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MISSOURI PUBLIC SERVICE COMMISSION

UTILITY SERVICES DIVISION

DIRECT TESTIMONY

OF

DAVID MURRAY

FILED

FEB 24 2006

**Missouri Public
Service Commission**

AQUILA, INC.

**d/b/a AQUILA NETWORKS-MPS-ELECTRIC AND
AQUILA NETWORKS-L&P-ELECTRIC**

CASE NO. ER-2005-0436

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Jefferson City, Missouri
October 2005

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DAVID MURRAY
AQUILA, INC.

d/b/a AQUILA NETWORKS MPS-ELECTRIC AND
AQUILA NETWORKS L&P-ELECTRIC
CASE NO. ER-2005-0436

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DIRECT TESTIMONY

OF

DAVID MURRAY

AQUILA, INC.

d/b/a AQUILA NETWORKS MPS-ELECTRIC AND

AQUILA NETWORKS L&P-ELECTRIC

CASE NO. ER-2005-0436

Q. Please state your name.

A. My name is David Murray.

Q. Please state your business address.

A. My business address is P.O. Box 360, Jefferson City, Missouri, 65102.

Q. What is your present occupation?

A. I am employed as a Utility Regulatory Auditor III for the Missouri Public Service Commission (Commission). I accepted the position of Public Utility Financial Analyst in June 2000 and have since had my position reclassified to my current title.

Q. Were you employed before you joined the Commission's Staff (Staff)?

A. Yes, I was employed by the Missouri Department of Insurance in a regulatory position.

Q. What is your educational background?

A. In May 1995, I earned a Bachelor of Science degree in Business Administration with an emphasis in Finance and Banking, and Real Estate from the University of Missouri-Columbia. I earned a Masters in Business Administration from Lincoln University in December 2003.

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1 Q. Are you currently pursuing any professional designations that would enhance
2 your credibility as a financial analyst, and, consequently, a rate-of-return witness?

3 A. Yes. I am pursuing the Chartered Financial Analyst (CFA) charter. I recently
4 passed the examination for Level I of the CFA Program. In order to receive the charter, I
5 must pass the examinations for the next two levels of the program and also have four years of
6 relevant professional work experience. I am currently enrolled to take the examination for
7 Level II of the CFA program in June 2006. The earliest I could complete the program would
8 be by June 2007 because the next two examinations are only offered once a year.

9 Q. What percentage of candidates that took the Level I examination in June 2005
10 passed the examination?

11 A. 36 percent.

12 Q. Please provide some background on the CFA Program.

13 A. According to the CFA Institute's website, the CFA Program is a self-study
14 program that is internationally recognized and considered by many employers and investors
15 as the "definitive standard for measuring competence and integrity in the fields of portfolio
16 management and investment analysis." The program's "professional conduct requirements
17 demand that both CFA candidates and charterholders adhere to the highest standards of
18 ethical responsibility."

19 Q. In your experience with the Missouri Public Service Commission, what
20 individuals in your field tend to hold the CFA charter?

21 A. During my tenure with the Missouri Public Service Commission I have found
22 the CFA charter to be most prevalent with individuals that work in the fixed-income industry
23 and the equity research industry.

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1 Q. Are these the instruments that you analyze when making recommendations to
2 the Commission on the cost of capital?

3 A. Yes.

4 Q. Have you filed testimony in other cases before this Commission?

5 A. Yes. Please see Attachment A for a list of these cases.

6 Q. Have you made recommendations in any other cases before this Commission?

7 A. Yes, I have made recommendations on finance, merger and acquisition cases
8 before this Commission.

9 Q. Have you attended any schools, conferences and/or seminars specific to utility
10 finance and utility regulation?

11 A. Yes. I attended the Annual Eastern Utility Rate School in October 2000, the
12 Fundamentals of Utility Finance seminar in January 2001 and the National Association of
13 Regulatory Utility Commissioners' Annual Regulatory Studies Program in August 2001.

14 Q. What is the purpose of your testimony in this case?

15 A. My testimony is presented to recommend to the Commission a fair and
16 reasonable rate of return for Aquila, Inc. d/b/a Aquila Networks MPS and Aquila Networks
17 L&P (MPS and L&P) rate base.

18 Q. Have you prepared any schedules to your analysis of the cost of capital for
19 MPS and L&P?

20 A. Yes. I am sponsoring a study entitled "An Analysis of the Cost of Capital for
21 Aquila, Inc. d/b/a Aquila Networks MPS and Aquila Networks L&P Case
22 No. ER-2005-0436" consisting of 21 schedules, which are attached to this direct testimony
23 (see Schedule 1).

1 **EXECUTIVE SUMMARY**

2 Q. Please provide an executive summary of your testimony.

3 A. I am recommending that the Commission authorize and overall rate of return
4 of 7.72 percent to 8.08 percent. My rate-of-return recommendation is based on a
5 recommended return on common equity of 8.50 percent to 9.50 percent applied to Aquila's
6 June 30, 2005 common equity ratio of 36.16 percent. Although my recommendation is
7 driven mainly by my continued use of the discounted cash flow (DCF) model, this
8 recommendation is based on a comparable company analysis using this model. I continue to
9 believe that the DCF model is the most reliable model to use when estimating a utility
10 company's cost of common equity.

11 My embedded cost of debt recommendation of 7.281 percent is based on all of
12 Aquila's outstanding debt issuances. However, I made downward adjustments to two of
13 these debt issuances because the actual cost of these debt issuances were very high as a result
14 of Aquila's financial uncertainty stemming from its nonregulated businesses.

15 My capital structure recommendation is based on Aquila's actual capital structure on
16 June 30, 2005. This capital structure is reasonable because it is within the range of capital
17 structures that Aquila had when it had a corporate credit rating that was at least investment
18 grade.

19 Q. Please explain how you estimated your recommended cost of common equity.

20 A. I determined my recommended cost of common equity by applying the DCF
21 model to a comparable group of vertically integrated electric utility companies. I then
22 evaluated a number of factors to test the reasonableness of this recommendation. A complete

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1 and detailed explanation of my recommended cost of common equity starts on page 24, line
2 16 of this testimony.

3 Q. Are there any other components in your rate-of-return recommendation that
4 the Commission should pay particular attention to when reviewing your testimony?

5 A. Yes. First, I had to make several adjustments to Aquila's embedded cost of
6 debt in order to adjust the costs of recent debt issuances to a level that is reasonable for a
7 company that has at least an investment grade credit rating. Please see page 20, line 23 for
8 the beginning of my discussion about adjustments that needed to be made to Aquila's
9 embedded cost of long-term debt.

10 Second, Aquila has consistently recommended what it refers to as a "divisional"
11 capital structure in rate case proceedings before this Commission. Staff views this capital
12 structure as nothing more than use of internal accounting methodology to "assign" capital to
13 its various divisions. The divisional capital structure that Aquila has consistently
14 recommended since the late 1980s is a fictitious capital structure. It does not have any
15 relation to the capital mix that MPS and L&P have available for investments. If the
16 Commission were inclined to accept this capital structure, then the Commission should
17 rightfully label this capital structure as a "hypothetical" capital structure.

18 Staff has recommended Aquila's consolidated capital structure for rate-making
19 purposes, because the common equity in this capital structure is consistent with the amount
20 of common equity that Aquila, (then known as UtiliCorp), had in its capital structure when it
21 had an investment grade credit rating. Please see page 19, line 4 for a more detailed
22 discussion of this topic.

1 **LEGAL PRINCIPLES**

2 Q. Please explain the main legal principles which form the basis for the
3 assessment of the justness and reasonableness of rate-of-return recommendations.

4 A. The *Bluefield Water Works and Improvement Company* (1923) (*Bluefield*) and
5 the *Hope Natural Gas Company* (1944) (*Hope*) cases have been cited as the two most
6 influential cases for the legal framework to determine a fair and reasonable rate of return.

7 Q. Please provide the main points surrounding the *Bluefield* case.

8 A. In the *Bluefield* the Supreme Court ruled that a fair return would be:

- 9 1. A return "generally being made at the same time" in that "general part
10 of the country;"
- 11 2. A return achieved by other companies with "corresponding risks and
12 uncertainties;" and
- 13 3. A return "sufficient to assure confidence in the financial soundness of
14 the utility."

15 The Court specifically stated:

16 A public utility is entitled to such rates as will permit it to earn a return
17 on the value of the property which it employs for the convenience of
18 the public equal to that generally being made at the same time and in
19 the same general part of the country on investments in other business
20 undertakings which are attended by corresponding risks and
21 uncertainties; but it has no constitutional right to profits such as are
22 realized or anticipated in highly profitable enterprises or speculative
23 ventures. The return should be reasonably sufficient to assure
24 confidence in the financial soundness of the utility and should be
25 adequate, under efficient and economical management, to maintain
26 and support its credit and enable it to raise the money necessary for the
27 proper discharge of its public duties. A rate of return may be
28 reasonable at one time and become too high or too low by changes
29 affecting opportunities for investment, the money market and business
30 conditions generally.

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1 Q. Please provide the main points surrounding the *Hope* case.

2 A. In the *Hope* case, the Court stated that:

3 The rate-making process . . . , i.e., the fixing of "just and reasonable"
4 rates, involves a balancing of the investor and the consumer interests.
5 Thus we stated . . . that "regulation does not insure that the business
6 shall produce net revenues" . . . it is important that there be enough
7 revenue not only for operating expenses but also for the capital costs
8 of the business. These include service on the debt and dividends on
9 the stock By that standard the return to the equity owner should
10 be commensurate with returns on investments in other enterprises
11 having corresponding risks. That return, moreover, should be
12 sufficient to assure confidence in the financial integrity of the
13 enterprise, so as to maintain its credit and to attract capital.

14 The *Hope* case restates the concept of comparable returns to include those achieved
15 by any other enterprises that have "corresponding risks." The Supreme Court also noted in
16 this case that regulation does not guarantee profits to a utility company.

17 Q. On a technical level, has the methodology of determining rate of return
18 changed since the *Hope* and *Bluefield* decisions were written?

19 A. Yes. While I believe the objective of authorizing a fair rate of return is still to
20 allow the company the ability to attract capital so it can pay its capital costs, the discipline of
21 rate of return analysis has evolved since the decisions were made in *Hope* and *Bluefield*. In
22 fact, two of the most commonly used models in making rate-of-return recommendations did
23 not even become a part of main stream finance until the 1960s. Of course, the courts in *Hope*
24 and *Bluefield* could not possibly have considered methodologies that had not yet been
25 developed at the time those courts made their analysis.

26 Q. What are these models?

27 A. The DCF Model and the Capital Asset Pricing Model (CAPM).

28 Q. When was the DCF Model introduced as a tool to estimate the required return
29 on common equity?

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1 A. The DCF Model, or the dividend growth, Gordon growth and/or dividend
2 discount model, as it is most often called to in college finance textbooks, was introduced by
3 Myron J. Gordon for cost-of-common-equity determinations in 1962. The use of this model
4 for stock valuation purposes had been introduced before this time.

5 Q. When was the CAPM introduced?

6 A. Much of the basis for this model was provided in 1964 by William F. Sharpe
7 who received the Nobel Prize in 1990 for much of his work in producing this model.

8 Q. Have there been any court cases that have specifically dealt with the legality
9 of the use of cost of common equity models to estimate a fair rate of return?

10 A. Not that I am aware of.

11 Q. Have these models been used and accepted in the past to determine a fair
12 authorized return on common equity in Missouri?

13 A. Yes.

14 Q. Do you have any further comments on the use of cost of capital models to
15 determine a fair rate of return?

16 A. Yes. See Schedule A.

17 **HISTORICAL ECONOMIC CONDITIONS**

18 Q. Please discuss the main points of the current capital and economic
19 environment that the Commission should consider in determining a reasonable authorized
20 ROE for MPS and L&P. (For a more detailed discussion of historical economic conditions,
21 please see Schedule B).

22 A. The Federal Reserve (Fed) has been steadily raising the Fed Funds rate by
23 25 basis points at every Federal Open Market Committee (FOMC) meeting since June 30,

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1 2004. This began after the Federal Reserve had kept the Fed Funds Rate at a 46-year low of
2 1.00 percent for a full year. Even in the wake of Hurricane Katrina, on September 20, 2005
3 the Fed decided to continue its "measured pace" of 25 basis point increases in the Fed Funds
4 Rate. The Fed Funds Rate now stands at 3.75 percent. According to the *Wall Street Journal*
5 (*WSJ*), the Fed concluded that Hurricane Katrina's impact on inflation is more worrisome
6 than its effect on growth. According to the *WSJ*, Alan Greenspan "appears more willing to
7 risk slowing the economy down by raising rates too much, than to risk letting inflation rise
8 further by raising them to little." The Fed believes that economic growth would be supported
9 by still-low interest rates and brisk productivity growth. According to the *WSJ*, financial
10 markets now expect one more quarter-point rate increase during the Fed's three remaining
11 meetings before Alan Greenspan's term ends on January 31, 2006. Long-term rates were
12 little affected by the most recent increase in the Fed Funds Rate because this was already
13 anticipated by the market. (*Wall Street Journal*, p. A1 and A6, September 21, 2005).

14 Q. Have long-term interest rates risen as a result of the Federal Reserve's eleven
15 increases in the Fed Funds Rate since June 2004?

16 A. Not by much. Actually, this is a phenomenon that the Federal Reserve has
17 struggled with and has openly discussed in many of its deliberations and speeches in recent
18 months. This intellectual struggle has resulted in Chairman Alan Greenspan causing another
19 movement into common use of a term or phrase. The latest term commonly being used, at
20 least in the field of finance, is "conundrum," which was used by Mr. Greenspan in a speech
21 in which he admitted his confusion as to why long-term interest rates haven't increased
22 recently.

23 Q. What are the consequences of long-term interest rates remaining low?

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1 A. Cost of long-term capital, including utilities' common equity, remains low.

2 Q. Is this also reflected in the yields on recently issued utility bonds?

3 A. Yes. A review of Schedules 5-1 and 5-3 shows the continued low level of
4 costs on utility debt. The average yield of 5.39 percent on utility bonds during June 2005
5 was the lowest average yield in the past 25 years.

6 Q. Do you fully understand why long-term interest rates have remained so low
7 even while the Federal Reserve has continued to steadily increase the Fed Funds Rate?

8 A. No. However, there are many theories as to why long-term interest rates have
9 remained low. Many analysts believe that investors have confidence that the Federal Reserve
10 will be able to contain inflation. Therefore, long-term investors do not require a higher
11 return in order to cover higher inflation in the future. Another school of thought is that the
12 United States' (U.S.) economy is so integrated with the global economy that swings in short-
13 term interest rates do not have as large of an impact on long-term investment requirements as
14 they did in previous years. This may also explain why some tragic events that have occurred
15 in the U.S. over the last several years have not rattled investors for any sustained period.

16 In light of the above interest rate activity, it is important to reflect on the results of the
17 major stock market indexes in the past year. According to the October 7, 2005 issue of the
18 *The Value Line Investment Survey: Selection & Opinion*, for the first three quarters of 2005,
19 the Dow Jones Industrial Average (DJIA) decreased 2.0 percent, the S&P 500 increased
20 1.4 percent, the Nasdaq Composite Index (NASDAQ) decreased 1.1 percent and the Dow
21 Jones Utility Average (DJUA) increased 29.1 percent. According to the same publication,
22 for the third quarter of 2005, the DJIA increased 2.9 percent, the S&P 500 increased
23 3.1 percent, the NASDAQ increased 4.6 percent and the DJUA increased 11.8 percent. For

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1 the twelve months, September 30, 2004, through September 30, 2005, the DJIA increased
2 4.8 percent, the S&P 500 increased 10.2 percent and the NASDAQ increased 13.4 percent
3 (*Wall Street Journal*, p. C10, October 3, 2005). According to closing quotes obtained from
4 CBS MarketWatch, the DJUA increased 46.4 percent over this same period.

5 Q. What can one infer from the fact that the DJUA has increased more in the past
6 year than the other indices have?

7 A. Since the projected earnings growth rates of utility stocks have not sky
8 rocketed along with the market, external macroeconomic factors have caused the utility
9 industry to become quite favorable in the capital markets. This would imply that the cost of
10 common equity for utility stocks is quite low. This explains why a reasonable application of
11 the DCF Model produces lower results than were seen in the past.

12 Q. Should the results from the DJUA be analyzed with some caution in this case?

13 A. Yes. Only one of my comparable companies is contained in the DJUA.
14 Consequently, some of the factors that have caused companies' stock prices in the DJUA to
15 increase so much, may not be the same factors that have caused other utilities' stock prices to
16 increase. However, even though other utility indices may not have increased as much as the
17 DJUA, most have easily outpaced the DJIA and the S&P 500. For example, Value Line
18 Utilities are up 9.2 percent for the 9-months ending, September 30, 2005. Consequently, I
19 believe it is safe to conclude that utility stocks have attracted investors' attention in recent
20 months.

21 **ECONOMIC PROJECTIONS**

22 Q. Do you have any information on economic projections?

23 A. Yes. See Schedule C for these projections.

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1 **BUSINESS OPERATIONS OF AQUILA, INC.**

2 Q. Please describe Aquila, Inc.'s (Aquila) business operations.

3 A. Aquila has had a major change in its business strategy since 2002. Before the
4 collapse of Enron and the shrinkage of the energy marketing and trading industry, Aquila
5 was embracing its nonregulated operations. In fact, at one time Aquila believed that it could
6 achieve more capital market value for its energy merchant business if it spun this business off
7 from its regulated utility business. Aquila took the initial step for this strategy in April 2001
8 by issuing 20 percent of the common stock in its energy merchant subsidiary to the public
9 before the collapse of the energy marketing and trading industry. However, Aquila was soon
10 faced with the fact that credit rating agencies had realized the amount of risk involved in this
11 "light asset" industry and started to require companies to have more "hard assets" to support
12 this type of business and still maintain an investment grade credit rating. As a result, in early
13 2002 Aquila reacquired the 20 percent of its energy merchant business that it had spun off. It
14 was at this time that UtiliCorp United, Inc. changed its name to Aquila, Inc. This was a
15 signal to investors that even though the Company was not spinning off the energy merchant
16 business, it was going to embrace this business in the future. However, because of
17 unforeseen events, Aquila's risks and losses from the energy merchant business proved too
18 great to keep Aquila's credit rating from falling below investment grade.

19 After Aquila realized that it might not be able to avoid bankruptcy if it remained in
20 the energy merchant sector, it decided to divest many of these assets, which involved many
21 losses. Aquila also decided to exit some of its other investments, such as the sale of much of
22 its interest in Quanta Services. Many in the industry considered this type of strategy as a
23 "Back to the Basics" strategy. Aquila's losses and impairments resulted in the deterioration

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1 in Aquila's book value of common equity. The market value of Aquila's common equity had
2 already taken into consideration many of these expected losses. Aquila also decided to divest
3 of its international businesses as well.

4 As recently as this past spring, ** _____
5 _____

6 _____ ** An announcement of
7 agreements to sell some of these properties for \$896.7 million was made on
8 September 21, 2005. Staff has yet to review the details of these sale agreements. Included in
9 the sale of these properties are the sale of Aquila's gas properties to Empire District Electric
10 Company (Empire). At the very least, Staff will review in detail the proposed sale of
11 Aquila's natural gas properties to Empire. To the extent that any of the other sales will affect
12 Aquila's Missouri operations, Staff will review these as well.

13 Q. Please provide some information from Aquila's 2004 Annual Report.

14 A. Aquila's 2004 Annual Report states the following relevant information about
15 its operations and financial condition:

16 Aquila, Inc. (Aquila or the company, which may be referred to as
17 "we," "us" or "our") is primarily an integrated electric and natural gas
18 utility headquartered in Kansas City, Missouri. We began as Missouri
19 Public Service Company in 1917 and reincorporated in Delaware as
20 UtiliCorp United Inc. in 1985. In March 2002, we changed our name
21 to Aquila, Inc. As of December 31, 2004, we had 3,192 employees in
22 the United States. Our business is organized into two groups:
23 Domestic Utilities, which comprises our regulated utility operations,
24 and Merchant Services, which comprises our unregulated energy
25 activities. All other operations are included in Corporate and Other,
26 including costs that are not allocated to our operating businesses; our
27 controlling investment in a broadband company operating in Kansas
28 City, Everest Connections; and our former investments in Australia,
29 New Zealand and the United Kingdom. Substantially all of our
30 revenues are generated by the Domestic Utilities group.

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Our electric utilities include 2,075 MW of generation and 20,888 pole miles of electric transmission and distribution lines. Our gas utilities include 721 miles of intrastate gas transmission pipelines and 19,356 miles of gas distribution mains and service lines. The Domestic Utilities group generated revenues of \$1.8 billion in the year ended December 31, 2004 and had total assets of \$3.2 billion at December 31, 2004.

Until recently, our operations also included significant international utility investments and Merchant Services was a much larger component of our business. In 2002, we began to reposition our business to concentrate on our Domestic Utilities and reduce our financial obligations. As part of that repositioning, we sold all of our international investments and a substantial portion of our Merchant Services assets. Additionally, we wound down most of our Merchant Services energy trading portfolio. Our remaining Merchant Services group principally owns, operates, and contractually controls non-regulated power generation assets in the United States. See Management's Discussion and Analysis for further discussion of our strategic and financial repositioning.

Aquila provides the following, more detailed explanations in its SEC Form 10K

Filing on its two business groups, Domestic Utilities and Merchant Services:

Domestic Utilities:

Domestic Utilities generates, transmits and distributes electricity to approximately 452,646 customers in Colorado, Kansas and Missouri. Our electric generating facilities and purchase power contracts supply electricity principally to our own distribution systems. Additionally, we sell excess power to other utilities and marketing companies. Approximately 65% of our electric customers are located in Missouri. Domestic Utilities also distributes natural gas to approximately 910,116 customers in Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri and Nebraska. Approximately 46% of our utility operations, based on the book value of our regulated assets, are located in Missouri.

Merchant Services

Merchant Services consists principally of our interests in gas-fired merchant power plants and our remaining wholesale energy trading business. Our merchant power plants are exempt wholesale generators that do not have dedicated customers and are designed to operate only

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1 during periods of peak demand in the geographic area in which the
2 plant is located. Because we currently believe that the fuel and start-up
3 costs of operating our merchant power plants will exceed the revenues
4 that would be generated from the power sold, we believe that for the
5 foreseeable future we will have limited ability to generate power from
6 these plants at a gross profit. Annual operating and maintenance costs
7 of these plants are approximately \$9.0 million. In addition, we make
8 annual capacity payments of approximately \$37.3 million on our
9 Elwood tolling contracts. We have sold capacity in three of these
10 plants which will partially offset these costs in 2005 and 2006

11 Aquila currently operates two electric utility divisions within the state of Missouri,
12 the St. Joseph Light & Power (L&P) division and the Missouri Public Service (MPS)
13 division. Both of these divisions are considered a part of Aquila's Domestic Networks
14 operations. On September 21, 2005, Aquila announced its agreement to sell its Missouri
15 natural gas properties to Empire. The natural gas properties are not a part of Aquila's rate
16 increase request.

17 Aquila's total operating revenues were \$1,711,000,000 for the 12 months ended
18 December 31, 2004. These total operating revenues resulted in an overall net loss of
19 \$292,500,000. These revenues and net incomes were generated from a total property, plant
20 and equipment of \$2,777,400,000 at December 31, 2004. These amounts were taken from
21 Aquila's 2004 SEC Form 10-K Filing.

22 Q. Please describe the current credit ratings of Aquila.

23 A. Currently, Standard & Poor's Corporation's (S&P) corporate credit rating of
24 Aquila is "B-" and recently placed Aquila on CreditWatch with positive implications.
25 S&P placed Aquila on a positive CreditWatch after Aquila announced it had signed
26 definitive agreements to sell several utility properties for \$896.7 million. Aquila's credit
27 rating still is not considered to be of "investment grade."

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1 Q. Please provide S&P's most recent outlook concerning the credit rating
2 assigned to Aquila.

3 A. S&P's recent September 22, 2005 research report on Aquila provides a
4 summary explaining S&P's outlook for Aquila. Specifically the report states:

5 **OUTLOOK: Watch Positive**
6 **RATIONALE**

7 On September 22, 2005, Standard & Poor's Ratings Services placed its
8 ratings on Aquila Inc. on CreditWatch with positive implications. As
9 of June 2005, the Kansas City, Mo.-based energy provider had about
10 \$2.35 billion in total debt.

11 The placement follows the company's announcement that it has signed
12 definitive agreements to sell four utility businesses, for a total of
13 \$897 million, plus working capital and subject to net plant
14 adjustments. Associated EBITDA loss is estimated to be in the
15 \$100 million range, which implies that Aquila received relatively
16 attractive bids for its assets. If approved by the various regulatory
17 commissions, the sales would provide an opportunity for debt
18 reduction – potentially 30% of total adjusted debt. While the company
19 is likely to lose as much in cash flows as a result of the sales, Standard
20 & Poor's expects the subsequent debt reduction to alter the company's
21 maturity schedule, which could reduce intermediate refinancing risk.
22 The company has large debt maturities in 2009, half of which are
23 related to a \$220 million term loan that can be prepaid with a modest
24 penalty. Because the sales involve three gas utilities, they are also
25 likely to reduce the company's working-capital requirements, which
26 would improve liquidity, all other things constant. Post-sale, the
27 company will serve 45% fewer gas customers. Due to its speculative-
28 grade status, the company must post collateral to its gas suppliers (in
29 addition to other counterparties). In an elevated commodity price
30 environment, such posting requirements can be a significant drain on
31 cash and alternative liquidity resources.

32 Standard & Poor's expects to resolve the CreditWatch listing on close
33 of the above asset sales, which are anticipated in the next 12 months
34 once regulatory approvals have been obtained. Greater clarity
35 regarding the amount and composition of debt to be retired should be
36 available at that time. A ratings upgrade would be contingent on an
37 improved financial profile as stipulated above, and on the company
38 demonstrating an established trend in positive cash flows. Over the
39 last two years, the company has worked to stem material cash losses
40 by exiting its noncore businesses, and terminating its tolls and gas

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1 contracts. For the first time since 2001, Aquila generated positive
2 (albeit marginally positive) funds from operations (FFO) in the first
3 half of the year. While the Elwood toll continues to drain \$37 million
4 in cash per year and the company's merchant gas peakers barely cover
5 their carrying costs, lower interest expense (due to early premium
6 income equity securities (PIEs) conversion), and pending rate cases in
7 Iowa, Missouri and Nebraska could establish a sustainable and positive
8 trend. That said, an adverse outcome in the South Harper peaking
9 facility lawsuit could thwart the establishment of a trend. The
10 plaintiffs in the lawsuit are seeking the removal and relocation of a
11 315 MW gas peaking facility and substation that cost the company
12 \$155 million to build.

13 Aquila is a diversified energy company with regulated and
14 nonregulated businesses. The company operates regulated electric and
15 natural gas distribution networks in seven Midcontinent states.
16 Following the completion of the above sales, Aquila will operate in
17 only five states. The company has nonregulated electric generation
18 assets in Illinois and Mississippi and also delivers gas and electricity
19 under contracted and hedged legacy trading arrangements. The current
20 ratings reflect the company's onerous debt burden and marginal FFO.

21 The company is aggressively leveraged. Adjusted debt to capital was
22 73% as of June 2005. Early conversion of its PIEs enabled Aquila to
23 retire about \$341 million in debt and reduce annual interest expense to
24 about \$23 million through 2007. Post-conversion, adjusted debt to
25 capital was 64%. The PIE conversions will be somewhat offset by an
26 increase in leverage to fund Aquila's capital program, which includes
27 participation in the Iatan 2 project. The company closed on a
28 \$300 million secured facility to secure its participation in the project
29 on Aug. 31, 2005. Aquila's debt burden results in heavy interest
30 expense (currently in excess of \$200 million), which pressures FFO.

31 Q. Please provide some historical financial information for Aquila.

32 A. Schedule 7-1 presents Aquila's historical capital structures from 1992 through
33 2004 in dollar amounts, while Schedule 7-2 presents Aquila's historical capital structures
34 from 1992 through 2004 in percentage terms. Schedule 8 presents selected financial ratios
35 from 2000 through 2004 for Aquila. Aquila and its subsidiaries' consolidated common
36 equity ratio has ranged from a high of 44.17 percent to a low of 32.28 percent from 1992
37 through 2004. As of June 30, 2005, the capital structure used for purposes of calculating the

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1 rate of return to be applied to the MPS and L&P rate base, had a common equity ratio of
2 36.16 percent (Schedule 9). Aquila's consolidated return on year-end common equity (ROE)
3 has varied widely from a negative 129.06 percent in 2002 to a high of 13.46 percent in 2000.
4 Aquila's 2002 ROE of negative 129.06 percent is a result of impairments, losses and write-
5 downs from its nonregulated activities. Aquila's market-to-book ratio has varied in the past
6 five years from a high of 1.73 times in 2000 to a low of 0.21 times in 2002.

7 **DETERMINATION OF THE COST OF CAPITAL**

8 Q. Please describe the approach for determining a utility company's cost of
9 capital.

10 A. The total dollars of capital for the utility company are determined as of a
11 specific point in time. This total dollar amount is then apportioned into each specific capital
12 component, i.e. common equity, long-term debt, preferred stock and short-term debt. A
13 weighted cost for each capital component is determined by multiplying each capital
14 component ratio by the appropriate embedded cost or by the estimated cost of common
15 equity component. The individual weighted costs are summed to arrive at a total weighted
16 cost of capital. This total weighted average cost of capital (WACC) is synonymous with the
17 fair rate of return for the utility company.

18 Q. Why is a total WACC synonymous with a fair rate of return?

19 A. From a financial viewpoint, a company employs different forms of capital to
20 support or fund the assets of the company. Each different form of capital has a cost and these
21 costs are weighted proportionately to fund each dollar invested in the assets.

22 Assuming that the various forms of capital are within a reasonable balance and are
23 costed correctly, the resulting total weighted cost of capital, when applied to rate base, will

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1 provide the funds necessary to service the various forms of capital. Thus, the total weighted
2 cost of capital corresponds to a fair rate of return for the utility company.

3 **CAPITAL STRUCTURE AND EMBEDDED COSTS**

4 Q. What capital structure did you use for MPS and L&P?

5 A. The capital structure I have used for this case is Aquila's capital structure on a
6 consolidated basis, as of June 30, 2005. Schedule 9 presents Aquila's capital structure and
7 associated capital ratios. The resulting capital structure consists of 36.16 percent common
8 stock equity and 63.84 percent long-term debt.

9 The amount of long-term debt outstanding on June 30, 2005 includes current
10 maturities due within one year. The amount of long-term debt in the capital structure is
11 based on net proceeds available from long-term debt financings, which is shown on
12 Schedule 10 attached to this direct testimony.

13 Q. Why did you use Aquila's capital structure as of the update period, June 30,
14 2005?

15 A. MPS and L&P are divisions of Aquila. Because the debt and equity are
16 generated from the parent company, Aquila, MPS and L&P rely on Aquila to finance their
17 investment in MPS and L&P assets. Because MPS and L&P do not issue their own debt or
18 equity, Aquila's actual capital structure as of June 30, 2005 was used for MPS and L&P.

19 In addition, Aquila's consolidated capital structure is only slightly more leveraged
20 than Puget Energy Inc. and Southern Company, which are companies in my comparable
21 group.

22 Q. Did you review any other information to determine if Aquila's consolidated
23 capital structure is reasonable for ratemaking purposes?

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1 A. Yes. Schedule 7-1 attached to this direct testimony shows Aquila's year-end
2 capital structures in dollar amounts from 1992 through 2004. Schedule 7-2 attached to this
3 direct testimony shows Aquila's year-end capital structures in percentage terms from 1992
4 through 2004. Aquila began to encounter its current financial difficulties in 2002, which is
5 the same year that Aquila's corporate credit rating was downgraded to junk (not investment
6 grade). In order to determine the amount of leverage that Aquila consistently used while its
7 corporate credit rating was still investment grade, I determined the 5-year and 10-year
8 average capital structures for Aquila up to the year that it was downgraded to below
9 investment grade (see Schedule 7-2). According to Staff's analysis, Aquila was able to
10 maintain a corporate investment grade credit rating with an average common equity ratio of
11 38.76 percent for ten years before it was downgraded and 39.36 percent for the five years
12 before it was downgraded.

13 Q. What was Aquila's lowest common equity ratio during the period 1997
14 through 2001, in which it still had an investment grade credit rating?

15 A. 34.91 percent in 1999.

16 Q. What was Aquila's lowest common equity ratio during the period 1992
17 through 2001 in which it still had an investment grade credit rating?

18 A. 34.65 percent in 1995.

19 Q. Is your recommended common equity ratio based on Aquila's June 30, 2005
20 capital structure above the lowest common equity ratios for the periods mentioned above?

21 A. Yes. Aquila's common equity ratio in my recommended capital structure is
22 36.16 percent common equity.

23 Q. What was the embedded cost of long-term debt for Aquila on June 30, 2005?

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1 A. The embedded cost of long-term debt for Aquila as of June 30, 2005 was
2 10.115 percent. Aquila provided this embedded cost in response to Staff Data Request
3 No. 250.

4 Q. Is this the embedded cost of long-term debt that you are recommending to be
5 included in your rate-of-return recommendation for the MPS and L&P properties?

6 A. No. The embedded cost of debt of 10.115 percent includes debt issuances that
7 were made at a time when Aquila's creditworthiness was highly uncertain. The uncertainty
8 of Aquila's creditworthiness was caused by Aquila's failed investments in the energy
9 merchant sector and the continued cash drain from these investments. It would not be fair to
10 ask Missouri ratepayers to pay the increased costs that Aquila is incurring due to these failed
11 investments. These increased costs should be incurred by investors because they would have
12 incurred the benefit of these investments if they had succeeded. It is not the ratepayers'
13 responsibility to bail a company out if its investments fail. If we assumed that Aquila's
14 electric utility operations were subject to competition, any attempt to raise rates because of
15 other failed investments would result in lost market share. This would result in even lower
16 cash flows for Aquila to utilize to attempt to gain financial stability. It is the Staff's and
17 Commission's responsibility to ensure that the increased costs due to these investment
18 failures are not passed on to ratepayers.

19 Q. How can one ensure that Aquila's recent increased capital costs due to failed
20 nonregulated investments are not incurred by Missouri ratepayers?

21 A. One option would be just to exclude all debt issuances that have been made
22 since Aquila's creditworthiness became uncertain in 2002. However, if this approach were
23 used, then MPS and L&P ratepayers would not benefit from the decreased capital costs that

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1 have occurred in recent years. Aquila has had to issue debt to fund its operations since 2002
2 and if Aquila had been able to keep its credit rating above investment grade, then it would
3 have been able to issue this debt at the lower costs that other Missouri utilities have been able
4 to enjoy during the recent low-cost-of-capital environment. Many Missouri utilities not only
5 have been able to replace maturing debt with lower cost debt, but they also have been able to
6 redeem existing debt early with cheaper debt because of the low cost of capital environment.
7 Aquila's ratepayers should not be denied the lower capital cost structure that Aquila could
8 have achieved if its financial health had not been impacted by its other nonutility
9 investments. Consequently, I decided to make downward adjustments to certain debt
10 issuances that have been made since Aquila's creditworthiness became questionable.

11 Q. Which debt issuances required adjustment?

12 A. The following debt issuances required downward adjustments to the stated
13 interest rate:

- 14 • July 3, 2002 11.875% Senior Note Due July 1, 2012
- 15 • September 20, 2004 8.260% Term Loan Due September 19, 2009

16 Q. Please explain how you determined the amount of downward adjustment to
17 apply to the July 3, 2002 Senior Note.

18 A. Empire issued a twenty-year, 7.05 percent senior note the same year that
19 Aquila issued its July 3, 2002 ten-year senior note. However, Empire issued its senior note
20 five months later (December 2002). Because interest rates were lower in December 2002
21 than in July 2002, Empire's yield needs to be adjusted upward to reflect the higher cost of
22 debt during the month Aquila issued its debt. Twenty-year U.S. Treasury Bonds averaged a
23 5.01 percent yield during December 2002. This is 50 basis points lower than what twenty-

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1 year U.S. Treasury Bonds were yielding during July 2002 (5.51 percent). Because Aquila
2 issued its note during July 2002, a comparison to Empire's senior note should assume that it
3 was also issued in July 2002. If this assumption is made, then it would be reasonable to
4 assume that Empire's twenty-year senior note would have a stated interest rate of 7.55
5 percent (7.05 plus .50).

6 Because Empire's senior note had a term of twenty years, a further adjustment needs
7 to be made in order to impute a reasonable cost for Aquila's shorter term note of ten years
8 (shorter term notes tend to be less costly than longer term notes). In July 2002 the ten-year
9 U.S. Treasury Bond was yielding 4.65 percent. This is approximately 85 basis points less
10 than the twenty-year U.S. Treasury was yielding at the same time. After making the
11 additional downward adjustment of 85 basis points, I arrived at an estimated cost of debt of
12 6.70 percent (7.55 percent less .85), if Aquila had been financially stable.

13 Q. Please explain how you determined the amount of downward adjustment to
14 apply to the September 20, 2004 Term Loan.

15 A. In response to Staff Data Request No. 252 Aquila provided the indenture
16 agreement for its September 20, 2004 Term Loan. ** _____

17 _____
18 _____
19 _____
20 _____
21 _____
22 _____
23 _____ **

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1 Q. After you made these adjustments what is Aquila's embedded cost of long-
2 term debt?

3 A. After making the adjustments I described above, Aquila's embedded cost of
4 long-term debt was 7.281% as of June 30, 2005.

5 Q. Do you believe that this is a reasonable embedded cost of long-term debt for
6 purposes of recommending a fair and reasonable rate of return for Aquila's Missouri electric
7 utility operations?

8 A. Yes. This embedded cost of long-term debt is very similar to Empire's
9 embedded cost of long-term debt of 7.22% as of June 30, 2004. The Commission adopted
10 this embedded cost of long-term debt in the Report and Order in Empire's recent rate case,
11 Case No. ER-2004-0570. Although this embedded cost of long-term debt is not as low as
12 AmerenUE's or Kansas City Power and Light's, because Empire and Aquila are much alike
13 when considering their reliance on natural-gas-fueled electricity, it would appear that using
14 Empire's embedded cost of debt as a test of reasonableness is the most logical.

15
16 **COST OF COMMON EQUITY**

17 Q. How do you propose to analyze those factors by which the cost of common
18 equity for MPS and L&P may be determined?

19 A. In order to calculate the cost of common equity for MPS and L&P, I
20 performed a comparable company analysis of six companies. I have selected the DCF model
21 (explained in detail in Schedule D) as the primary tool to determine the cost of common
22 equity for MPS and L&P, but I also used the CAPM (explained in detail as Schedule E) to
23 check the reasonableness of the DCF results. I also chose to provide the opinions and views

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1 of some of the most prominent individuals in the finance field, whether they are investors,
2 academics and/or monetary policy setters. In addition, I reviewed some other external
3 indicators to test the reasonableness of my recommendation. I will discuss these in more
4 detail later in my testimony.

5 Q. Can you directly analyze the cost of common equity for MPS and L&P?

6 A. No. In order to directly determine the cost of common equity for MPS and
7 L&P, they would have to be stand-alone companies that are publicly traded and pay a cash
8 dividend. The only way that an investor can invest in the operations of MPS and L&P is by
9 investing in the consolidated corporation of Aquila. When an investor purchases a share of
10 Aquila, he is purchasing an interest in the entire company, which includes the financial
11 effects of Aquila's failed nonregulated investments.

12 Q. Please explain how you approached the determination of the cost of common
13 equity for MPS and L&P.

14 A. I decided to do an analysis of the cost of common equity for a comparable
15 group of vertically integrated electric utility companies.

16 Q. Why didn't you use Aquila's cost of common equity as a proxy for the cost of
17 equity for MPS and L&P?

18 A. As explained above, Aquila's riskier, nonregulated operations have had a
19 dramatic effect on Aquila's cost of capital. Aquila's cost of capital is higher than it would be
20 for an electric utility company that did not get involved in riskier operations, such as energy
21 marketing and trading. The objective of this analysis is to approximate the cost of common
22 equity for MPS and L&P, which are regulated utilities. Therefore, it is appropriate to

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1 estimate MPS's and L&P's cost of common equity based on publicly traded companies that
2 have operations that resemble the operations of MPS and L&P.

3 Q. How did you determine which companies you would include to represent the
4 comparable electric utility companies?

5 A. I first relied on Standard & Poor's (S&P) current classification system, which
6 specifies companies that they consider to be vertically integrated electric utilities. Because
7 MPS and L&P are vertically integrated utilities, this helps ensure the selection of companies
8 that are similar in risk profile to that of MPS's and L&P's business operations. Schedule 11
9 presents a list of the eleven electric utility companies that S&P currently classifies as
10 vertically integrated electric utility companies. I then applied the following criteria to these
11 eleven companies in order to select my ultimate proxy group:

- 12 1. Stock publicly traded: This criterion eliminated two companies;
- 13 2. Information printed in Value Line: This criterion didn't eliminate any
14 companies;
- 15 3. Ten years of data available: This criterion eliminated one additional
16 company;
- 17 4. At least investment grade credit rating: This criterion didn't eliminate
18 any companies;
- 19 5. Two sources for projected growth available with one of those being
20 from Value Line: This criterion eliminated two additional companies.

21 This final group of six publicly traded electric utility companies serves as a proxy group to
22 determine the cost of common equity for MPS and L&P. The comparables are listed on
23 Schedule 12.

24 Q. Please explain how you approached the determination of the cost of common
25 equity for the comparables.

26 A. I have calculated a DCF cost of common equity for each of the comparables.
27 The first step was to calculate a growth rate. I reviewed the actual dividends per share

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1 (DPS), earnings per share (EPS), and book values per share (BVPS) as well as projected EPS
2 growth rates for the comparables. Schedule 13-1 lists the annual compound growth rates for
3 DPS, EPS, and BVPS for the past ten years. Schedule 13-2 lists the annual compound
4 growth rates for DPS, EPS, and BVPS for the past five years. Schedule 13-3 presents the
5 averages of the growth rates determined in Schedules 13-1 and 13-2. Schedule 14 presents
6 the average historical growth rates and the projected growth rates for the comparables. The
7 projected EPS growth rates were obtained from three outside sources; I/B/E/S Inc.'s
8 *Institutional Brokers Estimate System*, Standard & Poor's Corporation's *Earnings Guide*, and
9 *The Value Line Investment Survey: Ratings and Reports*. The three projected EPS growth
10 rates were averaged to develop an average projected growth rate of 4.16 percent, which was
11 averaged with the historical growth rates to produce an average historical and projected
12 growth rate of 2.29 percent. All the growth rates were then analyzed to arrive at a growth
13 rate range for the comparables of 3.90 percent to 4.90 percent.

14 The next step was to calculate an expected yield for each of the comparables. The
15 yield term of the DCF model is calculated by dividing the amount of common dividends per
16 share expected to be paid over the next twelve months by the market price per share of the
17 firm's stock. Even though a strict technical application of the model requires the use of a
18 current spot market price, I have chosen to use a monthly average market price for each of
19 the comparables. This averaging technique is an attempt to minimize the effects on the
20 dividend yield which can occur due to daily volatility in the stock market. Schedule 15
21 presents the average high / low stock price for the period of May 1, 2005, through August 31,
22 2005, for each comparable. Column 1 of Schedule 16 indicates the expected dividend for
23 each comparable over the next 12 months as projected by *The Value Line Investment Survey*:

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1 *Ratings & Reports*, June 3, July 1, and August 12, 2005. Column 3 of Schedule 16 shows the
2 projected dividend yield for each of the comparables. The dividend yield for each
3 comparable was averaged to calculate the projected dividend yield for the comparables of
4 4.56 percent. This was rounded up to 4.60 percent.

5 As illustrated in Column 5 of Schedule 16, the average cost of common equity based
6 on the projected dividend yield added to the average of historical and projected growth is
7 6.85 percent. However, this is not my recommendation because in this case, the historical
8 growth rates are somewhat volatile. As a result, I decided to place almost complete weight
9 on the projected growth rates that I analyzed. Even with giving complete weight to the
10 projected growth rates, which, in my opinion, tend to be overly optimistic, my DCF cost of
11 common equity recommendation is 8.50 percent to 9.50 percent. While some witnesses have
12 been dismissing the lower results obtained from a DCF analysis, even when they rely entirely
13 on projected growth rates, I will explain later in my testimony why these lower results are
14 actually consistent with the current capital market environment, in which the cost of money
15 is cheap compared to recent historical standards.

16 Q. What analysis did you perform to determine the reasonableness of your DCF
17 model-derived cost of common equity for the comparable company group?

18 A. I performed a CAPM cost-of-common-equity analysis for the comparables.

19 Q. What did you use for your risk-free rate?

20 A. For purposes of this analysis, the risk-free rate I used was the yield on 30-
21 Year U.S. Treasury Bonds. I determined the appropriate rate to be the average yield for the
22 month of August 2005. This rate was determined from Yahoo!Finance's Investopedia web
23 site and was calculated to be 4.46 percent.

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1 For the second variable, beta, I researched Value Line in order to find the betas for
2 my comparable group of companies. Schedules 17-1 and 17-2 contain the appropriate betas
3 for the comparables.

4 The final term of the CAPM is the market risk premium ($R_m - R_f$). The market risk
5 premium represents the expected return from holding the entire market portfolio less the
6 expected return from holding a risk-free investment. For purposes of this analysis, I not only
7 looked at historical time periods for risk premium estimates from actual returns, but because
8 there has been much discussion and research about lower equity risk premiums in the
9 financial press and in financial journals, I also looked at some implied/forward-looking
10 equity risk premiums. Although I am not recommending that the Commission adopt any of
11 the results from my CAPM analysis using these forward-looking equity risk premiums, I do
12 believe the Commission should keep these results in mind when determining whether the
13 lower cost of common equity estimates that are obtained from a reasonable application of the
14 DCF model are logical.

15 Q. Is there any other reason that you have decided to analyze the implied/forward
16 looking equity risk premiums in your application of the CAPM?

17 A. Yes. In the textbook, *Investment Analysis & Portfolio Management*, seventh
18 edition, 2003, written by Frank K. Reilly and Keith C. Brown, the authors discussed the
19 concept of the appropriate equity risk premium. In this discussion, the authors explained the
20 often-used method of estimating the current equity risk premium by analyzing historical
21 spreads between stock returns and U.S. Treasury returns (the risk-free rate). This is the
22 method that Staff has used for several years in order to test the reasonableness of its DCF
23 recommendation. However, the authors of this textbook cite many examples of research

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1 done that questions estimates based on the historical actual returns that are reported in
2 Ibbotson and Sinquefeld's yearbook, *Stocks, Bonds, Bills and Inflation*. As a result of this
3 concern, the authors used the risk premium estimates based on historical returns for the high
4 end of an estimate of the cost of capital. Consequently, Staff's historical application of the
5 CAPM has been on the high end of estimates made by many in the field of finance. Because
6 Staff had used the CAPM as a test of reasonableness for its DCF recommendation, Staff
7 believes that its past recommendations using the DCF model have been reliable and
8 consistent with the lower cost of capital environment. Staff is still recommending that the
9 Commission adopt its DCF recommendation, but by providing the Commission with the
10 information regarding implied/forward-looking risk premiums, Staff believes that this should
11 make the Commission more comfortable about the reasonableness of single-digit ROE
12 recommendations.

13 Q. Please explain your application of the CAPM using historical return
14 differences.

15 A. The first risk premium used was based on the long-term period of 1926 to
16 2004, which was 6.60 percent. The second risk premium used was based on the short-term,
17 recent period of 1995 to 2004, which was determined to be 2.29 percent. These risk
18 premiums were taken from Ibbotson Associates, Inc.'s *Stocks, Bonds, Bills, and Inflation:
19 2005 Yearbook*.

20 Schedule 17-1 presents the CAPM analysis of the comparables using historical actual
21 return spreads to estimate the required equity risk premium. The CAPM analysis produces
22 an estimated cost of common equity of 9.41 percent for the comparables when using the
23 long-term risk premium period. Using the short-term risk premium period produces an

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1 estimated cost of common equity of 6.18 percent. The long-term risk premium CAPM
2 results support the upper part of my recommended cost of common equity range based on my
3 DCF analysis. Considering the fact that the Reilly and Brown textbook considers equity risk
4 premium estimates based on historical earned return spreads as a high estimate of the cost of
5 common equity, this result provides considerable support for my DCF cost of common equity
6 estimate of 8.50 percent to 9.50 percent.

7 Although the short-term risk premium CAPM results are about 300 basis points
8 below the results of the long-term risk premium CAPM results, it is interesting to note the
9 narrowing of this historical risk premium estimate.

10 Q. Please explain your application of the CAPM using forward-looking/implied
11 risk premium estimates.

12 A. As I indicated previously, because there has been considerable research on
13 equity risk premiums that are implied in current stock valuation levels, I have decided to
14 perform a CAPM analysis using some of these estimates.

15 The first risk premium used for a forward-looking equity risk premium was based on
16 the difference between Roger G. Ibbotson (publisher of the yearbook that provides data on
17 the historical differences in returns between stocks and bonds) and Peng Chen's expected
18 return on the market over the long-run of 9.52 percent and the expected average yield of 5.53
19 percent on long-term treasury bonds through 2009, which is based on a compound average of
20 estimates provided by Value Line. This translates into an equity risk premium of 3.99
21 percent (9.52 less 5.53). The estimated cost of common equity for the comparable
22 companies using this approach was 7.45 percent (column 5 of Schedule 17-2).

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1 The second risk premium is based on an implied equity risk premium made using a
2 financial model developed by Dr. Aswath Damodaran, Associate Professor of Finance at
3 New York University's (NYU) Leonard N. Stern School of Business (Stern). I obtain this
4 model from Dr. Damodaran's website maintained as part of Stern's website. Based on the
5 current level of the S&P 500, the S&P dividend yield, projected growth in earnings for the
6 S&P 500 and the August 2005 average yield on the Thirty-Year U.S. Treasury Bond, the
7 current implied equity risk premium is 2.47 percent. The use of this equity risk premium in
8 the CAPM results in an estimated cost of common equity of 6.31 percent for the comparable
9 companies.

10 Q. What was Dr. Damodaran's year-end 2004 CAPM estimation of the cost of
11 common equity for the electric utility industry in the central region of the U.S.?

12 A. 7.89 percent.

13 Q. How did you become familiar with Dr. Damodaran's research?

14 A. Dr. Damodaran is the author of one of the textbooks that has been used as part
15 of the CFA curriculum. The title of this book is *Investment Valuation*, published in 1996.

16 Q. The CAPM cost of common equity results using forward-looking/implied
17 equity risk premiums appear to be quite low. Are you recommending that the Commission
18 use these results in its authorization of a cost of common equity in this case?

19 A. No. However, I urge the Commission to keep these low estimates of cost of
20 common equity in mind when determining if my cost of common equity estimate using the
21 DCF model is reasonable. These low cost of common equity estimates provide a basis that
22 my conclusions regarding the appropriate cost of common equity using the DCF model are
23 actually conservative and appear to be quite reasonable.

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1 Q. Are you aware of any other influential individuals in the finance field that
2 believe that equity risk premiums are currently quite low?

3 A. Yes. I have cited several of these individuals in past cases in which I have
4 filed cost of capital testimony.

5 These experts include Warren Buffett, Jeremy Siegel and Cliff Asness. Warren
6 Buffett is the chief executive officer of Berkshire Hathaway and is, in my opinion, one of the
7 most respected investors in the U.S. On December 20, 2001, in an interview on CNBC,
8 Mr. Buffett indicated that "returns in the stock market should come in around an average 7-8
9 percent over the next ten years." He also said that he's "not finding" undervalued companies
10 in this market, indicating that he remains watchful of valuation levels for stocks. As recently
11 as the release of Berkshire Hathaway's 2004 Annual Report, Mr. Buffett stated that he only
12 "found very few attractive securities to buy."

13 The other two financial experts are Dr. Asness, University of Chicago, who writes
14 influential studies in academic journals while running the \$5 billion hedge fund AQR Capital
15 Management, and Dr. Siegel, The Wharton School of the University of Pennsylvania, whose
16 book, *Stocks for the Long Run*, helped mold academic thinking on how equities perform over
17 long periods. These two experts were featured in a June 16, 2003 article in Fortune
18 magazine, "Can Stocks Defy Gravity? That's what Wall Street wants you to believe. Don't
19 buy it. The best minds say the market will rise, but it won't soar." Although these are the
20 two main academicians featured in the article, Kenneth French of Dartmouth also urges
21 caution when investing in today's market. Dr. French and Eugene Fama, University of
22 Chicago, Ph.D., have published many influential stock market studies in the past two
23 decades. Dr. Fama has been considered a possible candidate for a Nobel Prize in Economics

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1 since at least the early 1990s. While he hasn't received the Nobel Prize in Economics yet,
2 much of Dr. Fama's research on the efficient market hypothesis has made him well-respected
3 in the field of finance.

4 All of the influential individuals featured in this article have come to the conclusion
5 that the equity risk premium, which is the additional return that investors demand over risk-
6 free government securities, is now lower. As a result of the lower equity-risk premium, they
7 predict that the stock market as a whole can only provide 6 percent to 8 percent returns for
8 the foreseeable future. Dr. Siegel, when speaking about total market returns, specifically
9 states: "Better-than-average earnings, if they happen, could get us perhaps 8%. But 10%
10 assumes earnings growth that is just too big." It is obvious that well-respected investors and
11 academicians are not predicting very high returns for the near future because of current stock
12 valuation levels. *This translates into a low-cost-of common equity environment.*

13 Comparing my recommended cost of common equity of 8.50 percent to 9.50 percent
14 to the predictions of anywhere from 6 to 10 percent for the entire market by these well
15 respected individuals offers a barometer to the reasonableness of my recommendation in this
16 case. Given that regulated utilities are less risky than the market, and therefore investors
17 would normally require less return than the market, my recommendation is quite reasonable
18 considering the current capital market environment.

19 Q. Has any other influential financial expert made any comments concerning
20 investors' reduced required equity risk premiums?

21 A. Yes. In an August 26, 2005 symposium sponsored by the Federal Reserve
22 Bank of Kansas City at Jackson Hole, Wyoming, Alan Greenspan, Chairman of The Federal

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1 Reserve, stated the following about investors' appetite for risk, i.e. lower required equity risk
2 premiums:

3 Whether the currently elevated level of the wealth-to-income ratio will
4 be sustained in the longer run remains to be seen. But arguably, the
5 growing stability of the world economy over the past decade may have
6 encouraged investors to accept increasingly lower levels of
7 compensation for risk. They are exhibiting a seeming willingness to
8 project stability and commit over an ever more extended time horizon.

9 The lowered risk premiums--the apparent consequence of a long
10 period of economic stability--coupled with greater productivity growth
11 have propelled asset prices higher. The rising prices of stocks, bonds
12 and, more recently, of homes, have engendered a large increase in the
13 market value of claims which, when converted to cash, are a source of
14 purchasing power. Financial intermediaries, of course, routinely
15 convert capital gains in stocks, bonds, and homes into cash for
16 businesses and households to facilitate purchase transactions. The
17 conversions have been markedly facilitated by the financial innovation
18 that has greatly reduced the cost of such transactions.

19 Thus, this vast increase in the market value of asset claims is in part
20 the indirect result of investors accepting lower compensation for risk.
21 Such an increase in market value is too often viewed by market
22 participants as structural and permanent. To some extent, those higher
23 values may be reflecting the increased flexibility and resilience of our
24 economy. But what they perceive as newly abundant liquidity can
25 readily disappear. Any onset of increased investor caution elevates risk
26 premiums and, as a consequence, lowers asset values and promotes the
27 liquidation of the debt that supported higher asset prices. This is the
28 reason that history has not dealt kindly with the aftermath of protracted
29 periods of low risk premiums.

30 Although Mr. Greenspan does not attempt to quantify investors' lower required
31 equity risk premiums, it is clear that his views about investors' not requiring as much of a
32 risk premium to invest in stocks, rather than risk-free treasuries, is similar to that of the other
33 influential individuals in the field of finance that I have already mentioned. This provides
34 further support for the lower results that are being achieved by a reasonable application of the
35 DCF model. The lower results are not because the DCF model is not reliable, it is because
36 the cost of common equity is down. In fact, because the DCF model incorporates the price of

Direct Testimony of
David Murray

1 the subject companies' stocks, a reasonable application of this model will directly reflect the
2 lower costs of common equity.

3 Q. Have you reviewed any other evidence to test the reasonableness of your
4 recommendation?

5 A. Yes. I observed three other indicators that I believe provide the Commission a
6 measure of the reasonableness of my recommendation.

7 Q. What is the first indicator that you believe provides some insight as to the
8 reasonableness of your recommendation?

9 A. ** _____
10 _____
11 _____
12 _____ **
13 ** _____
14 _____
15 _____
16 _____
17 _____
18 _____
19 _____
20 _____
21 _____
22 _____
23 _____

Direct Testimony of
David Murray

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Q.

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A.

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Q.

What discount rate are you recommending in this rate case?

10

A.

The cost of capital, i.e., discount rate, that I am recommending in this case is

11

7.72 percent to 8.08 percent.

12

Q.

**

13

**

14

A.

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16

**

17

Q.

Do you know the discount rates that were used by the successful bidders on

18

Aquila's utility properties?

19

A.

No, but S&P indicated in a September 22, 2005, research report that it

20

believed that Aquila received attractive bids. This would imply that the successful bidders

21

used a lower discount rate, i.e., lower required return, and/or it believed it could realize

22

higher cash flows from the properties than Aquila realized.

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1 Q. Did you review any other information to test the reasonableness of your
2 recommendation?

3 A. Yes. Page 63 of Aquila's 2004 Annual Report indicated an expected return of
4 8.50 percent on pension assets. In Staff Data Request No. 308, I asked for the basis of this
5 expected return (asset allocation and expected returns on the various asset classes). The
6 following was part of Aquila's response to this data request:

7		<u>Allocation</u>	<u>Exp Return</u>
8			
9	**	_____	_____ **
10	**	_____	_____ **
11	**	_____	_____ **
12	**	_____	_____ **
13	**	_____	_____ **
14	**	_____	_____ **
15	**	_____	_____ **
16	**	_____	_____ **
17			

18 I believe the expected return of 8.25 percent on U.S. Equities is the most relevant for
19 testing the reasonableness of my recommended cost of common equity. My recommended
20 return on common equity is actually higher than Aquila's own expectation of returns on the
21 entire market (and the entire market is more risky than investing in a regulated utility
22 company based on using beta as a measure of risk).

23 Q. Do you have any other tests of reasonableness?

24 A. Yes. Since the Empire rate case, Case No. ER-2004-0570, I have been
25 monitoring the current yield on Empire's trust preferred securities. Until Empire's recent
26 announcement of its proposed acquisition of Aquila's Missouri natural gas properties, this
27 security had been yielding in the low 8 percent range. Because of some concerns about
28 Empire's credit quality with the acquisition of this property, this yield has risen to around

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1 8.4 percent. Although I cannot advise the Commission with any certainty the appropriate
2 risk premium for a common equity investment versus trust preferred securities, I can advise
3 the Commission that this yield can be used as a floor for a reasonable cost of common equity.
4 This assumes that the Commission believes that Empire is an efficiently managed company.
5 Even though I can't estimate with any certainty an appropriate risk premium to apply to trust
6 preferred securities to determine the cost of common equity, I can advise the Commission
7 that investors tend to view a regulated electric utility's common stock as a debt-like security.
8 The fact that Empire has been steadfast in not lowering its common stock cash dividend
9 provides some insight as to the debt-like nature that some utility stocks may exhibit. The
10 dividends on these stocks are quite similar to the stated yield on bonds.

11 Q. Did the Commission rely in part on authorized ROEs for its decision in the
12 Report and Order in the Empire rate case, Case No. ER-2004-0570?

13 A. Yes. The Commission cited the average electric utility authorized ROE of
14 11 percent for the first quarter of 2004.

15 Q. What were the average authorized ROEs for electric utilities since the first
16 quarter of 2004?

17 A. According to Regulatory Research Associates (RRA) the average authorized
18 ROE for electric utilities in 2004 was 10.73 percent based on 19 decisions the entire year
19 (first quarter - 11.00 percent based on 3 decisions; second quarter - 10.50 percent based on
20 6 decisions; third quarter - 10.33 percent based on 2 decisions; fourth quarter 10.91 percent
21 based on 8 decisions).

22 The average authorized ROE year-to-date for 2005 is 10.43 percent based on
23 17 decisions (first quarter - 10.44 percent based on 8 decisions; second quarter -

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1 10.06 percent based on 6 decisions; third quarter through 9/23/05 – 11.13 percent based on
2 3 decisions).

3 Q. Have you researched all of the cases mentioned above to determine the
4 specifics of the cases?

5 A. No.

6 Q. In light of your testimony about the lower cost of capital, isn't it true that the
7 Commission recently authorized an ROE of 11.0 percent for Empire?

8 A. Yes.

9 Q. How much higher was the Commission's authorized return on common equity
10 than you recommendation in that case?

11 A. It was approximately 170 basis points higher (11 percent minus 9.29 percent).

12 Q. What factors did the Commission consider in its Report and Order in the
13 Empire rate case, Case No. ER-2004-0570, when deciding on a fair and reasonable
14 authorized rate of return?

15 A. As a risk-increasing factor, the Commission cited Empire's more leveraged
16 capital structure compared to that of Dr. James Vander Weide's comparable companies. Of
17 course, the comparison that Dr. Vander Weide made was based on Empire's book value
18 capital structure versus his comparable companies' market value capital structure.

19 As risk-reducing factors, the Commission cited the stipulated Interim Energy Charge
20 (IEC) to consider in Empire's authorized return on common equity. The Commission also
21 cited as a risk-reducing issue that it had found for Empire on Net Salvage.

22 Q. Is the Staff proposing an IEC in this case?

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David Murray

1 A. Yes. It is my understanding that Staff is proposing to use an IEC approach to
2 determine fuel and purchased power costs in this case. Please see the testimony of Staff
3 witness Cary G. Featherstone for discussion regarding the IEC proposal.

4 Q. Has Staff developed its recommendation on depreciation rates consistent with
5 the Commission's decision in the Empire rate case?

6 A. Yes. Staff witness Gregory Macias, of the Commission's Engineering and
7 Management Services Department, determined the depreciation rates consistent with the
8 Commission's treatment of cost of removal and net salvage in the Empire case.

9 Q. Are Staff's recommendations on the use of an IEC for fuel and purchased
10 power costs and depreciation rates consistent with the Commission's most recent decision on
11 cost of removal and net salvage, and therefore, risk-reducing?

12 A. Yes.

13 Q. Is Staff's capital structure recommendation more leveraged than the capital
14 structure of its proxy group?

15 A. In this case, Staff recognizes that its recommended capital structure for MPS
16 and L&P is more leveraged than the comparable companies' average book value capital
17 structure. Staff has not analyzed the comparable companies' market value capital structures,
18 but because the market-to-book ratios of the comparable companies are well above one
19 (1.60, as shown on Schedule 18), Staff can assure the Commission that if it were to make this
20 comparison in this case, then Staff's recommended capital structure would be significantly
21 more leveraged than the comparable group's market value capital structure.

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David Murray

1 Q. What has happened to the yields on Thirty-Year U.S. Treasury Bonds and
2 public utility bonds since the Commission issued its March 10, 2005 Report and Order in the
3 Empire rate case?

4 A. Schedules 5-1 and 5-2 attached to my direct testimony show that these yields
5 have declined. In fact, average public utility bond yields have hit a recent historic low of
6 5.39 percent as of June 2005.

7 Q. What has happened to the yields on Thirty-Year U.S. Treasury Bonds and
8 public utility bonds since you filed your direct testimony in September of 2004 in the Empire
9 rate case, Case No. ER-2004-0570?

10 A. Although I filed testimony in September of 2004, much of the capital market
11 information that I relied on was from the spring and summer of 2004. A review of
12 Schedule 5-1 and 5-2 shows that these yields have declined since I did my analysis in the
13 Empire rate case.

14 Q. What was your cost of common equity recommendation for Empire in Case
15 No. ER-2004-0570?

16 A. My cost of common equity recommendations was 8.29 percent to
17 9.29 percent.

18 Q. If interest rates have declined since the Empire rate case, why is your
19 recommendation higher in this case?

20 A. I believe my higher results can be attributed to my heavy reliance on projected
21 growth rates (including Value Line) in this case. If I had not given Value Line's projected
22 earnings per share growth rates any weight, and had only used IBES growth rates, as
23 Dr. Vander Weide did in Empire's rate case, then my recommendation would have been as

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David Murray

1 low as the low- to mid-8 percent range. This would appear to be consistent with the
2 continued decrease in long-term yields on public utility bonds and U.S. Treasuries.

3 Q. How much has the public utility bond yield dropped since the Commission
4 issued its Report and Order in the Empire rate case?

5 A. The average utility bond yield averaged 5.86 percent during the month the
6 Commission issued its order. The public utility bond yield was around 5.50 percent during
7 the months of July and August. This represents a 35 basis point decrease.

8 Q. If the Commission were to assume that the cost of common equity had
9 dropped by the same amount, what could the authorized ROE be in this case?

10 A. 10.65 percent.

11 Q. How much has the public utility bond yield dropped since you performed the
12 analysis that supported your direct testimony in the Empire rate case?

13 A. As of July 2004, the latest month in which public utility bond yield
14 information was available at the time I wrote my testimony, the average public utility bond
15 yield was 6.34 percent. As indicated before, the average public utility bond yield recently
16 has been around 5.50 percent. This represents an 85 basis point decrease in the average cost
17 of utility debt. If one were to apply this 85 basis point reduction to the Empire authorized
18 ROE, then this would result in an authorized ROE of 10.15 percent.

19 Q. Considering all of the information you have analyzed to provide the
20 Commission with evidence to support an authorization, what do you think a reasonable range
21 would be for the Commission to use to be consistent with its most recent authorization?

22 A. I believe the Commission could authorize in the range of 10.20 percent to
23 11.20 percent and still be consistent with its most previous decision in Empire.

Direct Testimony of
David Murray

1 Q. What witness in the Empire rate case did the Commission appear to give the
2 most weight in its decision on the authorized return on common equity?

3 A. Dr. Vander Weide.

4 Q. Is Dr. Vander Weide a witness in this case?

5 A. No, he is not.

6 Q. Has Staff attempted to perform the same type of analysis that Dr. Vander
7 Weide performed in the Empire rate case?

8 A. No. However, because Dr. Vander Weide performed an analysis of "ex-ante"
9 equity risk premiums, I wanted to inform the Commission about what many prominent
10 individuals in the field of finance are indicating about "ex-ante" equity risk premiums. In
11 fact, I incorporated some of these estimations of "ex-ante" risk premiums in my CAPM
12 analysis. This results in lower cost-of-common-equity estimates than Dr. Vander Weide
13 made in the Empire case. Even though I looked at forward-looking equity risk premiums in
14 this case, my results were lower because I disagree with the inputs in the models that were
15 used by Dr. Vander Weide.

16 Q. Did you do anything else different in this case that should be explained?

17 A. Yes. I did not perform the type of "risk premium" analysis that the Financial
18 Analysis Department has performed for some time. The reason I eliminated this analysis was
19 because it wasn't necessarily an indicator of the company's cost of common equity, because
20 it was not a market-based model. It relied on actual book earned returns on common equity
21 for approximately the most recent ten years for the proxy companies. The actual earned book
22 return on common equity may not be reflective of a company's cost of common equity. For
23 example, in Case No. EC-2002-1, if Staff had just relied on AmerenUE's past earned returns

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1 on common equity to determine AmerenUE's cost of common equity, than obviously
2 AmerenUE would have continued to earn more than the cost of common equity reflected in
3 Ameren's stock price.

4 Q. If you believed that the risk-premium analysis you were performing was not
5 reflective of the subject utility company's cost of common equity, then why did you continue
6 to perform such an analysis?

7 A. Because I only used it to test the reasonableness of my DCF recommended
8 cost of common equity. Now that the Commission appears to be giving weight to other
9 models, I believe it is important for the Commission to have all of the information about the
10 differences in professional opinions about the appropriate inputs for a "risk premium"
11 analysis.

12 Q. Did you perform a "comparable company" analysis in this case, which is what
13 the Commission indicated it believed was more consistent with *Hope* and *Bluefield* in its
14 Report and Order in Empire's last rate case?

15 A. Yes. However, even if it were possible for Staff to perform a company-
16 specific cost of common equity analysis on Aquila, Staff would not use results from this
17 analysis to determine a reasonable cost of common equity for MPS and L&P. MPS and L&P
18 ratepayers should not pay higher rates because of Aquila's failed foray into nonregulated
19 businesses. Staff believed this approach was appropriate in the Empire rate case because
20 Empire's business operations are largely confined to regulated utility operations. This is not
21 the case with Aquila.

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David Murray

1 Q. If you used a comparable company approach to directly determine a
2 reasonable cost-of-common equity recommendation for Aquila's Missouri properties, then
3 why are your results still similar to what they were in the Empire rate case?

4 A. Because the results of my cost of common equity analysis are still a function
5 of what I consider to be reasonable inputs to the models, even if I apply these inputs to a
6 comparable group. In fact, I have given considerable deference to the projected EPS growth
7 rates in this case and my DCF recommended cost of common equity is still firmly in the
8 single digits.

9 Q. Please summarize your cost of common equity analysis to this point.

10 A. I have performed a DCF and CAPM cost of common equity analysis on a
11 group of six comparable companies. The results are summarized below.

	<u>DCF</u>	<u>CAPM (Historical & Forward-Looking)</u>
12 Comparable Companies	8.50% - 9.50%	Historical - 9.41%; 6.18%
14		Forward-looking - 7.45%; 6.31%

15 Q. Based on the analysis you performed, what is your recommended return on
16 common equity in this proceeding?

17 A. I am recommending a return on common equity in the range of 8.50 percent to
18 9.50 percent based on the results of my DCF analysis.

19 **RATE OF RETURN FOR MPS AND L&P**

20 Q. Please explain how the returns developed for each capital component are used
21 in the ratemaking approach you have adopted for MPS and L&P.

22 A. The cost of service ratemaking method was adopted in this case. This
23 approach develops the public utility's revenue requirement. The cost of service (revenue

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David Murray

1 requirement) is based on the following components: operating costs, rate base and a return
2 allowed on the rate base (see Schedule 19).

3 It is my responsibility to calculate and recommend a rate of return that should be
4 authorized on the Missouri jurisdictional electric utility rate base of MPS and L&P. Under
5 the cost of service rate making approach, a weighted cost of capital in the range of 7.72 to
6 8.08 percent was developed for MPS's and L&P's electric utility operations (see
7 Schedule 20). This rate was calculated by applying an embedded cost of long-term debt of
8 7.281 percent and a cost of common equity range of 8.50 percent to 9.50 percent to a capital
9 structure consisting of 63.84 percent long-term debt and 36.16 percent common equity.
10 Therefore, from a financial risk/return prospective, as I suggested earlier, I am
11 recommending that the MPS and L&P electric utility operations be allowed to earn a return
12 on its original cost rate base in the range of 7.72 to 8.08 percent.

13 Through my analysis, I believe that I have developed a fair and reasonable return,
14 which, when applied to the MPS and L&P jurisdictional rate base, will allow Aquila the
15 opportunity to earn the revenue requirement developed in this rate case.

16 Q. Does this conclude your prepared direct testimony?

17 A. Yes, it does.

CASE PROCEEDING PARTICIPATION

DAVID MURRAY

Date Filed	Issue	Case Number	Exhibit	Case Name
1/31/2001	Rate of Return Capital Structure	TC2001402	Direct	Ozark Telephone Company
2/28/2001	Rate of Return Capital Structure	TR2001344	Direct	Northeast Missouri Rural Telephone Company
3/1/2001	Rate of Return Capital Structure	TT2001328	Rebuttal	Oregon Farmers Mutual Telephone Company
4/19/2001	Rate of Return Capital Structure	GR2001292	Direct	Missouri Gas Energy, A Division of Southern Union Company
5/22/2001	Rate of Return Capital Structure	GR2001292	Rebuttal	Missouri Gas Energy, A Division of Southern Union Company
12/6/2001	Rate of Return Capital Structure	ER2001672	Direct	UtiliCorp United Inc. dba Missouri Public Service
12/6/2001	Rate of Return Capital Structure	EC2002265	Direct	UtiliCorp United Inc. dba Missouri Public Service
1/8/2002	Rate of Return Capital Structure	ER2001672	Rebuttal	UtiliCorp United Inc. dba Missouri Public Service
1/8/2002	Rate of Return Capital Structure	EC2002265	Rebuttal	UtiliCorp United Inc. dba Missouri Public Service
1/22/2002	Rate of Return Capital Structure	EC2002265	Surrebuttal	UtiliCorp United Inc. dba Missouri Public Service
1/22/2002	Rate of Return Capital Structure	ER2001265	Surrebuttal	UtiliCorp United Inc. dba Missouri Public Service
8/6/2002	Rate of Return Capital Structure	TC20021076	Direct	BPS Telephone Company
8/16/2002	Rate of Return Capital Structure	ER2002424	Direct	The Empire District Electric Company
9/24/2002	Rate of Return Capital Structure	ER2002424	Rebuttal	The Empire District Electric Company
10/16/2002	Rate of Return Capital Structure	ER2002424	Surrebuttal	The Empire District Electric Company
3/17/2003	Insulation	GM20030238	Rebuttal	Southern Union Co. dba Missouri Gas Energy
10/3/2003	Rate of Return Capital Structure	WC20040168	Direct	Missouri-American Water Company

Date Filed	Issue	Case Number	Exhibit	Case Name
10/3/2003	Rate of Return Capital Structure	WR20030500	Direct	Missouri-American Water Company
11/10/2003	Rate of Return Capital Structure	WR20030500	Rebuttal	Missouri-American Water Company
11/10/2003	Rate of Return Capital Structure	WC20040168	Rebuttal	Missouri-American Water Company
12/5/2003	Rate of Return Capital Structure	WC20040168	Surrebuttal	Missouri-American Water Co
12/5/2003	Rate of Return Capital Structure	WR20030500	Surrebuttal	Missouri-American Water Co
12/9/2003	Rate of Return Capital Structure	ER20040034	Direct	Aquila, Inc.
12/9/2003	Rate of Return Capital Structure	HR20040024	Direct	Aquila, Inc.
12/19/2003	Rate of Return Capital Structure	ST20030562	Direct	Osage Water Company
12/19/2003	Rate of Return Capital Structure	WT20030563	Direct	Osage Water Company
1/6/2004	Rate of Return Capital Structure	GR20040072	Direct	Aquila, Inc.
1/9/2004	Rate of Return Capital Structure	WT20030563	Rebuttal	Osage Water Company
1/9/2004	Rate of Return Capital Structure	ST20030562	Rebuttal	Osage Water Company
1/26/2004	Rate of Return Capital Structure	HR20040024	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks L&P
1/26/2004	Rate of Return Capital Structure	ER20040034	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks L&P
2/13/2004	Rate of Return Capital Structure	GR20040072	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
2/13/2004	Rate of Return Capital Structure	ER20040034	Surrebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
2/13/2004	Rate of Return Capital Structure	HR20040024	Surrebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
3/11/2004	Rate of Return Capital Structure	IR20040272	Direct	Fidelity Telephone Company

Date Filed	Issue	Case Number	Exhibit	Case Name
4/15/2004	Rate of Return Capital Structure	GR20040209	Direct	Missouri Gas Energy
5/24/04	Rate of Return Capital Structure	GR20040209	Rebuttal	Missouri Gas Energy
6/14/04	Rate of Return Capital Structure	GR20040209	Surrebuttal	Missouri Gas Energy
7/19/04	Rate of Return Capital Structure	GR20040209	True-Up Direct	Missouri Gas Energy
9/20/04	Rate of Return	ER20040570	Direct	Empire District Electric Co.
11/04/04	Rate of Return Capital Structure	ER20040570	Rebuttal	Empire District Electric Co.
11/24/04	Rate of Return Capital Structure	ER20040570	Surrebuttal	Empire District Electric Co.

1 **DAVID MURRAY**
2 **TESTIMONY SCHEDULES A THROUGH E**
3 **AQUILA, INC.**
4 **CASE NO. ER-2005-0436**
5

6 Q. Is the recommendation of the cost of common equity consistent with a fair rate
7 of return on common equity?

8 A. Yes. It is generally recognized that authorizing an allowed return on common
9 equity based on a utility's cost of common equity is consistent with a fair rate of return. It is
10 for this very reason that the Discounted Cash Flow (DCF) model is widely recognized as an
11 appropriate model to utilize in arriving at a reasonable recommended return on equity that
12 should be authorized for a utility. The concept underlying the DCF model is to determine the
13 cost of common equity capital to the utility, which reflects the current economic and capital
14 market environment. For example, a company may achieve a return on common equity that is
15 higher than its cost of common equity. This situation will tend to increase the share price.
16 However, this does not mean that this past achieved return is the barometer for what would be
17 a fair authorized return in the context of a rate case. It is the lower cost of capital that should
18 be recognized as a fair authorized return. If a utility continues to be allowed a return on
19 common equity that is not reflective of today's current low-cost-of-capital environment, then
20 this will result in the possibility of excessive returns.

21 The authorized return should provide a fair and reasonable return to the investors of
22 the company, while ensuring that excessive earnings do not result from the utility's

1 monopolistic powers. However, this fair and reasonable rate does not necessarily guarantee
2 revenues or the continued financial integrity of the utility.

3 It should be noted that a reasonable return may vary over time as economic conditions,
4 such as the level of interest rates, and business conditions change. Therefore, the past, present
5 and projected economic and business conditions must be analyzed in order to calculate a fair
6 and reasonable rate of return.

1 Q. Please discuss the historical economic conditions in which MPS and L&P have
2 operated.

3 A. One of the most commonly accepted indicators of economic conditions is the
4 discount rate set by the Federal Reserve Board (Federal Reserve or Fed). The Federal
5 Reserve tries to achieve its monetary policy objectives by controlling the discount rate (the
6 interest rate charged by the Federal Reserve for loans of reserves to depository institutions)
7 and the Federal (Fed) Funds Rate (the overnight lending rate between banks). However,
8 recently the Fed Funds Rate has become the primary means for the Federal Reserve to achieve
9 its monetary policy, and the discount rate has become more of a symbolic interest rate. This
10 explains why the Federal Reserve's decisions now focus on the Fed Funds rate and this is
11 reflected in the discussion of interest rates. It should also be noted that on January 9, 2003,
12 the Federal Reserve changed the administration of the discount window. Under the changed
13 administration of the discount window an eligible institution does not need to exhaust other
14 sources of funds before coming to the discount window, nor are there restrictions on the
15 purposes for which the borrower can use primary credit. This explains why the discount rate
16 jumped from 0.75 percent to 2.25 percent on January 9, 2003, when the Fed Funds rate didn't
17 change. Therefore, discount rates before January 9, 2003, are not comparable to discount
18 rates after January 9.

19 At the end of 1982, the U.S. economy was in the early stages of an economic
20 expansion, following the longest post-World War II recession. This economic expansion
21 began when the Federal Reserve reduced the discount rate seven times in the second half of
22 1982 in an attempt to stimulate the economy. This reduction in the discount rate led to a
23 reduction in the prime interest rate (the rate charged by banks on short-term loans to

1 borrowers with high credit ratings) from 16.50 percent in June 1982, to 11.50 percent in
2 December 1982. The economic expansion continued for approximately eight years until July
3 1990, when the economy entered into a recession.

4 In December 1990, the Federal Reserve responded to the slumping economy by
5 lowering the discount rate to 6.50 percent (see Schedules 2-1 and 2-2). Over the next year-
6 and-a-half, the Federal Reserve lowered the discount rate another six times to a low of
7 3.00 percent, which had the effect of lowering the prime interest rate to 6.00 percent (see
8 Schedules 3-1 and 3-2).

9 In 1993, perhaps the most important factor for the U.S. economy was the passage of
10 the North American Free Trade Agreement (NAFTA). NAFTA created a free trade zone
11 consisting of the United States, Canada and Mexico. The rate of economic growth for the
12 fourth quarter of 1993 was one the Federal Reserve believed could not be sustained without
13 experiencing higher inflation. In the first quarter of 1994, the Federal Reserve took steps to
14 try to restrict the economy by increasing interest rates. As a result, on March 24, 1994, the
15 prime interest rate increased to 6.25 percent. On April 18, 1994, the Federal Reserve
16 announced its intention to raise its targeted interest rates, which resulted in the prime interest
17 rate increasing to 6.75 percent. The Federal Reserve took action again on May 17, 1994, by
18 raising the discount rate to 3.50 percent. The Federal Reserve took three additional restrictive
19 monetary actions, with the last occurring on February 1, 1995. These actions raised the
20 discount rate to 5.25 percent, and in turn, banks raised the prime interest rate to 9.00 percent.

21 The Federal Reserve then reversed its policy in late 1995 by lowering its target for the
22 Fed Funds Rate by 0.25 percentage points on two different occasions. This had the effect of

1 lowering the prime interest rate to 8.50 percent. On January 31, 1996, the Federal Reserve
2 lowered the discount rate to a rate of 5.00 percent.

3 The actions of the Federal Reserve from 1996 through 2000 were primarily focused on
4 keeping the level of inflation under control, and it was successful. The inflation rate, as
5 measured by the *Consumer Price Index - All Urban Consumers* (CPI), had never been higher
6 than 3.70 percent during this period. The increase in CPI stood at 3.20 percent for the twelve
7 months ending July 31, 2005 (see attached Schedules 4-1, 4-2 and 6).

8 The unemployment rate was 4.90 percent as of August 2005 (see Schedule 6), which
9 is fairly low by historical standards. A lower unemployment rate probably provides the Fed
10 with some comfort to continue to raise the Fed Funds rate at its "measured" pace.

11 The combination of low inflation and low unemployment had led to a prosperous
12 economy from 1993 through 2000 as evidenced by the fact that real gross domestic
13 product (GDP) of the United States increased every quarter during this period. However,
14 GDP actually declined for the first three quarters of 2001, indicating there was a contraction
15 in the economy during these three quarters. This contraction of GDP for more than two
16 quarters in a row meets the textbook definition of a recession. According to the National
17 Bureau of Economic Research, the recession began in March of 2001 and ended eight months
18 later. Since the recession ended, GDP had been low up until the second quarter of 2003, but
19 since the second quarter of 2003, GDP has been fairly healthy. GDP grew at a rate of
20 3.30 percent for the second quarter of 2005(see attached Schedule 6).

21 Q. Please explain the changes in utility bond yields and Thirty-Year U.S. Treasury
22 yields in a little more detail.

1 A. Cost of capital changes for utilities are closely reflected in the yields on public
2 utility bonds and yields on Thirty-Year U.S. Treasury Bonds (see attached Schedules 5-1 and
3 5-2). Schedule 5-3, attached to this direct testimony, shows how closely the Mergent's
4 "Public Utility Bond Yields" have followed the yields of Thirty-Year U.S. Treasury Bonds
5 during the period from 1980 to the present. The average spread for this period between these
6 two composite indices has been 152 basis points, with the spread ranging from a low of
7 80 basis points to a high of 304 basis points (see attached Schedule 5-4). Although there may
8 be times when utility bond yield changes may lag the yield changes in the Thirty-Year U.S.
9 Treasury Bond, these spread parameters show just how tightly correlated utilities' cost of
10 capital is with the level of interest rates on long-term treasuries. This fact should be
11 considered when determining the reasonableness of rate of return recommendations.
12

1 Q. What are the inflationary estimations and expectations for 2005 through 2007?

2 A. *The Value Line Investment Survey: Selection & Opinion*, August 26, 2005,
3 estimates inflation to be 3.3 percent for 2005, 2.4 percent for 2006 and 2.0 percent for 2007.
4 The Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years*
5 *2006-2015*, issued January 2005, states that inflation is expected to be 2.4 percent for 2005,
6 1.9 percent for 2006 and 2.1 percent for 2007 (see attached Schedule 6).

7 Q. What are the interest rate estimates and forecasts for 2005, 2006 and 2007?

8 A. Short-term interest rates, those measured by three-month U.S. Treasury Bills,
9 are estimated to be 3.2 percent in 2005, 4.2 percent in 2006 and 4.3 percent in 2007 according
10 to Value Line's predictions. Value Line expects long-term treasury bond rates to average
11 4.7 percent in 2005, 5.3 percent in 2006 and 5.6 percent in 2007.

12 The current rate for the period ending August 2005 is 3.44 percent for three-month
13 U.S. Treasury Bills, as noted on the Federal Reserve website,
14 <http://www.stls.frb.org/fred/data/rates.html>. The rate for 30-Year U.S. Treasury Bonds was
15 4.57 percent as of September 30, 2005, as quoted on CBS MarketWatch at
16 <http://cbs.marketwatch.com/tools/marketsummary/default.asp?siteid=mktw>.

17 Q. What are the growth estimates and expectations for real GDP?

18 A. GDP is a benchmark utilized by the Commerce Department to measure
19 economic growth within the U.S. borders. Real GDP is measured by the actual GDP, adjusted
20 for inflation. Value Line stated that real GDP growth is expected to increase by 3.7 percent in
21 2005, 3.4 percent in 2006 and 3.1 percent in 2007. The Congressional Budget Office, *The*
22 *Budget and Economic Outlook: Fiscal Years 2006-2015*, stated that real GDP is expected to

1 increase by 3.8 percent in 2005, 3.7 percent in 2006 and 3.7 percent in 2007 (see attached
2 Schedule 6).

3 Q. Please summarize the expectations of the economic conditions for the next few
4 years.

5 A. In summary, when combining the previously mentioned sources, inflation is
6 expected to be in the range of 1.9 to 3.3 percent, increase in real GDP in the range of 3.1 to
7 3.8 percent and long-term interest rates are expected to range from 4.7 to 5.6 percent.

8 *The Value Line Investment Survey: Selection & Opinion, October 7, 2005, states that:*

9 **The economic signals are mixed.** For example, new home sales are
10 off, while the inventory of unsold homes is rising, suggesting we could
11 see further softness here in the coming months. However, home
12 resales—a much larger housing market—are up, while home prices for
13 both housing markets, a sign that this sector may slow down, but
14 probably won't pull back to any great extent. At the same time,
15 consumer confidence is falling, under pressure from high oil prices and
16 the dislocations caused by the recent hurricanes, but industrial
17 production and factory use remain relatively strong. These
18 crosscurrents suggest that the U.S. gross domestic product probably
19 rose by 3.5%, or so, in the just-concluded third quarter.

20 **We think the current pattern will continue for the rest of this year**
21 **and into early 2006.** The resilience shown by the economy, in the face
22 of hurricanes, monetary tightening by the Federal Reserve, and record
23 oil prices, is sufficiently encouraging for us to conclude that the next
24 few quarters will see GPD growth in the range of 3.0%-3.5%. This
25 forecast assumes the Fed will raise interest rates once or twice more
26 before it brings the tightening cycle to an end, and that the latest drop in
27 consumer confidence (which is based, in large part, on rising fuel costs)
28 will reverse itself once oil prices stabilize either later this year or early
29 in 2006.

30 **Some pickup in inflation is likely in the coming months.** Not only
31 will higher gasoline and heating oil costs pinch consumer budgets, but
32 so will the rising costs for certain building materials (arising from the
33 need to rebuild hurricane-ravaged areas of the country). The prices of
34 products that are dependent on petroleum as a raw material are also
35 likely to rise. We think future increases in inflation will be modest,
36 although pricing data will need to be watched closely.

1 **Meanwhile, the next challenge for investors will be the release of**
2 **third quarter earnings reports in the next few weeks.** Our feeling is
3 that the economy's resilience and the ongoing careful attention to
4 expenses will keep earnings trending higher.

5 **The stock market continues to do rather well, seemingly mirroring**
6 **the economy itself.** The third quarter was a decent one and assuming
7 that our economic, interest-rate, and profit forecasts are near the mark,
8 the stock market's strength should continue.

9 S&P stated the following in the October 5, 2005, issue of *The Outlook*:

10 Despite higher short-term interest rates, S&P thinks conditions are
11 favorable for stocks in the coming months.

12 The Federal Reserve raised its fed funds target to 3.75% at the Sept. 20
13 meeting. We now expect the Fed to continue its "measured" pace of
14 tightening by 25 basis points (one quarter of a percentage point) at each
15 of its two remaining 2005 meetings.

16 "If Katrina didn't stop the Fed, nothing will," observes David Wyss,
17 Standard & Poor's chief economist. He now believes that a rate increase
18 also is likely at the January meeting, which would bring fed funds to
19 4.5%.

20 The statement issued with the Fed's most recent increase noted that
21 Hurricane Katrina's disruptions "do not pose a more persistent threat."
22 But the Fed noted that the boost in energy costs has "the potential to
23 add to inflation pressures." We take that to mean that the Fed is now a
24 bit more concerned that the latest energy shock will fuel inflation.

25 Our projection for the 2006 average gain in the core consumer price
26 index, which excludes food and energy, remains a moderate 2.4%.
27 While we don't see much in the way of inflation, neither do we see the
28 economy slowing considerably. Standard & Poor's analysts now expect
29 S&P 500 operating earnings to increase 10% in 2006. Although that's
30 down from the 14% growth we project for this year, it is still a fairly
31 robust advance.

32 The market's seasonal patterns appear favorable. Although October is
33 known for its crashes in 1929 and 1987, stocks usually do well during
34 the month. Since 1990, the average October gain for the S&P 500 has
35 been 2.4%.

36 Sam Stovall, Standard & Poor's chief investment strategist, notes that
37 the fourth quarter has been positive for the S&P 500 in 13 of the 15
38 years since 1990. What's more, Stovall notes that consumer

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discretionary and tech stocks, the two sectors we currently favor, tend to outperform the market during the quarter.

A strong market with good showings by tech and consumer stocks could put investors in a merry mood by the end of 2005.

1 Q. Please describe the DCF model.

2 A. The DCF model is a market-oriented approach for deriving the cost of
3 common equity. The cost of common equity calculated from the DCF model is inherently
4 capable of attracting capital. This results from the theory that security prices adjust
5 continually over time, so that an equilibrium price exists and the stock is neither undervalued
6 nor overvalued. It can also be stated that stock prices continually fluctuate to reflect the
7 required and expected return for the investor.

8 The constant-growth form of the DCF model was used in this analysis. This model
9 relies upon the fact that a company's common stock price is dependent upon the expected
10 cash dividends and upon cash flows received through capital gains or losses that result from
11 stock price changes. The interest rate which discounts the sum of the future expected cash
12 flows to the current market price of the common stock is the calculated cost of common
13 equity. This can be expressed algebraically as:

$$14 \quad \text{Present Price} = \frac{\text{Expected Dividends}}{\text{Discounted by } k} + \frac{\text{Expected Price in 1 year}}{\text{Discounted by } k} \quad (1)$$

16 where k equals the cost of equity. Since the expected price of a stock in one year is equal to
17 the present price multiplied by one plus the growth rate, equation (1) can be restated as:

$$18 \quad \text{Present Price} = \frac{\text{Expected Dividends}}{(1+k)} + \frac{\text{Present Price } (1+g)}{(1+k)} \quad (2)$$

20 where g equals the growth rate and k equals the cost of equity. Letting the present price equal
21 P_0 and expected dividends equal D_1 , the equation appears as:

$$22 \quad P_0 = \frac{D_1}{(1+k)} + \frac{P_0(1+g)}{(1+k)} \quad (3)$$

1 The cost of equity equation may also be algebraically represented as:

$$2 \quad k = \frac{D_1}{P_0} + g \quad (4)$$

3
4
5 Thus, the cost of common stock equity, k , is equal to the expected dividend yield
6 (D_1/P_0) plus the expected growth in dividends (g) continuously summed into the future. The
7 growth in dividends and implied growth in earnings will be reflected in the current price.
8 Therefore, this model also recognizes the potential of capital gains or losses associated with
9 owning a share of common stock.

10 The discounted cash flow method is a continuous stock valuation model. The DCF
11 theory is based on the following assumptions:

- 12 1. Market equilibrium;
- 13 2. Perpetual life of the company;
- 14 3. Constant payout ratio;
- 15 4. Payout of less than 100% earnings;
- 16 5. Constant price/earnings ratio;
- 17 6. Constant growth in cash dividends;
- 18 7. Stability in interest rates over time;
- 19 8. Stability in required rates of return over time; and
- 20 9. Stability in earned returns over time.

21 Flowing from these, it is further assumed that an investor's growth horizon is
22 unlimited and that earnings, book values and market prices grow hand-in-hand. Although the
23 entire list of the above assumptions is rarely met, the DCF model is a reasonable working
24 model describing an actual investor's expectations and resulting behaviors.

1 Q. Please describe the CAPM.

2 A. The CAPM describes the relationship between a security's investment risk and
3 its market rate of return. This relationship identifies the rate of return which investors expect a
4 security to earn so that its market return is comparable with the market returns earned by other
5 securities that have similar risk. The general form of the CAPM is as follows:

6
$$k = R_f + \beta (R_m - R_f)$$

7 where:

8 k = the expected return on equity for a specific security;

9 R_f = the risk-free rate;

10 β = beta; and

11 $R_m - R_f$ = the market risk premium.

12 The first term of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the
13 level of return that can be achieved without accepting any risk. In reality, there is no such
14 risk-free asset, but it is generally represented by U.S. Treasury securities.

15 The second term of the CAPM is beta (β). Beta is an indicator of a security's
16 investment risk. It represents the relative movement and relative risk between a particular
17 security and the market as a whole (where beta for the market equals 1.00). Securities with
18 betas greater than 1.00 exhibit greater volatility than do securities with betas less than 1.00.
19 This causes a higher beta security to be less desirable to a risk-averse investor and therefore
20 requires a higher return in order to attract investor capital away from a lower beta security.

21 The final term of the CAPM is the market risk premium ($R_m - R_f$). The market risk
22 premium represents the expected return from holding the entire market portfolio less the
23 expected return from holding a risk-free investment.

24

AN ANALYSIS OF THE COST OF CAPITAL

FOR

**AQUILA, INC.
d/b/a AQUILA NETWORKS MPS AND
AQUILA NETWORKS L&P**

CASE NO. ER-2005-0436

SCHEDULES

BY

DAVID MURRAY

UTILITY SERVICES DIVISION

MISSOURI PUBLIC SERVICE COMMISSION

OCTOBER 2005

AQUILA, INC.
CASE NO. ER-2005-0436

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Federal Reserve Discount Rate and Federal Reserve Funds Rate Changes

Date	Discount Rate	Funds Rate	Date	Discount Rate	Funds Rate
07/19/82	11.50%		02/02/00	5.25%	5.75%
07/31/82	11.00%		03/21/00	5.50%	6.00%
08/14/82	10.50%		05/19/00	6.00%	6.50%
08/26/82	10.00%		01/03/01	5.75%	6.00%
10/10/82	9.50%		01/04/01	5.50%	6.00%
11/20/82	9.00%		01/31/01	5.00%	5.50%
12/14/82	8.50%		03/20/01	4.50%	5.00%
01/01/83	8.50%		04/18/01	4.00%	4.50%
12/31/83	8.50%		05/15/01	3.50%	4.00%
04/09/84	9.00%		06/27/01	3.25%	3.75%
11/21/84	8.50%		08/21/01	3.00%	3.50%
12/24/84	8.00%		09/17/01	2.50%	3.00%
05/20/85	7.50%		10/02/01	2.00%	2.50%
03/07/86	7.00%		11/06/01	1.50%	2.00%
04/21/86	6.50%		12/11/01	1.25%	1.75%
07/11/86	6.00%		11/06/02	0.75%	1.25%
08/21/86	5.50%		** 01/09/03	2.25%	1.25%
09/04/87	6.00%		06/25/03	2.00%	1.00%
08/09/88	6.50%		06/30/04	2.25%	1.25%
02/24/89	7.00%		08/10/04	2.50%	1.50%
07/13/90		8.00%	09/21/04	2.75%	1.75%
10/29/90		7.75%	11/10/04	3.00%	2.00%
11/13/90		7.50%	12/14/04	3.25%	2.25%
12/07/90		7.25%	02/02/05	3.50%	2.50%
12/18/90		7.00%	03/22/05	3.75%	2.75%
12/19/90	6.50%		05/03/05	4.00%	3.00%
01/09/91		6.75%	06/30/05	4.25%	3.25%
02/01/91	6.00%	6.25%	08/09/05	4.50%	3.50%
03/08/91		6.00%			
04/30/91	5.50%	5.75%			
08/06/91		5.50%			
09/13/91	5.00%	5.25%			
10/31/91		5.00%			
11/06/91	4.50%	4.75%			
12/06/91		4.50%			
12/20/91	3.50%	4.00%			
04/09/92		3.75%			
07/02/92	3.00%	3.25%			
09/04/92		3.00%			
01/01/93					
12/31/93	No Changes	No Changes			
02/04/94		3.25%			
03/22/94		3.50%			
04/18/94		3.75%			
05/17/94	3.50%	4.25%			
08/16/94	4.00%	4.75%			
11/15/94	4.75%	5.50%			
02/01/95	5.25%	6.00%			
07/06/95		5.75%			
12/19/95		5.50%			
01/31/96	5.00%	5.25%			
03/25/97		5.50%			
12/12/97	5.00%				
01/09/98	5.00%				
03/06/98	5.00%				
09/29/98		5.25%			
10/15/98	4.75%	5.00%			
11/17/98	4.50%	4.75%			
06/30/99	4.50%	5.00%			
08/24/99	4.75%	5.25%			
11/16/99	5.00%	5.50%			

* Staff began tracking the Federal Funds Rate.

**Revised discount window program begins. Reflects rate on primary credit. This revised discount window policy results in incomparability of the discount rates after January 9, 2003 to discount rates before January 9, 2003.

Sources: Federal Reserve Bank of New York: <http://www.newyorkfed.org/aboutthefed/fedpoint/fed18.html> (1/1/2000 through 8/9/2005).
MGE direct testimony in Case No. GR-2004-0209 (all data prior to 1/1/2000).

Note: Interest rates as of December 31 for each year are underlined.