BEFORE

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THE PUBLIC UTILITIES COMMISSION OF OHIO

In The Matter of the Application of)	
Duke Energy Ohio, Inc. for an)	Case No. 08-709-EL-AIR
Increase in Electric Distribution Rates)	
In the Matter of the Application of)	
Duke Energy Ohio, Inc. for Tariff)	Case No. 08-710-EL-ALT
Approval)	
In the Matter of the Application of)	
Duke Energy Ohio, Inc. for Approval)	Case No. 08-711-EL-AAM
to Change Accounting Methods)	

SUPPLEMENTAL DIRECT TESTIMONY OF

ROGER A. MORIN

ON BEHALF OF

DUKE ENERGY OHIO, INC.

- Management policies, practices, and organization
- _____ Operating income
- _____ Rate Base
- _____ Allocations
- <u>x</u> Rate of return
- _____ Rates and tariffs
- _____ Other

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BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio, Inc. for an Increase in Electric Distribution Rates)))	Case No. 08-709-EL-AIR
In the Matter of the Application of Duke Energy Ohio, Inc. for Tariff Approval)))	Case No. 08-710-EL-ATA
In the Matter of the Application of Duke Energy Ohio, Inc. for Approval to Change Accounting Methods))	Case No. 08-711-EL-AAM

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SUPPLEMENTAL DIRECT TESTIMONY OF

ROGER A. MORIN

ON BEHALF OF

DUKE ENERGY OHIO, INC.

INDEX

Supplemental testimony addressing rate of return on common equity recommendations in the Staff Report.

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i.

I. INTRODUCTION AND PURPOSE

1	Q.	PLEASE STATE YOUR NAME, ADDRESS, AND OCCUPATION.
2	Α.	My name is Dr. Roger A. Morin. My business address is Georgia State University,
3		Robinson College of Business, University Plaza, Atlanta, Georgia, 30303. I am Emeritus
4		Professor of Finance at the College of Business, Georgia State University and Professor of
5		Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia
6		State University. I am also a principal in Utility Research International, an enterprise
7		engaged in regulatory finance and economics consulting to business and government.
8	Q.	DID YOU FILE DIRECT TESTIMONY IN THIS PROCEEDING ON BEHALF OF
9		DUKE ENERGY OHIO INC. ("DE-OHIO" OR THE "COMPANY")?
10	Α.	Yes, I did.
11	Q.	WHAT IS THE PURPOSE OF YOUR SUPPLEMENTARY TESTIMONY?
12	A.	The purpose of my supplementary testimony is to discuss the Company's Objection No. 3
13		and respond to the rate of return on common equity recommendation contained in Staff's
14		Report of Investigation and Summary of Major Issues ("Report"), filed on January 27,
15		2009.
16		II. <u>DISCUSSION OF ISSUES AND OBJECTIONS TO THE STAFF REPORT</u>
17	Q,	PLEASE SUMMARIZE STAFF' RATE OF RETURN RECOMMENDATION.
18	Α.	Staff recommends that the Public Utility Commission of Ohio ("Commission") grant DE-
19		Ohio a Return on Equity ("ROE") allowance in the range of 10.12% - 11.14%. In
20		determining DE-Ohio's cost of common equity capital, Staff applies a multi-stage
21		Discounted Cash Flow ("DCF") analysis to a group of seven electric utilities. For the
22		growth component of the DCF analysis, Staff relies on a growth rate derived from analysts'

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growth forecasts. As shown on page 16, the comparable group DCF estimates average
 12.56%, exclusive of flotation costs.

Staff also applies a Capital Asset Pricing Model ("CAPM") to the same group of companies, using an average of 10-year and 30-year Treasury bond yields as proxies for the risk-free rate. For the beta component, Staff relies on beta estimates provided by Value Line. Staff's estimate of the market risk premium ("MRP") component of the CAPM is based on the historical MRP estimate over the 1930-2007 period published by Morningstar (formerly Ibbotson Associates). A CAPM cost of equity estimate of only 8.30% results from this procedure.

Applying equal weight to the DCF result of 12.56% and the CAPM result of 8.30%, the average result is 10.43%, as shown on page 16 of the Report. Using a 100 basis points range of uncertainty, the cost of equity estimates becomes 9.93% to 10.93%. Applying a factor for flotation costs, the cost of common equity range results in a recommendation of 10.12% to 11.14%.

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Q. PLEASE SUMMARIZE YOUR GENERAL REACTION TO STAFF'S REPORT.

16 I stress from the start that I agree with several of Staff's views and procedures. I agree Α. 17 broadly with: (i) the use of several methodologies in estimating a fair ROE, (ii) Staff's 18 proxy group of companies in the DCF and CAPM analyses, although I have some concern 19 with the very small size of the sample group, (iii) the inputs to the non-constant growth 20 DCF analysis, and (iv) the magnitude of the risk-free rate in the CAPM analysis. I disagree 21 with the weight accorded to the CAPM results during this time of financial crisis and with 22 one of Staff's inputs in the CAPM analysis, namely the MRP estimate. I also disagree with 23 the magnitude of Staff's flotation cost adjustment.

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1		Applying the proper weight to the CAPM result and allowing for the proper MRP
2		input in the CAPM analysis, Staff's recommended ROE range is quite consistent with my
3		own recommendation of 11.25%. At the very least, Staff should recommend the upper end
4		of its range.
5		I have the following specific comments on Staff's analysis:
6		1. CAPM and the Financial Crisis. I believe much less weight should be accorded to the
7		CAPM results under the present financial circumstances of extreme volatility and
8		uncertainty.
9		2. CAPM Market Risk Premium (MRP). Staff's MRP is understated because it relies
10		on total bond returns rather than on the income component of bond returns.
11		3. CAPM and the Empirical CAPM (ECAPM). The plain vanilla version of the CAPM
12		is known to understate return requirements for companies with beta estimates less than 1.0,
13		such as utility companies.
14		4. Flotation Costs. Staff's estimates of equity costs are understated by approximately 10
15		basis points to the extent that the market pressure component of flotation costs is ignored.
16		A. <u>CAPM AND THE CURRENT FINANCIAL CRISIS</u>
17	Q.	WHAT IS THE IMPACT OF THE ONGOING FINANCIAL CRISIS ON
18		UTIILTIES' COST OF CAPITAL?
19	A.	In a nutshell, it has increased markedly. During the past six months, capital markets in the
20		U.S. have been more volatile than at any time since the 1930s. Investors have witnessed
21		unprecedented large swings in the stock market and unprecedented corporate interest rate
22		spreads in the debt markets. Many large financial institutions were unable to survive as
23		independent institutions and others have required multibillion dollar capital infusions.

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1 The spreads between the yields on utility debt and U.S. Treasury securities have 2 increased markedly. Not only have single-A utility interest rates increased significantly 3 since the commencement of the financial crisis, but also single-A spreads for utility 4 companies have increased to above 300 basis points, which is some three times higher than 5 the spreads that existed little more than a year ago. In short, increased risk aversion and 6 market illiquidity have resulted in significantly higher borrowing costs for corporations, 7 In the current environment, investors' return expectations and including DE-Ohio. 8 requirements for providing capital to the utility industry remain high relative to the longer-9 term traditional view of the utility industry.

10 Q. HOW IMPORTANT IS IT THAT DE-OHIO MAINTAIN A STRONG CAPITAL 11 STRUCTURE DURING THE CURRENT MARKET CRISIS?

12 A. It is extremely important that utilities maintain a strong equity ratio in their capital structure 13 in order to access capital in this time of market volatility and financial uncertainty for the 14 reasons I just discussed. This risk in turn supports a greater equity to debt ratio to attract 15 investors, than the hypothetical capital structure proposed in the Staff's Report. A greater 16 equity percentage will help to mitigate the risks perceived by potential investors due to the 17 current market instability.

18 Q. HOW HAVE REGULATORY COMMISSIONS REACTED TO CHANGING 19 MARKET AND INDUSTRY CONDITIONS?

A. Over the past five years, allowed equity returns have generally followed interest rate
 changes. During 2008, allowed rates did increase from the lowest levels of 2006 and 2007.
 Of course, these historical averages cannot reflect the recent extreme market volatility. The
 table below summarizes the overall average ROEs allowed for electric utilities since 2004:

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Electric Utility Allowed Returns 2004-2008

	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Average Allowed Return	10.75%	10.54%	10,36%	10.36%	10.46%
Average Utility Debt Cost	6.20%	5.67%	6.07%	6.12%	6.65%
Average Risk Premium	4.55%	4.87%	4.29%	4.24%	3.81%

Source: Regulatory Focus, SNL Energy (formerly Regulatory Research Associates, Inc.,) Major Rate Case Decisions, January 2009.

2	Since 2004, the allowed equity risk premiums have ranged from 3.81% to 4.87%. At the
3	low end of this range, based on average single-A utility interest rates for the three months
4	ended January 2009 of approximately 7%, the indicated cost of equity is 10.81% (7.00% +
5	3.81% = 10.81%). At the upper end of this range, the indicated cost of equity is 11.87%
6	(7.00% + 4.87% = 11.87%). One would think that the upper end of the range is applicable
7	under the current financial crisis conditions. These estimates based on myriad regulatory
8	awards do not reflect current market turbulence.

9 Q. HOW MUCH WEIGHT SHOULD BE ACCORDED TO THE CAPM RESULTS

10 UNDER CURRENT MARKET CIRCUMSTANCES?

11 A. Staff accords equal weight to the CAPM and DCF results. I believe much less weight 12 should be accorded to the CAPM results under present economic circumstances for four 13 reasons. First, the CAPM estimates in the single-digit are barely above the corporate cost 14 of debt (7% - 8%) and are therefore suspect. Second, because the betas employed in the 15 CAPM analysis are estimated over five-year historical periods, the impact of the ongoing 16 financial crisis is not yet fully captured in the five-year historical betas. Third, government 17 interest rates have decreased substantially following the Federal Reserve's expansionary 18 policies designed to jumpstart the stalled economy, thus lowering the CAPM results. At 19 the same time, the cost of corporate debt and the cost of equity for electric utilities have

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increased significantly, as evidenced by the record high corporate yield spreads discussed
 earlier, and by the DCF results for utilities that have increased by some 150-200 basis
 points in response to lower stock prices (higher dividend yields) following the financial
 crisis.

5 This anomaly between actual market costs and the estimation techniques used in 6 this proceeding puts the Company at significant financing risk. As such, much less weight 7 should be accorded to this method at present. As I mentioned above, there is a fundamental 8 structural upward shift in risk aversion as capital markets are re-pricing risk, and capital has 9 become, and will continue to be, more expensive for all market participants, including DE-10 Ohio, over the next 18-24 months at least.

Fourth, as discussed in my direct testimony, it is well known that the plain vanilla version of the CAPM is known to understate return requirements for companies with beta estimates less than 1.0, such as utility companies.

14

15

B. CAPM MARKET RISK PREMIUM

For all these reasons, much less weight should be placed on Staff's CAPM results.

16 Q. DO YOU AGREE WITH STAFF'S HISTORICAL MRP ESTIMATE?

17 A. No, I do not. Staff estimates the MRP from historical data using the *total* return, rather
18 than the *income* return, on government bonds.

19 Q. HOW SHOULD THE HISTORICAL MRP BE ESTIMATED?

A. The historical MRP should be estimated using the income component of total bond return.
The historical MRP estimates of 6.5% used by Staff on Schedule D1.2 page 2 of the Report
was drawn from Morningstar's Valuation 2008 Year Book. Over the period 1926 through
2007, Morningstar's study estimated that the market risk premium is 6.5%.

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1		But, as I discussed in my direct testimony, the more accurate way to estimate the
2		market risk premium from historic data is to use the income return, not total returns, on
3		government bonds. The long-term (1926-2007) MRP based on income returns, as required,
4		is 7.1%, rather than 6.5%. The Morningstar publication on which Staff relies recommends
5		use of the income return on government bonds as a more reliable estimate of the historical
6		market risk premium because the income component of total bond return (i.e., the coupon
7		rate) is a better estimate of expected return than the total return (<i>i.e.</i> , the coupon rate +
8		capital gain). ¹ In other words, bond investors focus on income rather than realized capital
9		gains/losses. This correction alone increases Staff's CAPM estimate by approximately 40
10		basis points (the difference between 7.1% and 6.5% times Staff's beta of 0.70 shown on
11		Schedule D-1.2 page 2, notwithstanding my earlier criticism of Staff's historical beta
12		estimate.
12 13		estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u>
12 13 14	Q.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED
12 13 14 15	Q.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL?
12 13 14 15 16	Q. A.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more
12 13 14 15 16 17	Q. A.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to
12 13 14 15 16 17 18	Q. A.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by
12 13 14 15 16 17 18 19	Q. A.	 c. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. Chapter 6 of my book, <u>The New Regulatory Finance</u>, summarizes this
12 13 14 15 16 17 18 19 20	Q. A.	 C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. Chapter 6 of my book, <u>The New Regulatory Finance</u>, summarizes this extensive literature and provides additional statistical evidence that the risk-return
12 13 14 15 16 17 18 19 20 21	Q.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. Chapter 6 of my book, <u>The New Regulatory Finance</u> , summarizes this extensive literature and provides additional statistical evidence that the risk-return relationship is flatter than that predicted by the CAPM. The results of the empirical tests
12 13 14 15 16 17 18 19 20 21 22	Q. A.	C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. Chapter 6 of my book, <u>The New Regulatory Finance</u> , summarizes this extensive literature and provides additional statistical evidence that the risk-return relationship is flatter than that predicted by the CAPM. The results of the empirical tests support the idea that beta is related to security returns, that the risk-return tradeoff is
12 13 14 15 16 17 18 19 20 21 22 23	Q. A.	estimate. C. <u>CAPM AND THE EMPIRICAL CAPM</u> DO YOU AGREE WITH THE USE OF THE RAW FORM OF THE CAPM USED BY STAFF TO ESTIMATE THE COST OF CAPITAL? No, I do not. The plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. Chapter 6 of my book, <u>The New Regulatory Finance</u> , summarizes this extensive literature and provides additional statistical evidence that the risk-return relationship is flatter than that predicted by the CAPM. The results of the empirical tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return

¹ See Ibbotson Associates, Stocks, Bonds, Bills, and Inflation 2008 Yearbook: Valuation Edition (2008).

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tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most well known results in finance. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities based on the empirical evidence. The empirical form of the CAPM that I used in my testimony refines the standard form of the CAPM to account for this phenomenon.

8 For utility stocks with betas less than one, the CAPM understates the return. The 9 understatement is particularly significant for low-beta securities, such as utilities. The 10 empirical approximation to the CAPM that I utilize in my testimony is consistent with both 11 theory and with a huge body of empirical evidence, including my own, and has the added 12 advantage of computational simplicity.

13 The downward-bias inherent in the CAPM is particularly significant for low-beta 14 securities, such as the vast majority of electric utilities. Staff' CAPM estimates of equity 15 costs are understated by about 40 basis points from this bias alone.

16

D. FLOTATION COST

17 Q. WHAT FLOTATION COST TREATMENT BID STAFF RECOMMEND IN THIS 18 CASE?

A. Both Staff and I agree on the need for a flotation cost adjustment, but we disagree slightly
on its magnitude. Staff recommends a generic flotation (issuance) cost allowance of 3.5%
versus my recommended 5.0%. However, the 3.5% used by Staff does not include the
indirect component of flotation cost, namely, the market pressure component, which would
add another 1%-2% to the 3.5% estimate.

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1		Whereas Staff's 3.5% flotation cost factor does not include any allowance for market
2		pressure, my own 5.00% includes 1.0% for the market pressure component of flotation
3		costs. Empirical studies clearly show that the market pressure effect is real, tangible, and
4		measurable. It reflects the basic economic fact that when the supply of securities is
5		increased following a stock or bond issue, the price falls. There are numerous empirical
6		studies on the market pressure effect discussed in my direct testimony. These scientific
7		studies suggest a market pressure effect of about 1%. Taken as a whole, the research
8		results strongly suggest that the absolute magnitude of the relative price decline due to
9		market pressure is on the order of 1% - 3%.
10		As a result of using a flotation cost factor of 3.5% instead of a flotation cost factor of
11		5%, Staff's ROE recommendation is understated by approximately 10 basis points.
12		E. <u>COMPARABLE COMPANIES</u>
12 13	Q.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN
12 13 14	Q.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION?
12 13 14 15	Q. A.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only
12 13 14 15 16	Q. A.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio.
12 13 14 15 16 17	Q. A. Q.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE?
12 13 14 15 16 17 18	Q. A. Q. A.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE? Yes, briefly. A sample consisting of only seven utilities is statistically suspect. It is
12 13 14 15 16 17 18 19	Q. A. Q. A.	E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE? Yes, briefly. A sample consisting of only seven utilities is statistically suspect. It is important to select relatively large sample sizes as opposed to small sample sizes consisting
12 13 14 15 16 17 18 19 20	Q. A. Q. A.	 E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE? Yes, briefly. A sample consisting of only seven utilities is statistically suspect. It is important to select relatively large sample sizes as opposed to small sample sizes consisting of a handful of companies in applying the CAPM and DCF methods. This is particularly
12 13 14 15 16 17 18 19 20 21	Q. A. Q.	E. COMPARABLE COMPANIES DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE? Yes, briefly. A sample consisting of only seven utilities is statistically suspect. It is important to select relatively large sample sizes as opposed to small sample sizes consisting of a handful of companies in applying the CAPM and DCF methods. This is particularly important when industry capital market data are unstable, as is the case for the utility
12 13 14 15 16 17 18 19 20 21 22	Q. A. Q.	 E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE? Yes, briefly. A sample consisting of only seven utilities is statistically suspect. It is important to select relatively large sample sizes as opposed to small sample sizes consisting of a handful of companies in applying the CAPM and DCF methods. This is particularly important when industry capital market data are unstable, as is the case for the utility industry and equity markets generally in times of financial crisis. Confidence in the
12 13 14 15 16 17 18 19 20 21 22 23	Q. A. Q.	 E. <u>COMPARABLE COMPANIES</u> DID STAFF DEVELOP A SAMPLE OF COMPARABLE RISK COMPANIES IN ORDER TO ARRIVE AT ITS RECOMMENDATION? Yes. As shown on page 15 of the Report, Staff develops a small sample consisting of only seven electric utilities that it deems are comparable to DE-Ohio. WILL YOU COMMENT ON STAFF'S SAMPLE? Yes, briefly. A sample consisting of only seven utilities is statistically suspect. It is important to select relatively large sample sizes as opposed to small sample sizes consisting of a handful of companies in applying the CAPM and DCF methods. This is particularly important when industry capital market data are unstable, as is the case for the utility industry and equity markets generally in times of financial crisis. Confidence in the statistical reliability of the model results is considerably enhanced when applying financial

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1 models to a large group of companies. Moreover, small samples are subject to 2 measurement error, in violation of the Central Limit Theorem of statistics.² From a 3 statistical standpoint, reliance on robust sample sizes mitigates the impact of possible 4 measurement errors and vagaries in individual companies' market data. I believe that 5 Staff' small sample size is deficient on those grounds. I believe that the culprit is Staff's 6 requirement that the sample companies have a market capitalization of at least \$10 billion, 7 which I believe to be unnecessarily excessive.

8

III. CONCLUSIONS

9 Q. WHAT IS YOUR MAJOR CONCLUSION FROM STAFF'S ROE 10 RECOMMENDATION?

A. In the ongoing financial crisis, Staff has overweighted the importance of the CAPM results in arriving at its final ROE range recommendation. Coupled with an upward adjustment of lo basis points to account for the market pressure component of flotation costs and recognition of the appropriate MRP in the CAPM analysis, Staff's ROE estimates should be raised to the very upper end of its recommended range, namely, 11.14%. Moreover, the current market circumstances are anything but normal, and I consider the upper end of Staff's recommended range to be barebones and conservative.

² The Central Limit Theorem (CLT) describes the characteristics of the distribution of values we would obtain if we were able to draw an infinite number of random samples of a given size from a given population and we calculated the mean of each sample. The CLT asserts: [1] The mean of the sampling distribution of means is equal to the mean of the population from which the samples were drawn. [2] The variance of the sampling distribution of means is equal to the population from which the samples were drawn divided by the size of the samples. [3] If the original population is distributed normally, the sampling distribution of means will also be normal. If the original population is not normally distributed, the sampling distribution of means will increasingly approximate a normal distribution as sample size increases.

1 Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?

2 A. Yes