuepro.net.[6]

Q. How do the growth rates reported in the website, www.valuepro.net, compare to the growth rates for Dr. Woolridge's comparable companies?

A. As illustrated in Document No. 5 of my rebuttal exhibit,

[6] Dr. Woolridge states in Appendix A of his direct testimony that he is "a founder and a managing director of www.valuepro.net - stock valnation [sic] website."

the growth rates of nine of his thirteen comparable companies, as posted on this website, are higher than the growth rates that Dr. Woolridge used in his DCF analysis of these companies. Specifically, as my rebuttal exhibit document shows, the growth rates that he used in his DCF analysis average 4.5 percent. By comparison, the www.valuepro.net website, for which Dr. Woolridge is the managing director, reports average earnings growth rates for these same companies of 6.4 percent.

Q. Did you analyze how the growth rates in Dr. Woolridge's website, www.valuepro.net, would change his DCF calculation if he had used them instead of the ones that he used in his direct testimony?

A. Yes. I took the current dividend yields he filed in Exhibit JRW-10, page 2 of 6, and combined them with the www.valuepro.net growth rates. By only changing the growth rates, his DCF common stock equity results, as shown in Document No. 6 of my rebuttal exhibit, would have been 11.9 percent.

Q. How did he change his growth rate calculation methodology?

A. In previous cases (Texas Railroad Commission, Docket No. 9670, Kentucky PSC Case No. 2006-00464, and OCC Cause No. 200600285), Dr. Woolridge selected YAHOO! FirstCall, Reuters, and Zack's as the sources for his "Analysts Projected EPS Growth Rate Estimates". In this case, he used only Zack's and chose Bloomberg instead of the other two. In addition, Dr. Woolridge left out the calculation of a mean average growth as he did in previous cases. If he had done that calculation in this case, his average growth would be higher. The average for Zacks is 6.93 percent, and the average for Bloomberg is 9.48 percent; both are significantly higher than the 6.13 percent he reported on Exhibit JRW-10, page 5 of 6.

Q. Please explain what you meant when you said Dr. Woolridge's analysis of market volatility and risk premiums was internally inconsistent and contradictory.

A. On page 9, line 10 of his testimony, Dr. Woolridge states, "To assess the impact of recent market volatility on the equity risk premium and the equity cost rate, one must look to the volatility of stocks relative to bonds." Dr. Woolridge then presents a study he conducted that concludes, "Current market conditions suggest that stock volatility is high relative to bonds." (Woolridge, pg.

10, line 9) However, in various other places in his testimony, he contradicts this conclusion regarding common stock volatility and states that risk premiums have narrowed, and capital costs have declined. For example, on Page 9, line 1 of his testimony, Dr. Woolridge says, "In sum, the relatively low interest rates in today's market as well as the lower risk premiums required by investors indicate that capital costs for U.S. companies are the lowest in decades." In a similar vein, on page 48, line 1, Dr. Woolridge states, "As discussed above in the development of the expected market return, stock prices are relatively high at the present time in relation to earnings and dividends, and interest rates are relatively low." In this statement, Dr. Woolridge has the current relationship between common equity values, which have declined considerably, and debt costs, which have increased sharply, exactly backwards.

Q. How do Dr. Woolridge's misperceptions of current market conditions appear to affect his conclusions?

A. Dr. Woolridge's risk premium and CAPM analysis, and consequently, his resulting conclusions, are out of touch with current market realities. First, as cited previously, interest rates for corporations, including

utilities, have risen substantially. Second, stock prices have fallen dramatically, indicating that the cost of capital for the market, in general, and for utilities, in particular, has increased, not decreased. Third, Dr. Woolridge stated that he determined in his own study that the volatility of stocks has increased relative to bonds; this indicates a higher risk premium for stocks relative to bonds. Finally, comparing Dr. Woolridge's expected market return of 8.90 percent (Woolridge, pg.47, line 16) to the current yield on 30-year Treasury bonds (3.06 percent as of 12/4/08), which is Dr. Woolridge's usual practice, (Woolridge, pg. 49, line 8) indicates a risk premium well above the 4.56 percent risk premium used in his CAPM analysis. Consequently, Dr. Woolridge's CAPM analysis is unsound, does not reflect current market conditions, and should be ignored for the purpose of setting the required return on equity in this docket.

REBUTTAL OF MR. KEVIN O'DONNELL

Q. What issues in Florida Retail Federation Witness Kevin O'Donnell's testimony do you wish to rebut?

A. Mr. O'Donnell's DCF analysis contains several serious, mechanical flaws. In addition, he incorrectly implies that actual allowed returns are valid estimates of

current costs of capital.

Q. Do you have any comments regarding Mr. O'Donnell's Discounted Cash Flow analysis?

A. Yes. Although in some critical methodological areas Mr. O'Donnell and I agree, I believe that his analytical missteps have affected his analysis. For example, he correctly relies primarily on financial analysts' forecasts as representative of the information considered by potential investors and as the growth rates in his DCF analysis. Furthermore, although Mr. O'Donnell has considered the recent precipitous drop in values of common stock, he nevertheless has placed too much emphasis on historical financial performance. He has also used a methodologically flawed "plowback" method for estimating growth rates. These misspecifications of his DCF methodology are probably the reason that he misinterpreted my comments concerning use of the DCF.

Q. Why should Mr. O'Donnell have placed less emphasis on historical growth rates in his DCF model?

A. Schedule KWO-2 shows that many of the historical growth rates used by Mr. O'Donnell in his DCF analysis are

either equal to zero or negative. The average of the "Historical Growth Rate" in that schedule is "-6.7%." These growth rates cannot represent the comparative cost of capital of a healthy, comparable electric utility, which should be the standard for determining the prospective, future cost of capital of Tampa Electric. Comparing the negative historical average growth rates to the forecasted growth rate of +7.3 percent, in his schedule KWO-2, shows how misleading using the historical growth rates can be relative to the returns that investors actually expect.

Q. What is wrong with the "plowback" method for calculating the growth rate used by Mr. O'Donnell?

A. The projected plowback method used by Mr. O'Donnell illogically requires him to estimate the future returns on equity of his comparable companies in order to calculate a growth rate of earnings, which in turn, he uses to estimate future returns for his comparable companies. With this circularity, the plowback method cannot be a serious estimate of investors' earnings growth expectations. It is little more than an incomplete exercise in arithmetic. Additionally, Mr. O'Donnell neglected to include growth from external

financing through the issuance of new equity. So, in addition to using a flawed method, he understated investors' expectations of returns.

Q. Did you perform a DCF calculation using the source data that both you and Mr. O'Donnell consider relevant?

A. Yes. I used the current dividend yields and both the Value Line EPS growth rates and the Schwab Forecasted growth rates from Mr. O'Donnell's Schedule KWO-1 to calculate a DCF cost of common equity that should have been available to him. I have shown these calculations in Document No. 7 of my rebuttal exhibit. As that schedule illustrates, the average current yield for Mr. O'Donnell's comparable group is 5.4 percent. The average Value Line EPS growth rate is 5.6 percent, and the average Schwab forecasted growth rate is 7.4 percent. The recalculation of Mr. O'Donnell's DCF estimate, using a market yield and these two growth rates from his Schedule KWO-1, produces a result ranging from 11.0 to 12.8 percent for his comparable group. Notably, the midpoint of these calculations is 11.9 percent.

Q. You stated that because of his misspecifications of the DCF, Mr. O'Donnell misrepresented some of your comments

about the DCF methodology. Is that correct?

A. Yes. At page 35, lines 7 to 17, Mr. O'Donnell commented on my reference to many analysts applying a cushion to calculated DCF results because it produces a marginal cost measure of the cost of capital. By definition, a marginal cost measure of the cost of capital will not be sufficient to attract capital much of the time. Only an average cost of capital would provide a reasonable assurance. I explained in my direct testimony that many analysts apply specific adjustments to account for the marginal cost measure of the DCF. Consequently, Mr. O'Donnell's comments about "cushions" in the market place and for school boards, local governments, and retailers are not only analytically wrong, but also border on being silly.

Q. How did Mr. O'Donnell incorrectly apply authorized returns in his analysis?

A. At page 21, he presented a table of authorized returns on common equity. These decisions cover the period from June 15, 2007 to July 23, 2008. Of course, the data used in these decisions all predate the decisions themselves by a number of months. Consequently, these decisions

cannot represent current market conditions, and they are not relevant to this proceeding.

REBUTTAL OF MR. TOM HERNDON

Q. You stated that Mr. Herndon did not recognize current market conditions in recommending his allowed return for Tampa Electric in this proceeding. Can you explain that statement?

A. Mr. Herndon recommended an allowed return of 7.50 percent for Tampa Electric, which is less than the current cost of utility debt. This non-market recommended allowed return is so low relative to the costs of competitive, alternative investments in current markets that it has no value in this proceeding. It fails to meet the most basic economic principles as expressed in the regulatory standards set out in the U.S. Supreme Court's *Hope* and *Bluefield* cases. As I explained earlier and in my direct testimony, from page 9, line 18 to page 10 line 6, the *Hope* and *Bluefield* decisions specified that an allowed return should be equal to returns on alternative investments in companies of equivalent risk.

Q. Can you understand from his testimony why Mr. Herndon would recommend an allowed return on common equity for

Tampa Electric that is so much below current market costs?

A. No, I cannot. I can determine that he is factually wrong regarding his assumption about current cost of corporate debt and the level of interest rates. For example, from page 6, line 23 to page 7, line 1, he stated, "…interest rates are at an all time low and no sign of increases are in sight." As I discussed earlier, the current market facts directly contradict this statement. Furthermore, as I stated, a number of utilities have reported credit difficulties contrary to his statement that "…raising debt and equity capital should not be overly problematical" (Page 8, lines 15-16). Another instance when Mr. Herndon indicated that he ignored the current cost of corporate debt and equity appears on page 15, lines 10-18 of his direct testimony. He illogically used the current 30-year bond rate as a basis to justify his recommended allowed return of 7.5 percent for the higher risk common stock equity of Tampa Electric.[7] Additionally, I believe that Mr. Herndon may have misinterpreted the nature of the return on common stock equity for Tampa Electric in this proceeding, and this could account for why he recommended a return that was even less than current debt costs.

[7] "Direct Testimony of Tom Herndon, page 15, lines 11 through 18.

Q. How did Mr. Herndon misinterpret the nature of the return on common stock equity?

A. At page 14, lines 18 to 22, he stated,

> The reason that I believe that a fair rate of return would use 7.5% as the midpoint is that for investors to reach the 8+% target requires a considerable equity allocation - typically over 60% of the portfolio would have to be invested in equities.

This is revealing at several levels. First, a return on a mixed portfolio of debt and equity investments is not a relevant standard for setting an allowed return on common equity for a utility in ratemaking. Mr. Herndon appears to accept a 7.5 percent return as reasonable for a mixed portfolio, but this is not a reasonable return for the high-risk common equity component of that portfolio. Second, he also recognizes that in order to achieve that return in current markets, a major portion of that portfolio must be invested in equities earning a higher return than the average return for the portfolio. Stated differently, Mr. Herndon is admitting that a 7.5 percent return on common equity is lower than the expected common equity return in the portfolio. Portfolio returns are not appropriate for estimating the cost of common equity

of a utility and is supported by neither regulatory precedent, nor financial theory. For these reasons alone, Mr. Herndon's recommended allowed return on common equity for Tampa Electric must be disregarded.

Q. Did Mr. Herndon assume other factors affecting Tampa Electric's cost of common stock that you believe might have caused him to reach such a low return?

A. Yes. I believe that his discussion of the risks to Tampa Electric on pages 9 to 13 is very misleading. It does not accurately represent the risks of an electric utility, in general, and Tampa Electric, in particular. For example, virtually all electric utilities have adjustment clauses for the recovery of some costs. These clauses do not set Tampa Electric apart from other utilities considered by investors. While adjustment clauses are common and essential for utilities operating in a volatile market environment, they do not remove all of the risks of revenue recovery.

Q. Do the testimonies of Dr. Woolridge, Mr. O'Donnell and Mr. Herndon cause you to recede from your recommended allowed return on equity of 12.0 percent for Tampa Electric?

A. Not in the least. In fact, current market conditions, overlooked by these witnesses, further bolster the case for the equity return I have recommended. The market-based calculations have generally increased since I made my recommendation, because of the rising costs of capital to private corporations. Some of these increases were very significant. I have illustrated these changes in Document No. 8 of my rebuttal exhibit. This document takes into account more current market prices, which represent investor responses to current market conditions, plus the current financial information that is available to investors.

Q. Given the market turmoil and the increase in market-based cost of capital estimates, are you recommending a higher allowed return than you previously recommended?

A. No. At this time, I am not recommending an increase in my recommended allowed return of 12.0 percent because of continued market uncertainties. Although the risks to investors obviously have increased precipitously and market prices demonstrate this, markets remain unsettled and the effectiveness and speed of the federal programs and market adjustments are still very problematical. Nonetheless, these calculations emphasize that these

market uncertainties cannot be ignored in a serious analysis of market costs. They show the market misconceptions and analytical inadequacies of the intervener witnesses. Finally, these results prove that the recommended allowed returns of Dr. Woolridge, Mr. O'Donnell and Mr. Herndon, which are, at best, only equivalent with debt costs, are not realistic measures of the cost of common equity of Tampa Electric.

Q. Does this complete your rebuttal testimony?

A. Yes. It does.

TAMPA ELECTRIC COMPANY
DOCKET NO. 080317-EI
WITNESS: MURRY
REBUTTAL EXHIBIT NO. __ (DAM-2)

REBUTTAL EXHIBIT

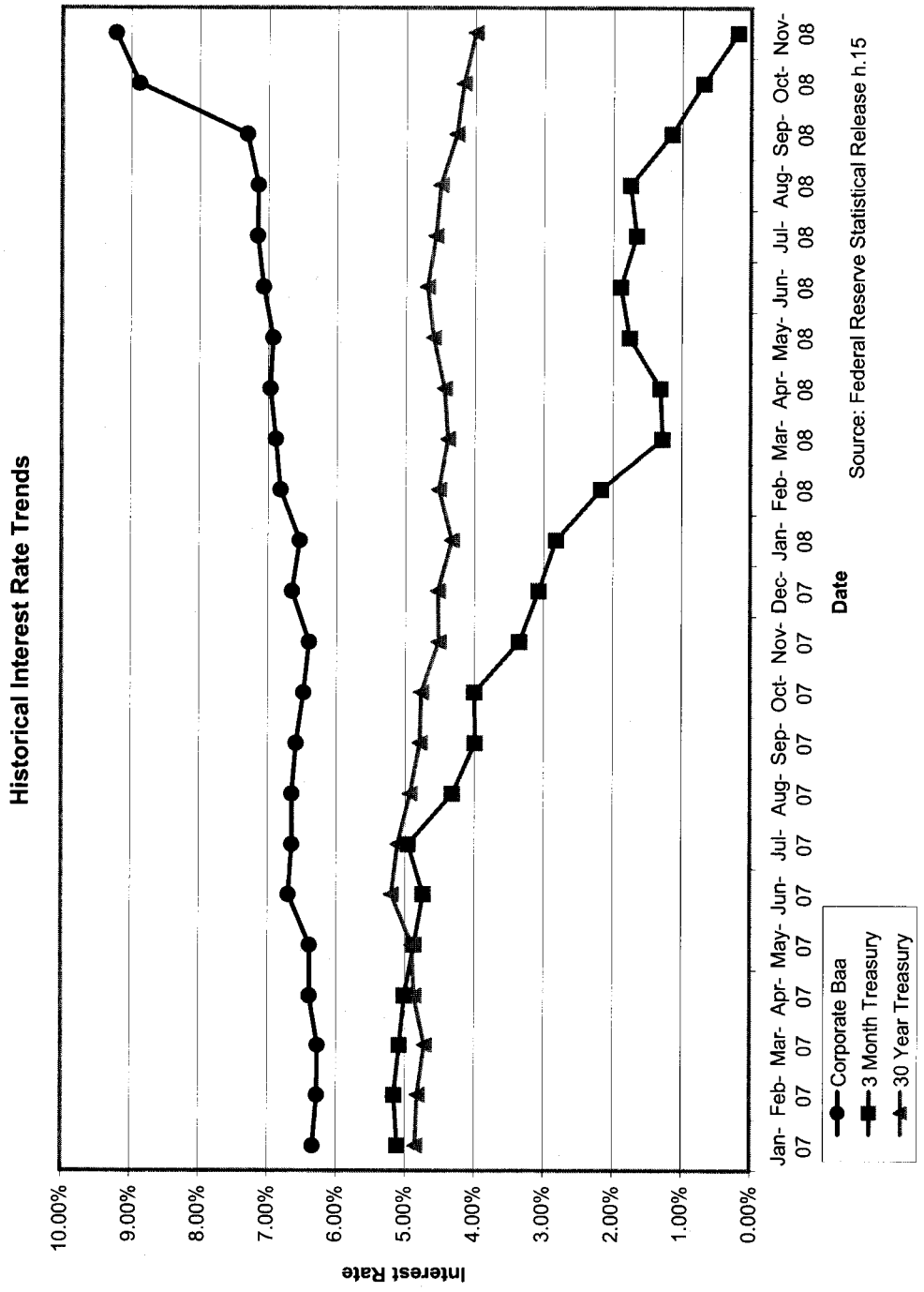
OF

DR. DONALD A. MURRY, PH.D.

ON BEHALF OF TAMPA ELECTRIC COMPANY

TABLE OF CONTENTS

TAMPA ELECTRIC COMPANY
DOCKET NO. 080317-EI
REBUTTAL EXHIBIT NO. ___ (DAM-2)
WITNESS: MURRY
DOCUMENT NO. 1
PAGE 1 OF 1
FILED: 12/17/08



TAMPA ELECTRIC COMPANY
DOCKET NO. 080317-EI
REBUTTAL EXHIBIT NO. ___ (DAM-2)
WITNESS: MURRY
DOCUMENT NO. 2
PAGE 1 OF 1
FILED: 12/17/08

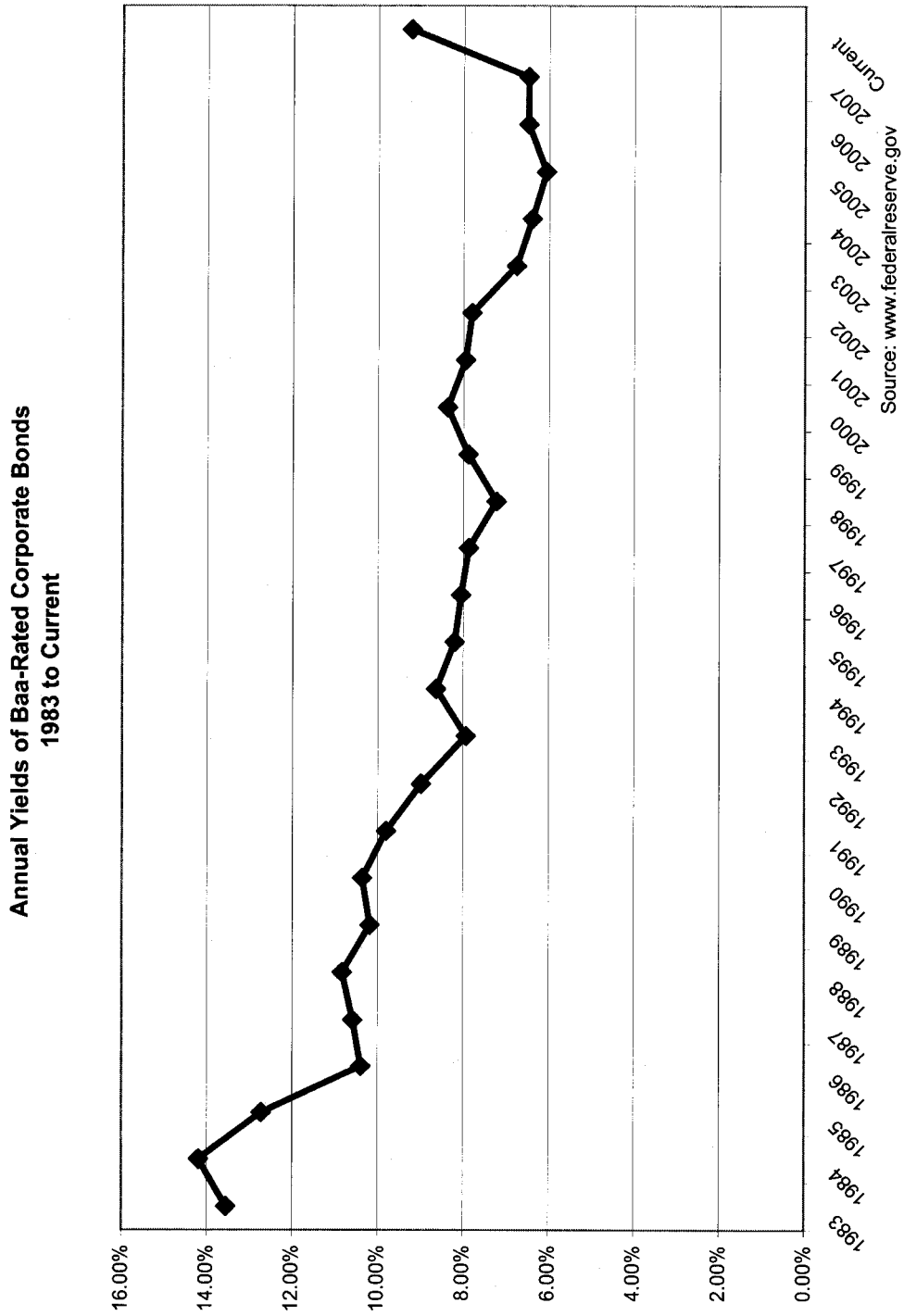


Table 7-14 (continued)
Size Effect within Industries
Summary Statistics and Excess Returns

(Through Year-end 2007)

SIC Code	Description	Small Company Group Geometric Mean	Arithmetic Mean	Standard Deviation	Excess Return
10	Metal Mining	8.74%	16.57%	45.51%	4.38%
13	Oil and Gas Extraction	12.37%	20.28%	45.67%	5.50%
15	Building Construction-General Contractors & Op. Builders	3.58%	13.35%	44.06%	-3.25%
16	Hvy. Construction Other than Bldg. Construction-Contractors	18.60%	23.37%	36.44%	10.22%
20	Food and Kindred Spirits	12.57%	16.09%	29.80%	3.44%
22	Textile Mill Products	9.25%	14.76%	34.44%	3.26%
23	Apparel & other Finished Products Made from Fabrics & Similar	5.69%	11.38%	37.52%	-0.72%
24	Lumber and Wood Products, Except Furniture	10.80%	20.58%	52.46%	9.24%
25	Furniture and Fixtures	7.83%	11.94%	29.50%	-0.55%
26	Paper & Allied Products	15.10%	20.45%	41.47%	6.04%
27	Printing, Publishing and Allied Products	14.94%	17.85%	25.20%	6.15%
28	Chemicals and Allied Products	12.85%	18.29%	39.37%	4.45%
29	Petroleum Refining & Related Industries	13.53%	17.93%	31.63%	4.05%
30	Rubber & Miscellaneous Plastics Products	12.28%	16.74%	32.90%	3.06%
31	Leather & Leather Products	10.50%	15.46%	34.02%	-0.83%
32	Stone, Clay, Glass & Concrete Products	10.01%	14.75%	32.84%	1.98%
33	Primary Metal Industries	13.63%	19.32%	38.17%	6.52%
34	Fabricated Metal Products, Except Machinery & Trans. Equip.	11.88%	17.40%	36.99%	5.06%
35	Industrial & Commercial Machinery & Computer Equipment	12.20%	17.47%	35.22%	3.26%
36	Electrical Equipment & Components, Except Computer	11.83%	19.64%	45.39%	6.15%
37	Transportation Equipment	12.04%	18.20%	37.94%	2.92%
38	Measuring, Analyzing & Controlling Instruments	12.90%	17.73%	34.61%	3.57%
39	Miscellaneous Manufacturing Industries	7.59%	11.92%	31.37%	-0.02%
40	Railroad Transportation	8.80%	15.02%	35.94%	2.31%
42	Motor Freight Transportation & Warehousing	6.48%	12.32%	38.44%	-0.21%
45	Transport by Air	8.67%	16.87%	47.63%	5.76%
48	Communications	17.00%	24.85%	45.23%	13.10%
49	Electric, Gas & Sanitary Services	10.56%	14.11%	29.34%	3.02%
50	Wholesale Trade-Durable Goods	10.97%	16.01%	35.70%	3.66%
51	Wholesale Trade-Nondurable Goods	8.34%	11.86%	28.05%	-0.74%
53	General Merchandise Stores	8.92%	16.26%	42.81%	3.45%
54	Food Stores	10.42%	14.11%	28.99%	0.58%
56	Apparel & Accessory Stores	11.13%	17.31%	38.88%	-0.27%
57	Home Furniture, Furnishings, and Equipment Stores	14.63%	24.80%	50.41%	2.16%
58	Eating and Drinking Places	1.72%	7.50%	36.30%	-7.79%
59	Miscellaneous Retail	11.59%	16.97%	35.97%	1.32%
60	Depository Institutions	14.21%	18.90%	25.13%	3.86%
61	Nondepository Credit Institutions	12.74%	16.67%	29.94%	1.83%
62	Security and Commod. Brokers, Dealers, Exchanges	14.85%	21.70%	41.62%	-2.29%
63	Insurance Carriers	12.77%	15.56%	23.78%	3.08%
65	Real Estate	6.42%	11.22%	34.37%	-0.24%
67	Holding & Other Investment Offices	11.07%	15.24%	30.91%	2.13%
70	Hotels, Rooming Houses, Camps, & Other Lodging	6.16%	12.03%	36.49%	-4.50%
72	Personal Services	17.90%	22.10%	31.96%	9.36%
73	Business Services	13.84%	23.17%	58.64%	8.26%
78	Motion Pictures	5.38%	13.10%	45.16%	-3.08%
79	Amusement and Recreation Services	10.03%	13.85%	31.27%	-2.44%
80	Health Services	14.76%	20.93%	39.89%	2.75%

Should the yield on a Treasury bond or a Treasury strip be used to represent the riskless rate? In most cases the yield on a Treasury coupon bond is most appropriate. If the asset being measured spins off cash periodically, the Treasury bond most closely replicates this characteristic. On the other hand, if the asset being measured provides a single payoff at the end of a specified term, the yield on a Treasury Strip would be more appropriate.

CAPM Modified for Firm Size

One of the important characteristics not necessarily captured by the Capital Asset Pricing Model is what is known as the size effect. This is discussed in detail in Chapter 7. The need for this premium when using the CAPM arises because, even after adjusting for the systematic (beta) risk of small stocks, they outperform large stocks. The betas for small companies tend to be greater than those for large companies; however, these higher betas do not account for all of the risks faced by those who invest in small companies.[2] This premium can be added directly to the results obtained using the CAPM:

$$k_s = r_f + (\beta_s \times ERP) + SP_s$$

where all of the variables are as given in the previous section on the CAPM, and SP_s is the appropriate size premium based on the firm's equity market capitalization. The market capitalization of company s will determine the relevant size premium: mid-cap, low-cap, or micro-cap.

Suppose we wish to calculate the cost of equity for a small electric utility company. To better account for both the industry risk and the firm size, we wish to use the modified CAPM approach. The company has a market capitalization of $135 million and falls within the micro-cap size group. Assume that the beta of the company is 0.53. The key variables for calculating the cost of equity using this size-premium-adjusted CAPM are:

Risk-free rate	= 4.5 percent
Expected equity risk premium	= 7.1 percent
The appropriate size premium	= 3.7 percent

Using the modified CAPM equation, the cost of equity for the electric utility company is:

$$k_s = r_f + (\beta_s \times ERP) + SP_s = 4.5\% + (0.53 \times 7.1\%) + 3.7\% = 12.0\%$$

The beta-adjusted size premium is the most appropriate for use with this model. Please note that the size premia commonly referred to in this publication are the beta-adjusted size premia, unless stated otherwise. The non-beta-adjusted size premia already account for the added return generally attributed to the higher betas of small companies. The non-beta-adjusted size premium makes the assumption that the beta of the company is the same as that of the small stock portfolio. If the non-beta-adjusted

2 In general, small company betas are expected to be higher than large company betas. This, however, does not hold for all time periods. Chapter 6 discusses in more detail the measurement of beta for small stocks.

TAMPA ELECTRIC COMPANY
DOCKET NO. 080317-EI
REBUTTAL EXHIBIT NO. ___ (DAM-2)
WITNESS: MURRY
DOCUMENT NO. 5
PAGE 1 OF 1
FILED: 12/17/08

Tampa Electric Company

Woolridge Electric Proxy Group

Comparison of As Filed Growth Rates to ValuePro Growth Rates

Company	Growth Rates As Filed	ValuePro
ALLETE	4.8%	2.5%
Ameren Corp.	3.1%	2.5%
Central Vermont Public Service	2.3%	7.5%
Cleco Corp.	7.2%	10.5%
DPL Inc.	7.4%	11.0%
Empire District Electric Company	10.8%	10.0%
Hawaiian Electric Industries	2.3%	7.5%
IDACorp, Inc.	1.6%	2.0%
Northeast Utilities	6.9%	11.5%
NSTAR	5.6%	7.5%
Pinnacle West Capital	2.6%	2.0%
Progress Energy	2.5%	5.0%
UIL Holdings Corp.	1.9%	4.0%
Mean	4.5%	6.4%

Sources:
Exhibit JRW-10, pages 3-5 of 6
www.valuepro.net

Tampa Electric Company

Woolridge Electric Proxy Group

Calculation of Discounted Cash Flow Analysis

Company	Yield As Filed	ValuePro Growth	DCF ROE
ALLETE	4.6%	2.5%	7.1%
Ameren Corp.	8.4%	2.5%	10.9%
Central Vermont Public Service	4.4%	7.5%	11.9%
Cleco Corp.	4.2%	10.5%	14.7%
DPL Inc.	4.9%	11.0%	15.9%
Empire District Electric Company	7.0%	10.0%	17.0%
Hawaiian Electric Industries	5.1%	7.5%	12.6%
IDACorp, Inc.	4.7%	2.0%	6.7%
Northeast Utilities	4.1%	11.5%	15.6%
NSTAR	4.8%	7.5%	12.3%
Pinnacle West Capital	6.9%	2.0%	8.9%
Progress Energy	6.8%	5.0%	11.8%
UIL Holdings Corp.	5.3%	4.0%	9.3%
Mean	5.5%	6.4%	11.9%

Sources:
Exhibit JRW-10, page 2 of 6
www.valuepro.net

Tampa Electric Company

Comparison Group of Kevin W. O'Donnell

Comparison of DCF Results

Company	Current Dividend Yield	Value Line Forecasted EPS Growth Rate	Schwab Forecasted EPS Growth Rate	Value Line GR DCF	Schwab GR DCF
Alliant Energy	5.2%	6.0%	7.0%	11.2%	12.2%
American Electric Power	5.8%	7.5%	5.1%	13.3%	10.9%
Avista Corp.	4.1%	9.0%	8.3%	13.1%	12.4%
CenterPoint Energy	6.4%	6.0%	12.5%	12.4%	18.9%
DTE Energy	5.9%	5.0%	6.3%	10.9%	12.2%
Duke Energy	5.9%	4.5%	5.3%	10.4%	11.2%
Edison International	3.8%	5.0%	8.1%	8.8%	11.9%
Empire Dist. Electric	7.0%	10.0%	6.0%	17.0%	13.0%
Great Plains Energy	9.3%	1.0%	7.6%	10.3%	16.9%
Hawaiian Electric	4.6%	5.0%	4.5%	9.6%	9.1%
IDACORP, Inc.	4.4%	2.0%	6.0%	6.4%	10.4%
Nisource Inc.	7.6%	5.0%	3.0%	12.6%	10.6%
Northeast Utilities	3.8%	11.5%	7.4%	15.3%	11.2%
Pepco Holdings	6.2%	13.0%	10.3%	19.2%	16.5%
PG&E Corp.	4.4%	5.0%	7.3%	9.4%	11.7%
PNM Resources	5.8%	-6.0%	13.5%	-0.2%	19.3%
Progress Energy	6.4%	5.0%	6.2%	11.4%	12.6%
SCANA Corp.	5.7%	4.5%	4.8%	10.2%	10.5%
Sierra Pacific Resources	4.4%	7.5%	15.2%	11.9%	19.6%
UIL Holdings	5.5%	4.5%	6.0%	10.0%	11.5%
Unisource Energy	3.8%	nil	N/A		
Westar Energy	6.1%	2.0%	4.4%	8.1%	10.5%
Wisconsin Energy	2.8%	8.0%	10.2%	10.8%	13.0%
Xcel Energy Inc.	5.6%	7.5%	6.2%	13.1%	11.8%
Average	5.4%	5.6%	7.4%	11.1%	13.0%
TECO	6.7%	7.0%	12.8%	13.7%	19.5%

Source: Witness Kevin O'Donnell KWO-1, page 1 of 1

TAMPA ELECTRIC COMPANY
DOCKET NO. 080317-EI
REBUTTAL EXHIBIT NO. ___ (DAM-2)
WITNESS: MURRY
DOCUMENT NO. 8
PAGE 1 OF 1
FILED: 12/17/08

Tampa Electric Company

Comparable Electric Companies

Summary of Financial Analysis

Method	TECO Energy, Inc. Low	TECO Energy, Inc. High	Comparable Electric Companies Low	Comparable Electric Companies High
Capital Asset Pricing Model	10.52%	12.53%	10.52%	12.53%
Earnings Growth DCF Analysis	10.01%	13.93%	9.86%	12.41%
Projected Growth DCF Analysis	11.14%	15.47%	10.02%	14.60%