EDUCATION AND EMPLOYMENT HISTORY
OF
STEPHEN G. HILL

EDUCATION

Auburn University - Auburn, Alabama - Bachelor of Science in Chemical Engineering (1971); Honors - member Tau Beta Pi national engineering honorary society, Dean's list, candidate for outstanding engineering graduate; Organizations - Engineering Council, American Institute of Chemical Engineers

Tulane University - New Orleans, Louisiana - Masters in Business Administration (1973); concentration: Finance; awarded scholarship; Organizations - member MBA curriculum committee, Vice-President of student body, academic affairs

Continuing Education - NARUC Regulatory Studies Program at Michigan State University

EMPLOYMENT

West Virginia Air Pollution Control Commission (1975)
Position: Engineer ; Responsibility: Overseeing the compliance of all chemical companies in the State with the pollution guidelines set forth in the Clean Air Act.

West Virginia Public Service Commission-Consumer Advocate (1982)
Position: Rate of Return Analyst ; Responsibility: All rate of return research and testimony promulgated by the Consumer Advocate; also, testimony on engineering issues, when necessary.

Hill Associates (1989)
Position: Principal; Responsibility: Expert testimony regarding financial and economic issue in regulated industries.

PUBLICATIONS

"The Market Risk Premium and the Proper Interpretation of Historical Data," Proceedings of the Fourth NARUC Biennial Regulatory Information Conference, Volume I, pp. 245-255.
"Use of the Discounted Cash Flow Has Not Been Invalidated," Public Utilities Fortnightly, March 31, 1988, pp. 35-38.

MEMBERSHIPS

American Institute of Chemical Engineers; Society of Utility and Regulatory Financial Analysts (Certified Rate of Return Analyst, Member of the Board of Directors)

SUSTAINABLE LONG-TERM GROWTH

Q. PLEASE PROVIDE AN EXAMPLE THAT DESCRIBES THE DETERMINANTS OF LONG-TERM SUSTAINABLE GROWTH.

A. Assume that a hypothetical regulated firm had a first period common equity or book value per share of $10, the investor-expected return on that equity was 10% and the stated company policy was to pay out 60% of earnings in dividends. The first period earnings per share are expected to be $1.00 ($10/share book equity x 10% equity return) and the expected dividend is $0.60. The amount of earnings not paid out to shareholders ($0.40), the retained earnings, raises the book value of the equity to $10.40 in the second period. The table below continues the hypothetical for a five-year period and illustrates the underlying determinants of growth.

TABLE A.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.25	$11.70	4.00%
EQUITY RETURN	10%	10%	10%	10%	10%	-
EARNINGS/SH.	$1.00	$1.040	$1.082	$1.125	$1.170	4.00%
PAYOUT RATIO	0.60	0.60	0.60	0.60	0.60	-
DIVIDENDS/SH.	$0.60	$0.624	$0.649	$0.675	$0.702	4.00%

We see that under steady-state conditions, the earnings, dividends and book value all grow at the same rate. Moreover, the key to this growth is the amount of earnings retained or reinvested in the firm and the return on that new portion of equity. If we let "b" equal the retention ratio of the firm (1 – the payout ratio) and let "r" equal the firm's expected return on equity, the DCF growth rate "g" (also referred to as the internal or sustainable growth rate) is equal to their product, or

$$g = br. \qquad (i)$$

Professor Myron Gordon, who developed the Discounted Cash Flow technique and first

introduced it into the regulatory arena, has determined that Equation (i) embodies the underlying fundamentals of growth and, therefore, is a primary measure of growth to be used in the DCF model. Professor Gordon's research also indicates that analysts' growth rate projections are useful in estimating investors' expected sustainable growth.

I should note here that the above hypothetical does not allow for the existence of external sources of equity financing, i.e., sales of common stock. Stock financing will cause investors to expect additional growth if the company is expected to issue new shares at a market price that exceeds book value. The excess of market over book would inure to current shareholders, increasing their per share equity value. Therefore, if the company is expected to continue to issue stock at a price that exceeds book value, the shareholders would continue to expect their book value to increase and would add that growth expectation to that stemming from earnings retention or internal growth. Conversely, if a company were expected to issue new equity at a price below book value, that would have a negative effect on shareholder's current growth rate expectations. In such a situation, shareholders would perceive an overall growth rate less than that produced by internal sources (retained earnings). Finally, with little or no expected equity financing or a market-to-book ratio near unity, investors would expect the sustainable growth rate for the company to equal that derived from Equation (i), "g = br." Dr. Gordon[1] identifies the growth rate which includes both expected internal and external financing as:

$$g = br + vs, \qquad\qquad (ii)$$

where,

> g = DCF expected growth rate,
> r = return on equity,
> b = retention ratio,
> v = fraction of new common stock
>   sold that accrues to the current
>   shareholder,

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[1]Gordon, M.J., The Cost of Capital to a Public Utility, MSU Public Utilities Studies, East Lansing, Michigan, 1974, pp., 30–33.

s = funds raised from the sale of stock
as a fraction of existing equity.

Additionally,

$$v = 1 - BV/MP, \qquad\qquad \text{(iii)}$$

where,

MP = market price,
BV = book value.

I have used Equation (iii) as the basis for my examination of the investor expected long-term growth rate (g) in this proceeding.

Q. IN YOUR PREVIOUS EXAMPLE, EARNINGS AND DIVIDENDS GREW AT THE SAME RATE (br) AS DID BOOK VALUE. WOULD THE GROWTH RATE IN EARNINGS OR DIVIDENDS, THEREFORE, BE SUITABLE FOR DETERMINING THE DCF GROWTH RATE ?

A. No, not necessarily. Rates of growth derived from earnings or dividends alone can be unreliable due to extraneous influences on those parameters such as changes in the expected rate of return on common equity or changes in the payout ratio. That is why it is necessary to examine the underlying determinants of growth through the use of a sustainable growth rate analysis.

If we take the hypothetical example previously stated and assume that, in year three, the expected return on equity rises to 15%, the resultant growth rate for earnings and dividends far exceeds that which the company could sustain indefinitely. The potential error in using those growth rates to estimate "g" is illustrated in the following table.

TABLE B.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.47	$12.157	5.00%
EQUITY RETURN	10%	10%	15%	15%	15%	10.67%
EARNINGS/SH.	$1.00	$1.040	$1.623	$1.720	$1.824	16.20%
PAYOUT RATIO	0.60	0.60	0.60	0.60	0.60	-
DIVIDENDS/SH.	$0.60	$0.624	$0.974	$1.032	$1.094	16.20%

What has happened is a shift in steady-state growth paths. For years one and two, the sustainable rate of growth (g=br) is 4.00%, just as in the previous hypothetical. Then, in the last three years, the sustainable growth rate increases to 6.00% (g=br = 0.4x15%). If the regulated firm were expected to continue to earn a 15% return on equity and retain 40% of its earnings, then a growth rate of 6.0% would be a reasonable estimate of the long-term sustainable growth rate. However, the compound annual growth rate for dividends and earnings exceeds 16% which is the result only of an increased equity return rather than the intrinsic ability of the firm to grow continuously at a 16% annual rate. Clearly, this type of estimate of future growth cannot be used with any reliability at all. In the case of the hypothetical, to utilize a 16% growth rate in a DCF model would be to expect the company's return on common equity to increase by 50% every five years into the indefinite future. This would be a ridiculous forecast for any regulated firm and underscores the importance of utilizing the underlying fundamentals of growth in the DCF model.

It can also be demonstrated that a change in our hypothetical regulated firm's payout ratio makes the past rate of growth in dividends an unreliable basis for predicting "g". If we assume our regulated firm consistently earns its expected equity return (10%) but in the third year, changes its payout ratio from 60% to 80% of earnings, the results are shown in the table below.

TABLE C.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.036	$11.26	3.01%
EQUITY RETURN	10%	10%	10%	10%	10%	-
EARNINGS/SH.	$1.00	$1.040	$1.082	$1.104	$1.126	3.01%
PAYOUT RATIO	0.60	0.60	0.80	0.80	0.80	7.46%
DIVIDENDS/SH.	$0.60	$0.624	$0.866	$0.833	$0.900	10.67%

What we see here is that, although the company has registered a high dividend growth rate (10.67%), it is, again, not at all representative of the growth that could be sustained indefinitely, as called for in the DCF model. In actuality, the sustainable growth rate has declined from 4.0% the first two years to only 2.0% ($g=br = 0.2 \times 10\%$) during the last three years due to the increased payout ratio. To utilize a 10% growth rate in a DCF analysis of this hypothetical regulated firm would 1) assume the payout ratio of the firm would continue to increase 33% every five years into the indefinite future, 2) lead to the highly implausible result that the firm intends to consistently pay out more in dividends than it earns and 3) grossly overstate the cost of equity capital.

SAMPLE COMPANY GROWTH RATE ANALYSES

ELECTRIC UTILITIES

ELECTRIC UTILITIES

CV – Central Vermont Public Service - CV's sustainable growth rate has averaged 2.28% over the most recent five year period (2001-2005), including a set-back with low growth in 2001. VL expects CV's sustainable growth to rise above that historical growth rate level and reach 5.8% by the 2009-2011 period. CV's book value growth rate is expected to be "nmf" (not meaningful) over the next five years, due to write offs. The per share book value in 2009-2011 is expected to approximate the book value in 2005. Book value increased at a 3% rate of growth over the past five years. CV's earnings per share are projected to increase at a 5.0% (VL) rate (Reuters and Zack's do not publish growth rate expectations for this company). Over the past five years, CV's earnings growth was 8.5% but its dividends increased at only a 0.5% rate. Investors can reasonably expect long-term sustainable growth rate in the future to be higher than the past but not as high as the company's current internal (b x r) growth projections; a growth rate of **4.0%** is reasonable for CV.

      Regarding share growth, CV's shares outstanding increased at a 1.45% rate over the past five years. The growth the number of shares is projected by VL to decline dramatically through the 2009-11 period due to a stock buy-back program initiated in 2006 and financed by the sale of one of the company's unregulated subsidiaries. An expectation of share growth of **0%** for this company is reasonable.

FE – FirstEnergy Corp. - FE's sustainable growth rate averaged 3.16% over the five-year historical period, with negative results in 2003. Absent those recent results, the company's historical sustainable growth was 4%. VL projects that the internal growth will increase through 2009-11, will bring sustainable growth to 4.95%. FE's book value, which increased at a 6% rate during the most recent five years, however, is expected to decline slightly to a 5.5% rate in the future. FE's earnings per share are projected to increase at 8.5% (VL) to 4.38% (Reuters), and 4.8% (Zack's) rates, indicating the variability of that growth rate measure. Value Line's projections are largely a function of it's three-year averaging technique, which includes FE's 2003 results in which it paid out more in dividends that it took in earnings, thereby depressing the base year average and causing the projected earnings to overstate long-term expectations. FE's dividends are expected to grow at a 4.5% rate, moderating long-term growth expectations to some extent. Historically FE's earnings grew at a 1% rate, according to Value Line, and its dividends showed 2% growth over the past five years. On a compound growth rate basis using 2005 projections as the final year, FE's earnings grew at about a 4% rate historically. The projected sustainable growth, earnings and book value growth rate data indicate that investors can expect the growth from FE in the future to be higher than that which has existed in the past. Investors can reasonably expect a sustainable growth rate of **5.00%** for FE.

      Regarding share growth, FE's shares outstanding showed a 2.6% increase over the past five years. However, FE's growth rate in shares outstanding is expected to fall to a 0% rate of increase through 2009-11. Those projections indicate

that future share growth will be below past averages. An expectation of share growth of **0.5%** for this company is reasonable.

GMP – Green Mountain Power – GMP's sustainable growth rate has averaged 6.67% over the most recent five-year period. VL expects GMP's sustainable growth to decline to approximately 4.2% by the 2009-2011 period. GMP's book value growth rate is expected to be 3% over the next five years, up from the -0.5% rate of growth experienced over the past five years, but below sustainable growth projections. Also, GMP's earnings per share are projected to increase at 3.5% according to Value Line. That investor service projects an 11% growth in dividends, following a 6% decline for the previous five years. Also Value Line shows an historical earnings growth of 37% due to the inclusion of negative earnings in 1998 in the base-year calculation. The 5-year compound rate of earnings growth for this company is 3.2%. Investors can reasonably expect a lower sustainable growth rate in the future — **5%** for GMP is reasonable.

Regarding share growth, GMP's shares outstanding declined at approximately a 2% rate over the past five years. The number of shares is expected to grow at a 1.1% rate through 2009-11. An expectation of share growth of **0%** for this company is reasonable.

PGN- Progress Energy- PGN's sustainable growth rate has averaged 3.60% over the most recent five-year period. VL expects PGN's sustainable growth to decline to a growth rate level of 2.5% by the 2009-2011 period. PGN's book value growth rate is also expected to decline to 2.5% over the next five years, well below the 8.5% rate of growth experienced over the past five years, pointing to lower growth. Also, PGN's earnings per share are projected to increase at 0% (VL) to 3.14% (Reuters), to 3.8% (Zack's) rate—bracketing the indicated projected internal growth rate. Also, PGN's dividends are expected to grow at 2%, above earnings growth rate expectations and below historical dividend growth of 3%. Investors can reasonably expect a sustainable growth rate in the future of **3.0%** for PGN.

Regarding share growth, PGN's shares outstanding increased at approximately a 3.6% rate over the past five years. The number of shares outstanding in 2009-2011 is expected to show about a 0.7% increase from 2004 levels. That increase will leave the total number of shares at a lower level than existed in 2000. An expectation of share growth of **1.5%** for this company is reasonable.

AEE – Ameren Corp. - AEE's sustainable growth rate has averaged 1.8% over the most recent five year period (2001-2005), with a clear declining trend. VL expects AEE's sustainable growth to improve a bit over recent low growth rate levels and reach 2.5% by the 2009-2011 period. AEE's book value growth rate shows stability and is expected to be 4.5% over the next five years, just above the 4% rate of growth experienced over the past five years, but well above internal growth projections. Also, AEE's earnings per share are projected to increase at a 2.5% (VL) rate. Reuters and Zacks project 5.17% and 6% earnings growth for AEE, respectively. AEE's dividends are expected to show no growth over the next five years, after growing at a 0% rate the previous five years, according to Value Line. Over the past five years, AEE's earnings growth was 1.5%. Based on projected earnings and book value growth, investors can reasonably expect long-term sustainable growth rate in the future to be higher than the internal growth projections published by Value Line; a growth rate of **3.75%** is reasonable for AEE.

Regarding share growth, AEE's shares outstanding increased at a 10.4% rate over the past five years due to a series of equity issuances. The growth the number of shares is projected by VL to increase at about a 1.1% rate between 2004 and the 2009-11 period. An expectation of share growth of **2.5%** for this company is reasonable.

CNL – Cleco Corp. - CNL's sustainable growth rate averaged 4.56% for the five-year period, with the results in the most recent years below that average. VL expects sustainable growth to continue at about a 4% level through the 2009-11 period. CNL's book value growth is expected to increase at a 8% rate, above the historical level of 4%, due to the building of a new power plant. CNL's earnings per share is projected to show 4.5% growth over the next five years, and its dividends are expected to show 2% growth, according to Value Line (Reuters & Zacks project 8% earnings growth). Historically CNL's earnings increased at a 1% rate and its dividends increased at a 2% rate of growth, according to Value Line. These data indicate that future growth will be above prior growth rate averages. Investors can reasonably expect sustainable growth from CNL to be below past averages, a sustainable internal growth rate of **5.0%** is reasonable for this company.

Regarding share growth, CNL's shares outstanding grew at approximately a 2.7% rate over the past five years. The growth in the number of shares is expected by VL to be 6.3% through 2009-11. An expectation of share growth of **4%** for this company is reasonable.

DPL – DPL, Inc.- DPL's sustainable growth rate has averaged 4.34% over the most recent five-year period. VL expects DPL's sustainable growth to increase to approximately 7% by the 2009-2011 period. DPL's book value growth rate is expected to be 2% over the next five years, up substantially from the -3% rate of growth experienced over the past five years. Also, DPL's earnings per share are projected to increase at a rate of from 5.5% (Reuters and Value Line), to 7% (Zack's). Over the past five years, DPL's earnings growth was -1% according to Value Line. Historically, dividends grew at a only 0.5% rate and VL expects that rate to increase to 3% over the next five years. Investors can reasonably expect a higher sustainable growth over the long term — **6.5%** for DPL is reasonable.

Regarding share growth, DPL's shares outstanding increased at a 0.3% rate over the past five years. The number of shares is expected to decline at a 2.1% rate through 2009-11. An expectation of share growth of **0%** for this company is reasonable.

EDE – Empire District Electric - EDE's sustainable internal growth rate averaged –2% over the five-year historical period, with several negative growth years. VL projects EDE's sustainable growth to rise to a level of only 1.4% through 2009-11—a substantial improvement over historical results. EDE's book value growth rate is expected to continue in the future at 1.5%, similar to the historical level of 2%. However, EDE's earnings per share are projected to increase at 5.5% to according to VL, while the analysts' surveyed by Reuters project earnings growth at 2%, a wide differential. EDE's dividends are expected to remain at a constant level over the next five years (i.e., showing 0% growth), and moderating long-term growth expectations. Sustainable growth has been relatively inconsistent for this company, historically and is expected to trend upward in the future. Dividend growth has been non-existent, but the company has continued to pay its dividend. Also, Value Line's

earnings growth projection is skewed upward by their inclusion of the company's poor 2004 earnings in is "base" three-year period. From 2003 through the mid-point of the 2009-2011 period, Value Line's projected earnings per share indicate a 5% growth rate. Investors can reasonably expect a sustainable growth rate of **3.5%** from EDE.

Regarding share growth, EDE's shares outstanding grew at about a 7% rate over the past five years, due primarily to a large equity issuance in 2002. The level of share growth is expected by VL to drop to 2.8% through 2009-11. An expectation of share growth of **4%** for this company is reasonable.

ETR – Entergy Corp. - ETR's internal sustainable growth rate has averaged 5.79% over the most recent five year period (2001-2005). Sustainable growth is expected to decline to about 5% by the 2009-2011 period. Also, ETR's book value growth rate is expected to be 4.5% over the next five years—a decrease from the 5.5% rate of growth experienced over the past five years—pointing to somewhat lower growth expectations for the future. ETR's earnings per share are projected to increase at a rate of from about 5% (VL) to 7.4% (Zack's) to 6.8% (Reuters). After showing low growth historically ETR's dividends are expected to grow at a high 8% rate, supporting higher sustainable growth expectations. Over the past five years, ETR's earnings grew at a 11% rate according to Value Line (8% on a compound growth basis) while its dividends showed 1.5% growth. These data indicate that investors can reasonably expect a sustainable growth rate in the future below past averages, however the earnings growth projections are above historical sustainable growth. Therefore, **6.0%** is a reasonable long-term growth expectation for ETR.

Regarding share growth, ETR's shares outstanding grew at a –1.7% rate over the past five years. The number of shares outstanding is projected by VL to continue to decline at approximately a 0.2% rate through 2009-11. An expectation of share growth of **–0.25%** for this company is reasonable.

HE – Hawaiian Electric - HE's sustainable growth rate has averaged 1.97% over the most recent five year period (2001-2005), with lower growth in the most recent year, indicating a decreasing trend. However, VL expects HE's sustainable growth to increase from that historical growth rate level to reach 3% by the 2009-2011 period. Also, HE's book value growth rate is expected to be 2.5% over the next five years, down from the 3% rate of growth experienced over the past five years. HE's earnings per share are projected to increase at a 3% (Value Line) to 5.2% (Zack's) to 2.9% (Reuters) rate. The company's dividends are expected to show 0% growth over the next five years. Over the past five years, HE's earnings grew at a 1% rate while its dividends showed no increase. Investors can reasonably expect a sustainable growth rate in the future of **3.5%** for HE.

Regarding share growth, HE's shares outstanding grew at a 3.27% rate over the past five years. The number of shares is projected by VL to show a 0.25% rate of increase through the 2009-11 period. An expectation of share growth of **1%** for this company is reasonable.

PNM Resources – PNM - PNM's sustainable growth rate has averaged 5.37% over the most recent five year period with a declining trend. VL expects PNM's sustainable growth to fall below that historical average growth rate level to about 3.5% by the 2009-2011 period. PNM's book value growth rate is expected to be 4% over the next five years, similar to the 4.5% rate of growth experienced over the past five years. Those data indicate stable growth. Also, PNM's earnings per share

are projected to increase at a 5.5% (VL) to 8.3% (Zacks) to 10.3% (Reuters) rate. Its dividends are expected to grow at 8.5%, increasing long-term growth rate expectations. Over the past five years, PNM's earnings growth was -1% while its dividends increased at a 5% rate. Investors can reasonably expect a sustainable growth rate in the future of **5.75%** for PNM.

Regarding share growth, PNM's shares outstanding increased at a 4% rate over the past five years. The number of shares outstanding in 2009-2011 is expected to increase at about a 1.5% rate from 2005 levels. An expectation of share growth of **2%** for this company is reasonable.

Puget Energy – PSD - PSD's internal sustainable growth rate has averaged only 0.3% over the most recent five-year period (2001-2005), with very negative results in 2001. Absent those results the historical average was 1.4% and the most recent growth was above the historical growth rate level, indicating an increasing trend. That higher level of growth is expected to be maintained and to reach 3% by the 2009-2011 period. PSD's book value growth rate is expected to be 4% over the next five years—up substantially from the 0.5% rate of growth experienced over the past five years. PSD's earnings per share are projected to increase at 5% to 5.14% (VL & Reuters, respectively) and 7% (Zack's), while its dividends are also expected to grow at 1.5%, moderating long-term growth expectations. Investors can reasonably expect a sustainable growth rate in the future to be higher than past averages, **4.5%** is reasonable for PSD.

Regarding share growth, PSD's shares outstanding grew at a 7.3% rate over the past five years. The number of shares outstanding is projected by VL to rise at approximately a 1.2% rate through 2009-11. An expectation of share growth of **2%** for this company is reasonable.

Pinnacle West – PNW - PNW's sustainable growth rate has averaged 3.22% over the most recent five-year period with a downward trend. VL expects PNW's sustainable growth to fall below that historical average growth rate level to 2.84% by the 2009-2011 period. PNW's book value growth rate is expected to be 3.5% over the next five years, just below to the 4% rate of growth experienced over the past five years, indicating relatively stable growth expectations for this firm. PNW's earnings per share is projected to increase at a 6% (VL and Reuters) to 6.8% (Zack's) rate—all well above the indicated internal growth rate. PNW's dividends are expected to grow at a 5% rate, supporting higher long-term growth rate expectations. Over the past five years, PNW's earnings growth was –4.5% while its dividends increased at a 6.5% rate. Investors can reasonably expect a sustainable growth rate in the future of **5.0%** for PNW.

Regarding share growth, PNW's shares outstanding increased at approximately a 4% rate over the past five years due to a share issuance in 2002. The number of shares outstanding in 2009-2011 is expected to show a 0% increase from 2005 levels. An expectation of share growth of **1%** for this company is reasonable.

UNS – Unisource Energy - UNS's sustainable growth rate has averaged 5.29% over the most recent five year period. VL expects UNS's sustainable growth to decline below that historical growth rate level, to about 3.5%, by the 2009-2011 period. UNS's book value growth rate is expected to be 5% over the next five years, below the very high 12% rate of growth experienced over the past five years UNS's earnings per share are projected to increase at a rate of 7% (VL). Zack's and

Reuters do not report projected earnings growth for this company. Its dividends are expected to grow more rapidly, at a 9.5% rate—catching up from an historical growth rate of 0%. Over the past five years, UNS's earnings growth was 5%. Investors can reasonably expect a sustainable growth rate in the future to be similar to that of the past and **5.0%** is reasonable for UNS.

Regarding share growth, UNS's shares outstanding increased at approximately a 1% rate over the past five years. That rate of increase is expected to decline in the future to a 1.2% rate through 2009-2011. An expectation of share growth of **1%** for this company is reasonable.

GAS DISTRIBUTORS

ATG - AGL Resources - ATG's sustainable growth rate has averaged 5.49% over the most recent five year period (2001-2005). VL expects ATG's sustainable growth to fall below that historical growth rate level and to reach 4.75% by the 2009-2011 period. ATG's book value growth rate is expected to be 6% over the next five years, a decrease from the 6% rate of growth experienced over the past five years. Also, ATG's earnings per share are projected to increase at a 4.57% (Reuters), 4.5% (Zack's) to 4% (VL) rate— below historical growth and similar to the projected sustainable growth rate—and its dividends are expected to show 6.5% annual growth over the next five years. Over the past five years, ATG's earnings showed 13.50% growth (as the company acquired other large distribution operations and expanded its energy trading business), while its dividends increased at only a 2% rate. Investors can reasonably expect a sustainable growth rate in the future of **5.0%** for ATG.

Regarding share growth, ATG's shares outstanding increased at approximately a 9% rate over the past five years, due to merger activity. The number of shares is projected by VL to increase at about a 0.1% rate between 2005 and the 2009-11 period. An expectation of share growth of **1%** for this company is reasonable.

ATO – Atmos Energy Corp - ATO's sustainable growth rate averaged only about 2,2% for the five-year historical period. Value Line projects increasing growth in 2006 and 2007, and then a rise by the 2009-11 period to a level near 4.8%, through an increasing ROE and earnings retention. However, ATO's book value growth during the most recent five years (8.5%) is expected to moderate to a 5% rate in the future. ATO's earnings per share are projected to increase at a 7% (VL) to 4.8% (Reuters) to 5.5% (Zack's) rate, but its dividends are expected to grow at only a 2% rate, moderating long-term growth expectations. Value Line's earnings growth rate expectation is due, largely, to the inclusion of 2004's poor results in the "base period" earnings measurement and, as a result, would not represent investors' expectations for a sustainable growth rate. Historically ATO's earnings have shown 6.5% growth, while its dividends increased at a 2.0% rate. Investors can reasonably expect a sustainable growth rate higher than that established historically, but not as high as the earnings growth projected by Value Line; **4.25%** is a reasonable expectation for this company.

Regarding share growth, ATO's shares outstanding grew at approximately an 18% rate over the past five years due to merger activity. The number of shares is

expected to grow at approximately a 4.5% rate through 2009-11. An expectation of share growth of **5%** for this company is reasonable.

CGC - Cascade Natural Gas Company - CGC's sustainable growth rate averaged 1.2% over the five-year historical period with the company paying out more in dividends that it had in earnings in 2003 and 2005. By 2009-11, sustainable growth is projected to approximate 3%. However, CGC's book value, which showed no increase during the most recent five years, is expected to increase at a 10.5% rate in the future, well above the sustainable growth projection. CGC's earnings per share are projected to increase at a 8.5% (VL) and 3.5% (Reuters) rate, but its dividends are expected to grow at only a 0.5% rate. Historically CGC's earnings declined at a 3.5% rate, according to Value Line and its dividends showed 0% growth. The projected sustainable growth indicates declining growth for this company, however earnings and book value growth rate data indicate that investors can expect the growth from CGC to be higher in the future than has existed in the past. Investors can reasonably expect a sustainable growth rate of **4%** for CGC.

Regarding share growth, CGC's shares outstanding showed a 0.8% increase over the past five years. CGC's growth rate in shares outstanding is expected to rise at about a 1.8% rate of increase through 2009-11. Those projections indicate that future share growth will be above past averages. An expectation of share growth of **1%** for this company is reasonable.

LG – Laclede Group - LG's sustainable growth rate has averaged 1.8% over the most recent five year period, with much higher growth in the most recent year—indicating an upward trend. VL expects LG's sustainable growth to rise above that historical growth rate level and reach 6% by the 2009-2011 period. LG's book value growth rate is expected to be 5% over the next five years, up from the 2.5% rate of growth experienced over the past five years. Also, LG's earnings per share are projected to increase at a 4.0% (Reuters) to 7% (VL) rate—bracketing the indicated sustainable growth rate. However, its dividends are expected to grow at 2%. Over the past five years, LG's earnings growth was 4.5% while its dividends increased at a 0.5% rate. Investors can reasonably expect a sustainable growth rate in the future of **4.5%** for LG.

Regarding share growth, LG's shares outstanding increased at approximately a 2.9% rate over the past five years, with equity issuances recently. The number of shares outstanding in 2009-2011 is expected to have increased at a rate of 2.5% from 2005 levels. An expectation of share growth of **2.5%** for this company is reasonable.

NJR - New Jersey Resources - NJR's sustainable growth rate averaged 7.18% over the most recent five-year period, with an increasing trend. VL projects, by the 2009-11 period, sustainable growth will approximate 7%. NJR's projected book value also indicates stability -- book value grew at a 7% rate during the most recent five years and is expected to rise at an 8% rate in the future, according to Value Line. Value Line projects a rate of earnings increase for NJR of 4.5%, while Reuters projects 5.2% and Zack's projects 6.0%--all of those estimates are below sustainable growth projections. Dividends are expected to grow at a 4.5% rate, moderating long-term growth expectations slightly. Historically NJR's earnings grew at an 8.5% rate while its dividends increased at a 3% rate. Therefore, like many other gas distributors, NJR's earnings can not be expected support dividend

increases at the same rate. Investors can reasonably expect a long-term sustainable growth rate of **6.5%.**

Regarding share growth, NJR's shares outstanding grew at a 0.8% rate over the past five years. The five-year average level of share growth is expected to decrease at approximately 1% annually through 2009-11. An expectation of share growth of **0%** for this company is reasonable.

GAS – Nicor, Inc. - GAS's sustainable growth rate averaged 3.98% over the five-year historical period with a decreasing trend. VL projects sustainable growth through 2009-11 near historical averages, 3.6%. GAS's book value, which increased at a 1% rate during the most recent five years, is expected to increase to a 3.5% rate in the future, above historic rates and near the sustainable growth projection. GAS's earnings per share are projected to increase at 4% (VL) 3.1% (Reuters) rate and 3.5% (Zack's). Its dividends are expected to grow at a 1.5% rate, moderating long-term growth expectations. Historically GAS's earnings grew at a –0.5% rate, according to Value Line and its dividends showed 4.5% growth. The projected sustainable growth, earnings and book value growth rate data indicate that investors can expect the growth from GAS to be lower in the future than has existed in the past. Investors can reasonably expect a sustainable growth rate of **3.75%** for GAS.

Regarding share growth, GAS's shares outstanding showed a –0.1% increase over the past five years. Further, GAS's growth rate in shares outstanding is expected to rise at about a 0.2% rate of increase through 2009-11. An expectation of share growth of **0%** for this company is reasonable.

NWN - Northwest Natural Gas - NWN's sustainable growth rate averaged 2.85% for the five-year period, with the results in the most recent year exceeding the average. VL expects sustainable growth to rise to about a 4.25% level through the 2009-11 period. NWN's book value growth is expected to continue to increase at a 3.5%, equal to the historical level of 3.5%. NWN's earnings per share growth is projected to increase at 7% (VL) to 5.2% (Reuters) to 5.3% (Zack's). VL projects its dividends are expected to grow at a 4.0% rate. Historically NWN's earnings and dividends increased at 3% and 1% rates, respectively, according to Value Line. Investors can reasonably expect sustainable growth from NWN to exceed past averages, a sustainable internal growth rate of **4.5%** is reasonable for this company.

Regarding share growth, NWN's shares outstanding grew at a 2.2% rate over the past five years. The growth in the number of shares is expected by VL to be 0.3% through 2009-11. An expectation of share growth of **1.0%** for this company is reasonable.

PGL – Peoples Energy - PGL's sustainable growth rate has averaged 2.36% over the most recent five year period, with sub-par results in the most recent two years. VL expects PGL's sustainable growth to be 2.3% by the 2009-2011 period. PGL's book value growth rate is expected to be –1.5% over the next five years, below the 2.0% rate of growth experienced over the past five years. Also, PGL's earnings per share are projected to increase at 0.5% (VL), 4.38% (Reuters) and 4.0% (Zack's). Dividends are expected to grow at only 1.0%. Over the past five years, PGL's earnings growth was 1% while its dividends increased at a 2% rate. Investors can reasonably expect a sustainable growth rate in the future of **3.0%** for PGL.

Regarding share growth, PGL's shares outstanding increased at approximately a 1.9% rate over the past five years. The number of shares outstanding in 2009-2011 is expected to increase at a 1.9% rate. An expectation of share growth of **2%** for this company is reasonable.

PNY - Piedmont Natural Gas - PNY's sustainable internal growth rate averaged 2.96% over the five-year historical period, but was above that level in the two most recent years, indicating an increasing trend. VL projects PNY's sustainable growth to rise to a level of approximately 4.1% through 2009-11. Also, PNY's book value growth rate is expected to continue in the future at 3.5%, below the historical level of 6.5%, pointing to moderating growth for this company. PNY's earnings per share are projected to increase at 6% (VL) to 5.2% (Zack's), to 4.87% (Reuters), while its dividends are expected to grow at a 5.5% rate, approximating to the historical rate. Sustainable growth has been relatively consistent for this company and is expected to trend upward somewhat in the future to above the 4% level. Dividend growth has been consistent at 5%, therefore, investors can reasonably expect a sustainable growth rate of **5%**, from PNY.

Regarding share growth, PNY's shares outstanding grew at about a 4.25% rate over the past five years, due to a large equity issuance in 2004. Prior to that time share growth was about 1.7% annually. The level of share growth is expected by VL to decline at a 0.4% rate through 2009-11. An expectation of share growth of **0.5%** for this company is reasonable.

SJI – South Jersey Industries - SJI's internal sustainable growth rate has averaged 5.31% over the most recent five-year period (2001-2005), with results in 2005 above the historical growth rate level, indicating an increasing trend. That higher level of growth is expected to be maintained and to reach 6.5% by the 2009-2011 period. SJI's book value growth rate is expected to be 6% over the next five years—down from the 13% rate of growth experienced over the past five years (the product of acquisitions). SJI's earnings per share are projected to increase at 7% to 5.67% (VL & Reuters, respectively) and 5.7% (Zack's), while its dividends are also expected to grow at 6%. Over the past five years, SJI's earnings grew at a 11.5% rate while its dividends showed a 2.5% increase. Investors can reasonably expect a sustainable growth rate in the future to be higher than past averages, **6%** is reasonable for for SJI.

Regarding share growth, SJI's shares outstanding grew at a 5% rate over the past five years. The number of shares outstanding is projected by VL to rise at approximately a 1.3% rate through 2009-11. An expectation of share growth of **1.5%** for this company is reasonable.

SWX – Southwest Gas - SWX's sustainable growth rate averaged 2.37% over the five-year historical period with an increasing trend. VL projects that the retention ratio and ROE will rise through 2009-11, bringing sustainable growth near 6.75%. SWX's book value, which increased at a 4% rate during the most recent five years, is expected to decline slightly to a 3% rate in the future, below the sustainable growth projection. SWX's earnings per share are projected to increase at a 8.5% (VL) 4.33% (Reuters) and 6% (Zack's). Its dividends are expected to grow at a 0% rate, moderating long-term growth expectations. Historically SWX's earnings grew at a 1.5% rate, according to Value Line and its dividends showed 0% growth. The projected sustainable growth and earnings growth rate data indicate that investors can expect the growth from SWX to be higher in the future than has existed in the

past, however those expectations are moderated by the decline in book value growth and the stagnant dividend. Investors can reasonably expect a sustainable growth rate of **5.5%** for SWX.

Regarding share growth, SWX's shares outstanding showed a 4.8% increase over the past five years. Further, SWX's growth rate in shares outstanding is expected to rise at about a 2.8% rate of increase through 2009-11. An expectation of share growth of **3%** for this company is reasonable.

WGL – WGL Holdings - WGL's sustainable growth rate has averaged 3.52% over the most recent five year period, with an increasing trend. VL expects WGL's sustainable growth to rise above that historical growth rate level to 4.35% by the 2009-2011 period. WGL's book value growth rate is expected to be 4% over the next five years, above the 3% rate of growth experienced over the past five years. WGL's earnings per share are projected to increase at a 2% (VL) 3.73% (Reuters) to 4.0% (Zack's). However, like the other gas distributors, its dividends are expected to grow at only 2%. Over the past five years, WGL's earnings growth was 6% while its dividends increased at a 1.5% rate. Investors can reasonably expect a sustainable growth rate in the future of **4.0%** for WGL.

Regarding share growth, WGL's shares outstanding increased at approximately a 0.5% rate over the past five years. That rate of increase is expected to be maintained in the future with number of shares outstanding in 2009-2011 is expected to grow at a similar rate. An expectation of share growth of **0.5%** for this company is reasonable.

CORROBORATIVE EQUITY CAPITAL COST ESTIMATION METHODS
CAPITAL ASSET PRICING MODEL

Q. PLEASE DESCRIBE THE CAPITAL ASSET PRICING MODEL (CAPM) YOU USED TO ARRIVE AT AN ESTIMATE FOR THE COST RATE OF THE COMPANY'S EQUITY CAPITAL.

A. The CAPM states that the expected rate of return on a security is determined by a risk-free rate of return plus a risk premium which is proportional to the non-diversifiable (systematic) risk of a security. Systematic risk refers to the risk associated with movements in the macro-economy (the economic "system") and, thus, cannot be eliminated through diversification by holding a portfolio of securities. The beta coefficient (β) is a statistical measure that attempts to quantify the non-diversifiable risk of the return on a particular security against the returns inherent in general stock market fluctuations. The formula is expressed as follows:

$$k = r_f + \beta(r_m - r_f), \qquad\qquad \text{(i)}$$

where "k" is the cost of equity capital of an individual security, "r_f" is the risk-free rate of return, "β" is the beta coefficient, "r_m" is the average market return and "$r_m - r_f$" is the market risk premium. The CAPM is used in my analysis, not as a primary cost of equity analysis, but as a check of the DCF cost of equity estimate. Although I believe the CAPM can be useful in testing the reasonableness of a cost of capital estimate, certain theoretical shortcomings of this model (when applied in cost of capital analysis) reduce its usefulness.

Q. CAN YOU EXPLAIN WHY YOU APPLY THE CAPM ANALYSIS WITH CAUTION?

A. Yes. The reasons why the CAPM should be used in cost of capital analysis with caution are set out below. It is important to understand that my caution with regard to the use of

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the CAPM in a cost of equity capital analysis does not indicate that the model is not a useful description of the capital markets. Rather, it recognizes that in the practical application of the CAPM to cost of capital analysis there are problems that can cause the results of that type of analysis to be less reliable than other, more widely accepted models such as the DCF.

The CAPM was originally designed as a point-in-time tool for selecting stock portfolios that matched a particular investor's risk/return preference. Its use in rate of return analysis to estimate multi-period return expectations for one stock or one type of stock, rather than a diversified portfolio of stocks, takes the model out of the context for which it was intended. Also, questions regarding the fundamental applicability of the CAPM theory and the accuracy of beta have arisen recently in the financial literature.

Over the past few years there has been much comment in the financial literature over the strength of the assumptions that underlie the CAPM and the inability to substantiate those assumptions through empirical analysis. Also, there are problems with the key CAPM risk measure that indicate that the CAPM analysis is not a reliable primary indicator of equity capital costs.

Cost of capital analysis is a decidedly forward-looking, or *ex-ante*, concept. Beta is not. The measurement of beta is derived with historical, or *ex-post*, information. Therefore, the beta of a particular company, because it is usually derived with five years of historical data, is slow to change to current (i.e., forward-looking) conditions, and some price abnormality that may have happened four years ago could substantially affect beta while, currently, being of little actual concern to investors. Moreover, this same shortcoming, which assumes that past results mirror investor expectations for the future plagues the market risk premium in an ex-post, or historically-oriented CAPM.

Also, an important study performed for the Center for Research in Security Prices at the University of Chicago Graduate School of Business shows that the assumed linear relationship between beta, risk and return (i.e., beta varies directly with risk and return) simply does not appear to exist in the marketplace. As Value Line reported in its Industry Review published in March of 1992:

Two of the most prestigious researchers in the financial community, Professors Eugene F. Fama and Kenneth R. French from the University of Chicago have challenged the traditional relationship between Beta and return in a recent paper published by the Center for Research in Security Prices. In this study, the duo traced the performance of thousands of stocks over 50 years, but found no statistical support for the hypothesis that the relationship between volatility and return is significantly different from random. (Value Line Industry Review, March 13, 1992, p. 1-8.)

Fama and French have continued their investigation of the CAPM since their 1992 article and have postulated that a more accurate CAPM would use two additional risk measures in addition to beta. However, it is important to note that while those authors tout the superiority of their three-factor CAPM to the single-beta CAPM on theoretical grounds, they recognize that there are significant problems with any type of asset pricing model when it comes to using the model to estimate the cost of equity capital. Recently, Fama and French noted regarding the CAPM:

> "The attraction of the CAPM is that is offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor—poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model….In the end, we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model are invalid." (Fama, E., French, K., "The Capital Asset Pricing Model: Theory and Evidence," *Journal of Economic Perspectives*, Vol. 18, No. 3, Summer 2004, pp. 25-46)

While the recently published conclusions as to the imprecision of equity cost estimates produced by CAPM-type models does not necessarily negate the risk/return

basis of asset pricing, it does call for more accurate measures with which asset returns can be more reliably indexed. However, unless and until such indices are published and widely accepted in the marketplace, CAPM cost of equity capital estimates should be relegated to a supporting role or informational status. Therefore, I use the CAPM for informational purposes and do not rely on that methodology as a primary equity capital cost estimation technique.

Q. WHAT VALUE HAVE YOU CHOSEN FOR A RISK-FREE RATE OF RETURN IN YOUR CAPM ANALYSIS?

A. As the CAPM is designed, the risk-free rate is that rate of return investors can realize with certainty. The nearest analog in the investment spectrum is the 13-week U. S. Treasury Bill. However, T-Bills can be heavily influenced by Federal Reserve policy, as they have been over the past three years. While longer-term Treasury bonds have equivalent default risk to T-Bills, those longer-term government securities carry maturity risk that the T-Bills do not have. When investors tie up their money for longer periods of time, as they do when purchasing a long-term Treasury, they must be compensated for future investment opportunities forgone as well as the potential for future changes in inflation. Investors are compensated for this increased investment risk by receiving a higher yield on T-Bonds. However, when T-Bills and T-Bonds exhibit a "normal" (historical average) spread of about 1.5% to 2%, the results of a CAPM analysis that matches a higher market risk premium with lower T-Bill yields or a lower market risk premium with higher T-Bond yields, are very similar.

As I noted in my previous discussion of the macro-economy, the Fed has acted vigorously during the past year or so to raise short-term interest rates. Over the most recent six-week period, T-Bills have produced an average yield of 4.69% and Treasury Bonds have yielded 4.97% (data from Value Line *Selection & Opinion*, six most recent weekly editions[1]).

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[1] Current T-Bill yield, six-week average yield from Value Line Selection & Opinion (3/31/06-5/5/06).

Q. DO YOU BELIEVE THE USE OF A LONG-TERM TREASURY BOND RATE IS
    APPROPRIATE IN THE CAPM?

A. In the current economic environment, the use of a long-term Treasury bond produces a
    more accurate estimate of investors' cost of equity. Although the selection of a long- or
    short-term Treasury security as the risk free rate of return to be used in the CAPM is one
    of the areas of contention in applying the model in cost of capital analysis, the use of a
    normalized short-term T-Bill rate is the more prevalent in the literature. However, the T-
    Bill yield can be influenced by Federal Reserve policy, and, produce inaccurate
    indications of the cost of equity, especially if the yield differential between T-Bonds and
    T-Bills is different from long-term averages.

        For example, in 2004 when the Fed had pushed T-Bill rates below 2%, the results
    of a T-Bill-based CAPM for utilities were below bond yields and were not reliable.
    Recently, with the Fed pushing up short-term T-Bill yields resulting through credit
    tightening, combined with stable long-term yields, the yield differential between T-Bonds
    and T-Bills has shrunk to about 0.4%, which is well below long-term averages of about
    1.5% to 2%. Therefore, the short-term CAPM will overstate the cost of equity. For
    purposes of analysis in this proceeding I will rely on the long-term Treasury bond yields
    for the risk-free rate in the CAPM. Also, along with those measures of the risk-free rate I
    use the corresponding measures of market risk premiums.

Q. WHAT HAVE YOU CHOSEN AS THE MARKET RISK PREMIUM FOR THE CAPM
    ANALYSIS?

A. In their 2006 edition of Stocks, Bonds, Bills and Inflation, R.G. Ibbotson Associates
    indicates that the average market risk premium between stocks and T-Bills over the
    1926–2005 time period is 6.5% (based on an arithmetic average), and 4.9% (based on a
    geometric average). For short-term Treasuries, the market risk premiums are 8.6% (based
    on an arithmetic average) and 6.7% (based on a geometric average). I have used these
    values to estimate the market risk premium in the CAPM analysis. The geometric mean is
    based on compound returns over time and the arithmetic mean is based on the average of

single-period returns.

It is also important to note that, as I point out in Section I of my testimony, recent research in the field of financial economics has shown that the market risk premium data published by Ibbotson Associates—the earned return differentials that existed in the U.S. between 1926 and 2003—overstates investor-expected market risk premiums. The most recent research indicates that the return investors require over the risk-free rate ranges from 2.5% to 4.5% as opposed to the 4.9% to 6.5% estimate published by Ibbotson. Also Ibbotson, himself, has published a recent paper that indicates the forward-looking risk premium expectation ranges between 4% and 6%.[2] Therefore, the upper end of the CAPM cost of equity estimates, based on the historical Ibbotson data, should be considered to be higher than the current cost of common equity capital.

Q. IF THE IBBOTSON HISTORICAL DATA OVERSTATE THE EXPECTED MARKET RISK PREMIUM, WHY DO YOU USE THOSE DATA IN YOUR CAPM ESTIMATE OF THE COST OF COMMON EQUITY CAPITAL?

A. I continue to utilize the historical Ibbotson data in my CAPM analysis in order to be consistent with the manner in which I have traditionally used those data. I have been testifying on the subject of the cost of equity capital for more than twenty years and have consistently used the Ibbotson historical data in my CAPM analyses, and choose not to deviate from that practice at this time. However, the new research on the market risk premium (including a paper from Ibbotson, himself) indicates that the market risk premium expected by investors is considerably lower than the risk premium contained in the historical data. While that information does not cause me to change my long-standing CAPM methodology using the Ibbotson historical risk premium data, the current research on the topic of the market risk premium is important, deserves consideration and causes me to put considerably less weight on the higher end of the CAPM estimates.

Q. WHAT VALUES HAVE YOU CHOSEN FOR THE BETA COEFFICIENTS IN THE

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[2] Ibbotson, R, Chen, P., "Long-Run Stock Returns: Participating in the Real Economy," *Financial Analysts Journal*, January/February 2003, pp. 88-89.

CAPM ANALYSIS?

A. Value Line reports beta coefficients for all the stocks it follows. Value Line's beta is derived from a regression analysis between weekly percentage changes in the market price of a stock and weekly percentage changes in the New York Stock Exchange Composite Index over a period of five years. The average beta coefficient of the sample group of electric companies is 0.82, and for the gas distributors is almost identical, at 0.81.

Q. WHAT IS YOUR RECOMMENDED COST OF EQUITY CAPITAL FOR THE SAMPLE OF UTILITY COMPANIES USING THE CAPITAL ASSET PRICING MODEL ANALYSIS?

A. Exhibit__(SGH-14), page 1, shows that the average Value Line beta coefficient for the group of electric companies under study, rounded to two decimal places, is 0.82. The overall arithmetic average market risk premium of 6.5% would, upon the adoption of a 0.82 beta, become a sample group premium of 5.32% (0.82 x 6.5%). That non-specific risk premium added to the risk-free T-Bond rate of 4.97%, previously derived, yields a common equity cost rate estimate of 10.30%. Using the geometric market risk premium of 4.90% with the current T-Bond yield produces a CAPM estimate of 8.99%.

For the gas distributors, the CAPM based on the long-term Treasury bond indicates a cost of equity from 8.94% to 10.24%. As noted above, the upper-end estimate of the CAPM exceeds the current cost of equity capital. However, the CAPM results bracket the DCF results derived previously, supporting the reasonableness of those results.

MODIFIED EARNINGS-PRICE RATIO ANALYSIS

Q. PLEASE DESCRIBE THE MODIFIED EARNINGS-PRICE RATIO (MEPR) ANALYSIS OF THE COST OF COMMON EQUITY CAPITAL.

A. The earnings-price ratio is calculated simply as the expected earnings per share divided

by the current market price. In cost of capital analysis, the earnings-price ratio (which is one portion of this analysis) can be useful in a corroborative sense, since it can be a good indicator of the proper range of equity costs when the market price of a stock is near its book value. When the market price of a stock is *above* its book value, the earnings-price ratio *understates* the cost of equity capital. Exhibit__(SGH-15) contains mathematical proof for this concept. The opposite is also true, i.e.; the earnings-price ratio *overstates* the cost of equity capital when the market price of a stock is *below* book value.

Under current market conditions, the utilities under study have an average market-to-book ratio of 1.79 (gas) and 1.66 (electric) and, therefore, the average earnings-price ratio alone would understate the cost of equity for the sample groups. However, I do not use the earnings-price ratio alone as an indicator of equity capital cost rates. Because of the relationship among the earnings-price ratio, the market-to-book ratio and the investor-expected return on equity described in Exhibit__(SGH-15), I have modified the standard earnings-price ratio analysis by including expected returns on equity for the companies under study. It is that modified analysis that I will use to assist in estimating an appropriate range of equity capital costs in this proceeding.

Q. PLEASE EXPLAIN THE RELATIONSHIP AMONG THE EARNINGS-PRICE RATIO, THE EXPECTED RETURN ON EQUITY, AND THE MARKET-TO-BOOK RATIO.

A. When the expected return (ROE) approximates the cost of equity, the market price of the utility approximates its book value and the earnings-price ratio provides an unbiased estimate of the cost of equity. When the investor-expected return on equity for a utility (ROE) exceeds the investor-required return (the cost of equity capital), the market price of the firm will tend to exceed its book value. As explained above, when the market price exceeds book value, the earnings-price ratio understates the cost of equity capital. Therefore, when the expected equity return (ROE) exceeds the cost of equity capital, the earnings-price ratio will understate that cost rate.

Also, in situations where the expected equity return is below what investors

require for that type of investment, market prices fall below book value. Further, when market-to-book ratios are below 1.0, the earnings-price ratio overstates the cost of equity capital. Thus, the expected rate of return on equity and the earnings-price ratio tend to move in a countervailing fashion around the cost of equity capital.

When market-to-book ratios are above one, the expected equity return exceeds and the earnings-price ratio understates the cost of equity capital. When market-to-book ratios are below one, the expected equity return understates and the earnings-price ratio exceeds the cost of equity capital. Further, as market-to-book ratios approach unity, the expected return and the earnings price ratio approach the cost of equity capital. Therefore, the average of the expected book return and the earnings price ratio provides a reasonable estimate of the cost of equity capital.

These relationships represent general rather than precisely quantifiable tendencies but are useful in corroborating other cost of capital methodologies. The Federal Energy Regulatory Commission, in its generic rate of return hearings, found this technique useful and indicated that under the circumstances of market-to-book ratios exceeding unity, the cost of equity is bounded above by the expected equity return and below by the earnings-price ratio (e.g., 50 Fed Reg, 1985, p. 21822; 51 Fed Reg, 1986, pp. 361, 362; 37 FERC ¶ 61,287). The mid-point of these two parameters, therefore, produces an estimate of the cost of equity capital which, when market-to-book ratios are different from unity, is far more accurate than the earnings-price ratio alone.

Q. WHAT ARE THE RESULTS OF YOUR EARNINGS-PRICE RATIO ANALYSIS OF THE COST OF EQUITY FOR THE SAMPLE GROUP?

A. Exhibit__(SGH-16) shows the Reuters projected 2007 per share earnings for each of the firms in the sample groups. Recent average market prices (the same market prices used in my DCF analysis), Value Line's projected return on equity for 2007 and 2009-2011 for each of the companies are also shown.

The average earnings-price ratio for the electric sample group, 7.40%, is below the cost of equity for those companies due to the fact that their average market-to-book

ratio is currently above unity (average electric utility M/B = 1.66). The sample electric companies' 2007 expected book equity return averages 10.61%. For the electric sample group, then, the mid-point of the earnings-price ratio and the current equity return is 9.00%.

Exhibit__(SGH-16) also shows that the average expected book equity return for the electric utilities over the next three- to five-year period declines slightly to 10.46%, indicating consistent return expectations. The midpoint of these two boundaries of equity capital cost for the whole group, i.e., the long-term projected return on book equity (10.46%) and the current earnings-price ratio (7.40%) is 8.93%, which provides another forward-looking estimate of the equity capital cost rate of electric utility firms.

For the gas distributors, the MEPR analysis, shown on page 2 of Exhibit__(SGH16), indicates a cost of equity range of 8.94% to 9.29%. The results of this MEPR analysis indicate that the DCF equity cost estimate previously derived may be overstated (i.e., too high).

MARKET-TO-BOOK RATIO ANALYSIS

Q. PLEASE DESCRIBE YOUR MARKET-TO-BOOK (MTB) ANALYSIS OF THE COST OF COMMON EQUITY CAPITAL FOR THE SAMPLE GROUPS.

A. This technique of analysis is a derivative of the DCF model that attempts to adjust the capital cost derived with regard to inequalities that might exist in the market-to-book ratio. This method is derived algebraically from the DCF model and, therefore, cannot be considered a strictly independent check of that method. However, the MTB analysis is useful in a corroborative sense. The MTB seeks to determine the cost of equity using market-determined parameters in a format different from that employed in the DCF analysis. In the DCF analysis, the available data is "smoothed" to identify investors' long-term sustainable expectations. The MTB analysis, while based on the DCF theory, relies instead on point-in-time data projected one year and five years into the future and, thus, offers a practical corroborative check on the traditional DCF. The MTB formula is

derived as follows:

Solving for "P" from Equation (1), the standard DCF model, we have

$$P = D/(k\text{-}g). \qquad (ii)$$

But the dividend (D) is equal to the earnings (E) times the earnings payout ratio, or one minus the retention ratio (b), or

$$D = E(1\text{-}b). \qquad (iii)$$

Substituting Equation (iii) into Equation (ii), we have

$$P = \frac{E(1\text{-}b)}{k\text{-}g}. \qquad (iv)$$

The earnings (E) are equal to the return on equity (r) times the book value of that equity (B). Making that substitution into Equation (iv), we have

$$P = \frac{rB(1\text{-}b)}{k\text{-}g}. \qquad (v)$$

Dividing both sides of Equation (v) by the book value (B) and noting from Equation (iii) in Appendix B that g = br+sv,

$$\frac{P}{B} = \frac{r(1\text{-}b)}{k\text{-}br\text{-}sv}. \qquad (vi)$$

Finally, solving Equation (vi) for the cost of equity capital (k) yields the MTB formula:

$$k = \frac{r(1\text{-}b)}{P/B} + br + sv. \qquad (vii)$$

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Equation (vii) indicates that the cost of equity capital equals the expected return on equity multiplied by the payout ratio, divided by the market-to-book ratio plus growth. Exhibit__(SGH-17) shows the results of applying Equation (vii) to the defined parameters for the utility firms in the comparable sample. For the electric and gas utility sample group, pages 1 and 3 of Exhibit__(SGH-17) utilize current year (2006) data for the MTB analysis while pages 2 and 4 utilize Value Line's 2009-2011 projections, respectively.

The MTB cost of equity for the sample of electric utility firms, recognizing a current average market-to-book ratio of 1.66 is 9.42% using the current year data and 9.32% using projected three- to five-year data. For the gas distributor sample group, pages 3 and 4 of Exhibit__(SGH-17) show the current and projected MTB equity cost estimate, respectively. Page 3 of Exhibit__(SGH-17) indicates that the cost of equity based on current data for the gas distributor sample group is 9.41% and page 4 indicates that, based on projected 3- to 5-year data, the MTB equity cost estimate is 9.16%. Those estimates indicate that my DCF equity cost estimate may be somewhat overstated as a representation of future equity cost rates.

Q. DOES THIS CONCLUDE YOUR DISCUSSION OF YOUR CORROBORATIVE EQUITY COST ESTIMATION ANALYSES?

A. Yes.

THE IMPACT OF DECOUPLING

ON

ELECTRIC UTILITY

OPERATING RISK

STEPHEN G. HILL

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The Impact of Decoupling

On

Electric Utility Operating Risk

Stephen G. Hill

Because decoupling utility revenues from sales has the effect of reducing the utility's exposure to revenue stream volatility caused by weather and economic conditions, it lowers the operating risk of the utility. Lower operational risk for the utility equals lower risk for investors, which calls for lower allowed rates of return on equity. This paper offers an analytical framework through which that risk reduction imparted by decoupling can be assessed and the equity capital cost impact quantified.

VOLATILITY AND RISK

A financial asset is purchased by an investor with an expectation that the asset will produce a future stream of income, generating an expected rate of return. The risk of investing in any asset is directly related to the possibility that actual returns will deviate from expected returns, and the degree of those potential fluctuations determines the degree of risk. The greater the potential for actual returns to deviate from expected returns, the higher the risk. Conversely, the more certain an investor can be that the returns expected will be realized, the lower the risk.

A measure of the risk of a financial asset, then, is the volatility or variability of the income stream or return it generates. Figure 1, below, shows the income streams generated by two financial assets, "A" and "B." Both of the assets have, over time, provided a trend of increasing returns. In fact, the trend line of the returns (shown as the dashed line in Fig. 1) for both investments is the same. Therefore, given that conditions in the future can be expected to resemble those of the past, investors would, on average, expect that the income produced by each investment to be the same in future periods.

Figure 1
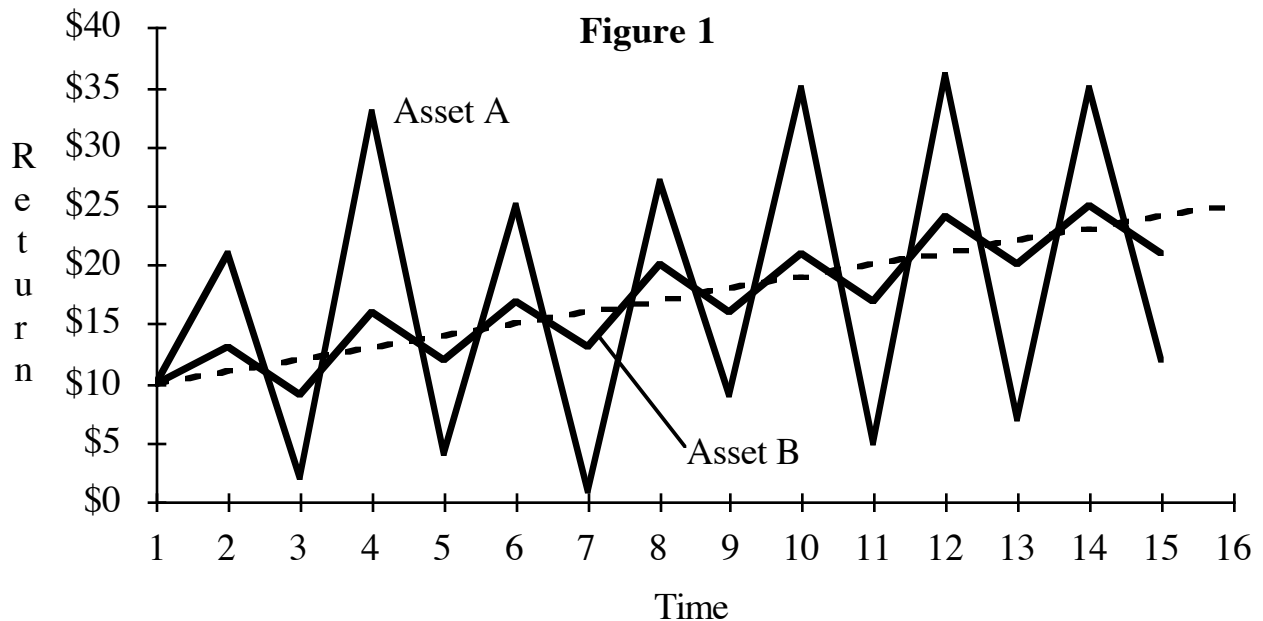
However, the risk of investing in the two financial assets is not the same. Asset "A" has shown much wider swings in return, much greater volatility, than has asset "B." Therefore, even though, asset "A" has the same expected future income stream as asset "B," there is a much lower probability that the actual return realized from an investment in asset "A" will equal the expected return. Asset "A," then, is a riskier investment than asset "B" whose actual return will, in all probability, more closely approximate the expected return.

When an investor purchases a share of utility stock he or she is purchasing an expected future stream of income in the form of dividends and growth in that dividend or capital appreciation when the stock is sold. That dividend expectation is, in turn, dependent on the earnings of the utility. If the earnings are steady and show little fluctuation, the dividend is more secure and the utility is seen by the investor as less risky than an otherwise similar investment whose dividend is based on a volatile earnings stream. The fact that the income stream volatility of a financial asset is directly related to its investment risk is neither controversial nor difficult to comprehend, but that concept is fundamental to assessing the risk impact of decoupling. Decoupling works to reduce the income stream volatility of utility operations and, thus, operating risk.

DECOUPLING AND VOLATILITY

Decoupling is intended to promote energy conservation by separating utility revenues from aggregate unit sales and targeting, instead, some measure of customer consumption. A target of per customer consumption is set and, ideally, if conservation occurs, the resulting per customer consumption will be below the target level. The utility is allowed to raise its rates to recover enough revenues to raise the realized revenue level to the target level of revenues per customer. If, on the other hand, conservation does not occur, and per customer consumption exceeds target levels, the utility is required to return to its ratepayers those revenues which exceed that target level.

However, in a decoupling regulatory regime, there is no mechanism for discerning the source of the change in energy use per customer. The reduction in usage may come from conservation, or it may come from lower customer usage due to other factors completely unrelated to conservation, i.e., warmer winters or a downturn in the regional economy of a utility heavily dependent on commercial and/or industrial sales. Because there is no practical way to distinguish the various factors which may affect per customer usage, all factors which impact per customer usage are necessarily included in the decoupling, make-whole process. Therefore, the decoupling process acts as a buffer for the utility, sheltering its stockholders from fluctuations in revenues and, ultimately, moderating swings operating earnings which might arise from unfavorable weather or economic conditions.

As regulators are well aware, those two factors -- weather and the economic condition of the utility's service territory -- are often important determinants of the revenue requirements of an electric utility operation. If, through a decoupling process, the utility is made whole for revenue under-recoveries due to unseasonable weather or economic downturns, the potential for revenue and income volatility is greatly reduced. Investors and investor advisory services are quite aware of the fact that a reduction in the income stream volatility reduces the overall investment risk of a utility operation. Subsequent to one Northeastern public service commission's approval of a trial decoupling experiment with an electric utility operating in its jurisdiction in 1991, the Value Line Investment Survey was quick to point out to its subscribers that the new regulatory plan would reduce that utility's exposure to fluctuations in revenues due to weather and economic conditions. Therefore, removal of the income volatility and risk associated with those factors indicates that a utility's "pre-decoupling" allowed return on equity should be reduced.
Decoupling lowers a utility's operating risk and, unless that lower operating risk is recognized in rates through the allowance of a lower authorized rate of return, decoupling will produce a windfall for the utilities which operate under that regime. Instituting a decoupling program for utilities without a downward adjustment to the allowed equity return, then, would create utility rates which exceed costs and encourage inefficient allocation of utility resources. Therefore, the allowed return on equity for a utility that is entering a

regulatory framework in which revenues are decoupled from sales must be lower than that appropriate for the same utility under "traditional" regulation -- but how much lower?

An analytical process through which the impact of decoupling on allowed returns can be estimated is presented below, however, it is intuitively obvious that the more dependent the utility's revenues are on weather and economic fluctuations, the greater the risk reduction caused by decoupling and the lower the allowed equity return should be. If, for example, 100% of the revenue variations of a utility were due to weather and economic conditions, the implementation of decoupling would eliminate volatility in the utility's revenue stream and effectively turn a utility equity investment into a bond-like financial instrument. In that extreme instance, the level of uncertainty regarding the expected return which normally accompanies a utility equity investment would be substantially reduced by decoupling and an appropriate equity return would fall toward that appropriate for utility debt capital.

RISK QUANTIFICATION

Quantifying the change in operating risk of a utility operation due to a reduction in revenue volatility caused by a decoupling is a two step process. First, the degree to which fluctuations in utility revenues are dependent on weather and economic conditions must be measured and, second, the revenue volatility that normally exists with the utility operation must be quantified.

Measuring the degree to which fluctuations in utility revenues are dependent on changes in weather and economic conditions is accomplished through multi-factor regression analysis. In such an analysis, variables which represent weather (e.g., degree days) and economic conditions (e.g., a state or regional economic index) as well as other factors which affect utility revenues (e.g., number of customers) are regressed against the utility's revenues over a relatively long period of time (10 - 15 years). Through such an analysis (which is quite similar to analyses used to project utility revenue requirements in regulatory jurisdictions which utilize future test years), it can be determined to what degree revenues are affected by weather and economic conditions.

Regression analysis also plays a part in quantifying the revenue volatility that normally exists with the utility operation. Figure 2 shows the revenue stream of a utility operation over the past fifteen years, by quarter. Also shown on Figure 2 is the least-squares regression line which represents the trend in revenues over that time period. In addition, the variance and standard deviation of the revenues around the trend line can be calculated. That process gives a quantitative measure of the volatility of the utility's revenues around the revenue trend or regression line.

Figure 2

Linear Regression of Quarterly Revenues
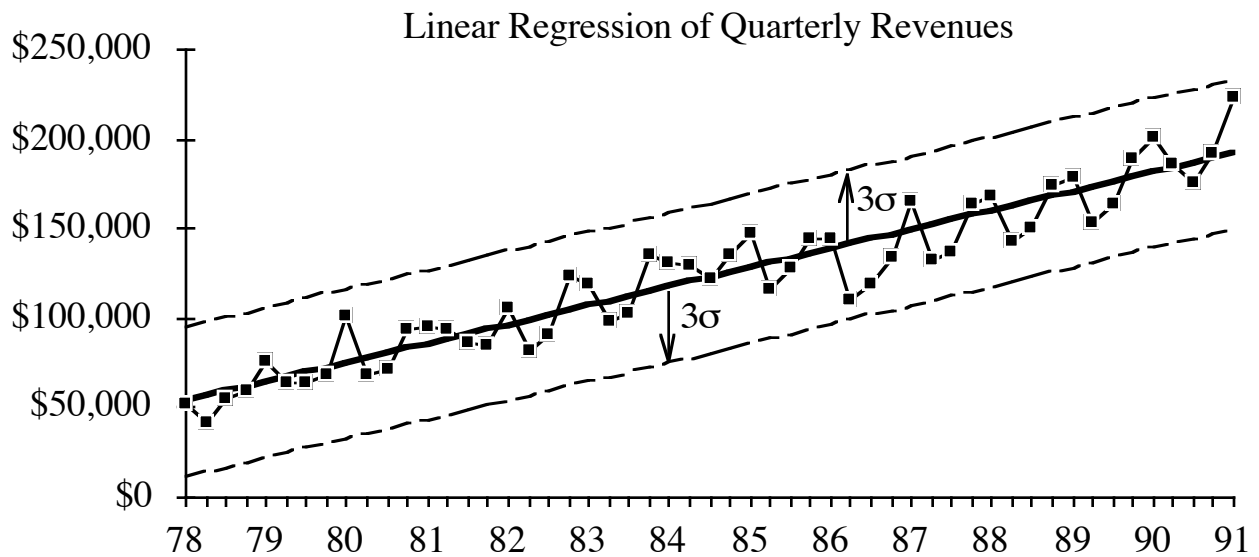
Once the standard deviation of the revenues about the trend line is established, a zone ±3 standard deviation units (σ) above and below that revenue trend line can be established. Assuming the utility's revenues are normally distributed about the revenue trend, a zone ±3σ above and below the revenue trend line establishes a range within which the utility's revenues will fall 99.9% of the time. The distribution of quarterly revenues about the utility's revenue trend line can also be represented as the familiar bell-shaped curve shown in Figure 3.

Figure 3
Revenue Distribution
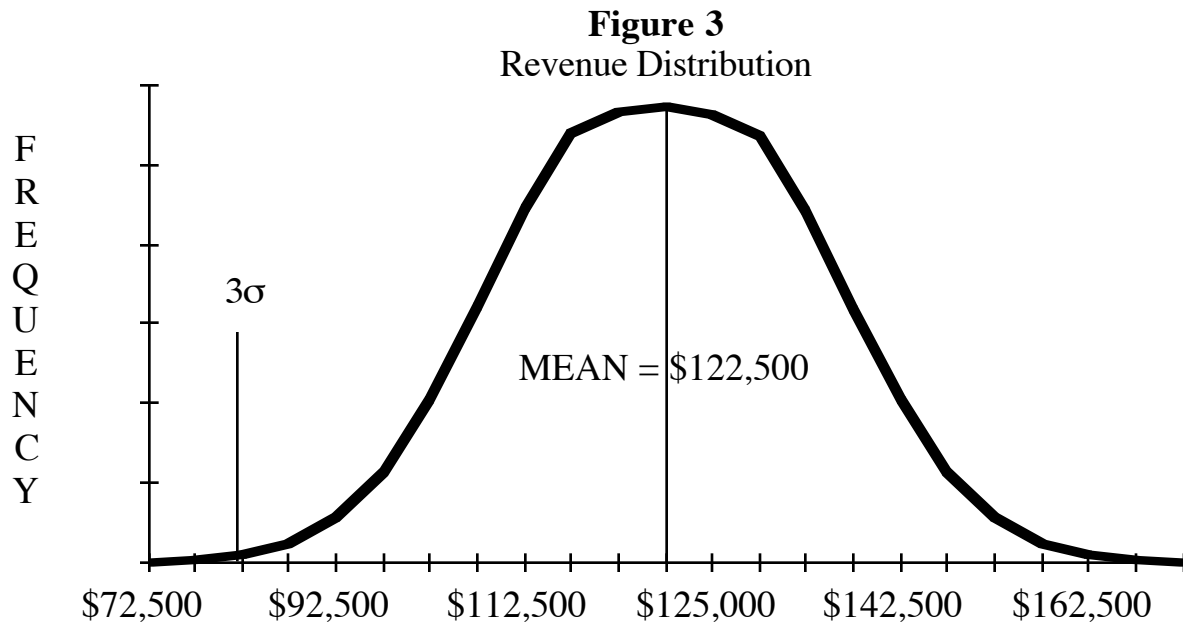
When the volatility of the revenue stream is reduced, the variance of the revenues about the trend line shown in Figure 2 is reduced and the width of the zone ±3σ above and below the revenue trend line narrows. In other words, as the volatility of the utility's revenue stream is reduced, the possibility that the actual revenue (which will fall within ±3σ)will more closely approximate the expected revenue (represented by the trend line) is increased and, therefore, the utility's operating risk is reduced. Further, as the volatility of the utility's revenues around the revenue trend line is reduced, the shape of the "bell curve" graph of the revenue distribution changes. As shown in Figure 4, while still centered on the average revenue value, the "bell" formed by the distribution of utility revenues under decoupling becomes taller and thinner.

Figure 4
Revenue Distribution
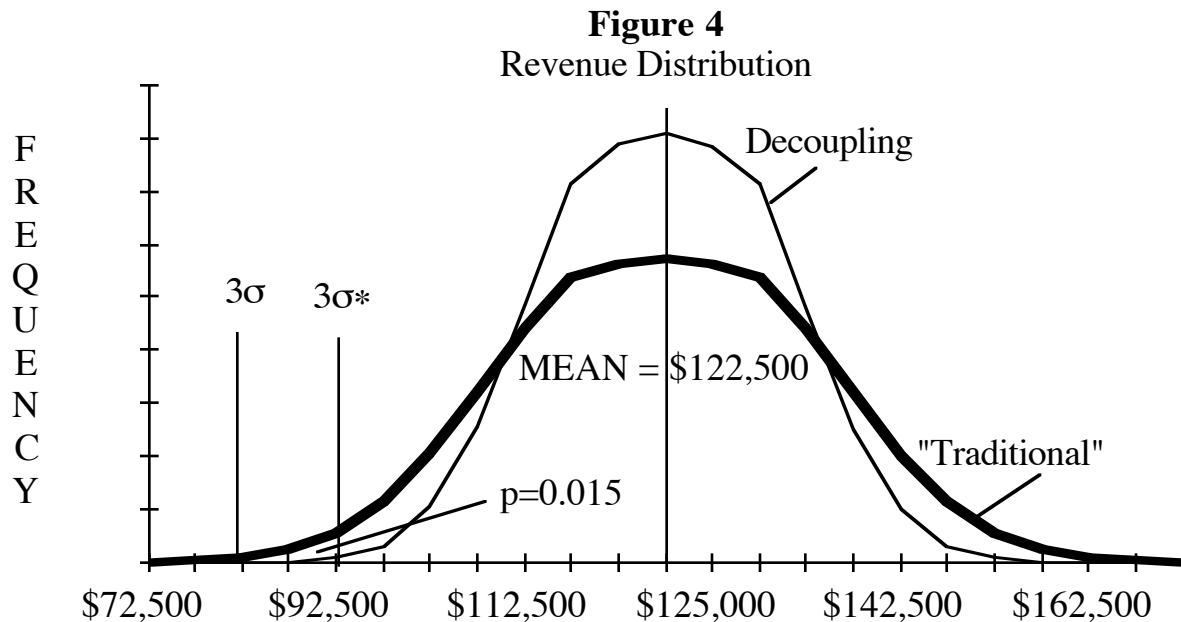
It is through this change in the shape of the distribution of possible revenue outcomes, shown in Figure 4, that we are able to quantify the cost of equity capital impact of decoupling. When the variance of revenues about the trend is reduced, the possibility of more extreme outcomes, both negative and positive, are eliminated. To the investor, the risk-reducing aspect of this change is the elimination of the possibility of extreme negative outcomes. Under "traditional" regulation it is possible that the utility could experience revenues at the extreme lower left corner of the original revenue distribution (-3σ). This would represent a risky outcome to the investor. Under a decoupling scenario, where revenue volatility is reduced, the revenue distribution is narrower and the most negative outcome (-3σ* on the new bell curve) is a higher revenue value and, thus, represents less risk to the investor. The pertinent difference in the probable outcomes under the "traditional" and decoupling scenario is quantified as the difference in the area under the curves between -3σ and -3σ*. This area between the original bell curve and the new (decoupling) bell curve represents the reduction in the probability of extreme negative outcomes that existed prior to decoupling. If, as shown in figure 4, the probability differential represented by the reduction in revenue volatility equals 0.015, which represents 1.5% of revenues, then investors would be indifferent between "traditional" regulation and decoupling if the equity return under decoupling produced a revenue requirement 1.5% less than that under "traditional" regulation.

EXAMPLE

Let's assume that a multiple factor regression analysis reveals that weather and economic conditions in a utility's service territory account for 50% of the fluctuation in the quarterly revenues of the utility. [Note: The author's research on the dependence of revenue volatility on weather and economic conditions indicates that those factors may be determinative of as much as 85% of revenue volatility, therefore, 50% is a conservative estimate.] In our example, reducing the variance in the utility revenues by 50% produces the taller, narrower bell-shaped curve shown in Figure 4. The difference in the area under the original bell curve and the new decoupling bell curve represents a probability of 0.015, or 1.5% of average revenues.

Continuing this example, assume our utility has a $1 Billion rate base, average annual revenues of $500 Million, an equity ratio of 45%, an allowed equity return of 12% under "traditional" regulation and a prospective tax rate of 40%. The "traditional" regulatory scheme would call for an equity return component in revenues of $90 Million (45% x 12% x (1/(1-40%)) x $1 Bill.). Using the 1.5% revenue probability differential between "traditional" regulation and decoupling hypothesized above, investors would be indifferent between the $90 Million pre-tax equity return produced by "traditional" regulation and an equity return under a decoupling regime which produced a pre-tax revenue requirement of $82.5 Million ($90 Mill. - ($500 Mill. x 1.5%)). The equity return which would satisfy that requirement, that is, the equity return which would produce an $82.5 Million equity component in revenues in this example is 11.00% [$82.5 Mill./ (45% x $1 Bill. x (1/(1-40%)))]. Therefore, under this example, the utility's allowed return on equity capital should be reduced from the "pre-decoupling" level of 12% to 11%.

SUMMARY

Due to the nature of decoupling and the inextricability of the impact of weather and economic conditions on per customer usage from the impact of any conservation which may occur, decoupling will reduce utility operating risk. Reduced operating risk translates to lower investment risk and lower allowed returns to the investor. Regulators are able to quantify the impact of decoupling on equity capital costs by 1) determining the degree to which weather and service territory economic health determine revenue volatility and 2) calculating the degree to which the removal of that volatility will reduce the probability of extreme negative outcomes. That percentage by which the probability of extreme negative outcomes is reduced, multiplied by the average annual revenues provides an estimate of the amount by which the pre-tax equity return requirement can be reduced to account for the reduced risk of decoupling. This reduced pre-tax return requirement can then be translated into an appropriate return on equity to be utilized under a regulatory framework which employs decoupling.

PUGET SOUND ENERGY

MOODY'S BAA BOND YIELDS

1984-2005

Data from Federal Reserve Release H.15.
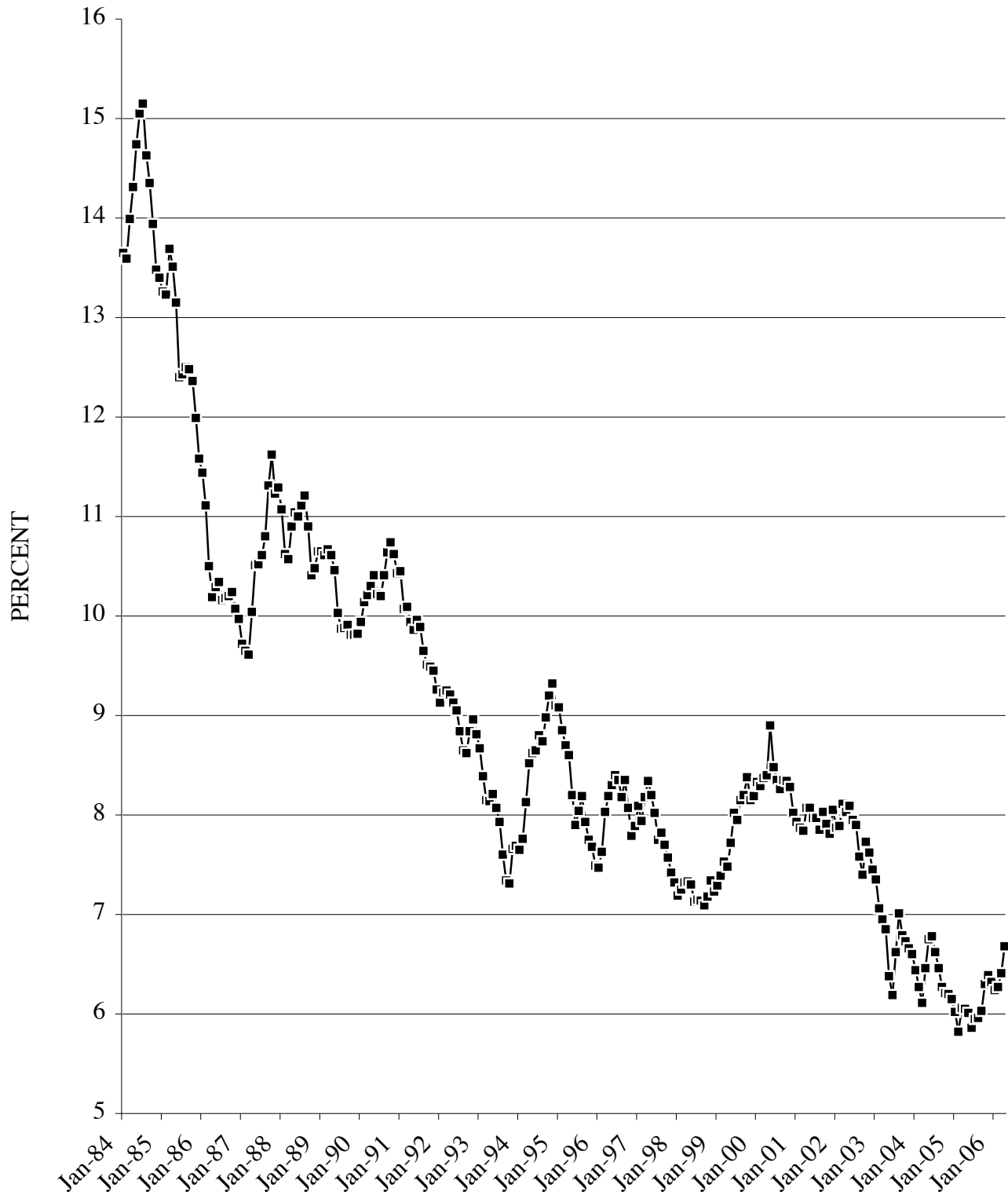
PUGET SOUND ENERGY

MOODY'S BAA BOND YIELDS

1968-2006

Data from Federal Reserve Release H.15.
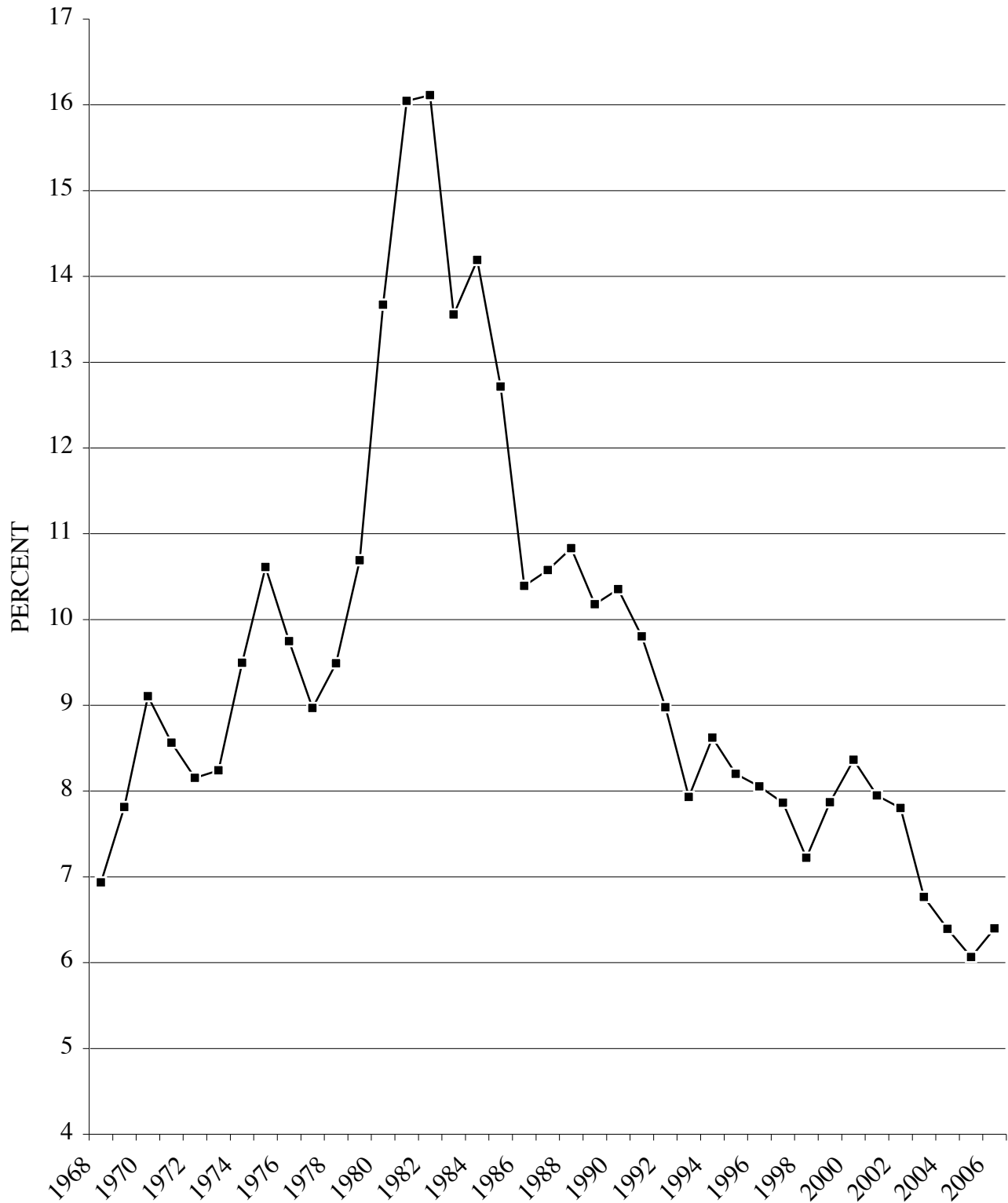
PUGET SOUND ENERGY, INC.
RECENT HISTORICAL CAPITAL STRUCTURE

AMOUNT (000)

Type of Capital	Dec-04	Mar-05	Jun-05	Sep-05	Dec-05	5 Quarter Average
Common Equity†	$1,535,255	$1,591,845	$1,614,487	$1,580,716	$1,852,754	**$1,635,011**
Preferred Stock	$1,889	$1,889	$1,889	$1,889	$1,889	**$1,889**
Trust Preferred	$280,250	$280,250	$237,750	$237,750	$237,750	**$254,750**
Long-term Debt*	$2,095,360	$2,095,360	$2,145,360	$2,114,360	$2,264,360	**$2,142,960**
Short-term Debt	$0	$97,051	$159,623	$233,871	$41,000	**$106,309**
TOTAL	$3,912,754	$4,066,395	$4,159,109	$4,168,586	$4,397,753	**$4,140,919**

PERCENTAGE

Type of Capital	Dec-04	Mar-05	Jun-05	Sep-05	Dec-05	5 Quarter Average
Common Equity	39.24%	39.15%	38.82%	37.92%	42.13%	**39.48%**
Preferred Stock	0.05%	0.05%	0.05%	0.05%	0.04%	**0.05%**
Trust Perferred	7.16%	6.89%	5.72%	5.70%	5.41%	**6.15%**
Long-term Debt*	53.55%	51.53%	51.58%	50.72%	51.49%	**51.75%**
Short-term Debt	0.00%	2.39%	3.84%	5.61%	0.93%	**2.57%**
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

† Common equity balances exclude amounts related to unregulated operations.

PUGET SOUND ENERGY, INC.
COMBINATION GAS-ELECTRIC UTILITY EQUITY RATIOS

COMBINATION GAS & ELECTRIC COMPANIES	EQUITY RATIO
AES Corp.	nmf
Alliant Energy	48%
Ameren Corp.	52%
Aquilla	40%
Avista Corp.	41%
Black Hills Corp.	50%
CenterPoint Energy	13%
CH Energy Group	56%
Cinergy Corp.	42%
CMS Energy Corp.	22%
Consolidated Edison	47%
Constellation Energy	49%
Dominion Resources	36%
DTE Energy Company	40%
Duke Energy	49%
Energy East Corp.	41%
Entergy Corp.	45%
Excelon Corp.	39%
Florida Pub. Utilities	46%
MDU Resources	61%
MGE Resources	53%
NiSource Inc.	42%
Northeast Utilities	43%
Northwestern Corp.	50%
NSTAR	34%
Pepco Holdings	39%
PG&E Corp.	40%
PNM Resources	38%
PPL Corp.	37%
Public Service Ent. Group	29%
Puget Energy	43%
SCANA Corp.	42%
SEMPRA Energy	49%
Sierra Pacific Resources	34%
TECO Energy	30%
Unisource Energy	33%
Unitil Corp.	40%
Vectren Corp.	42%
Wisconsin Energy Corp.	40%
WPS Resources	52%
Xcel Energy Inc.	42%
AVERAGE	**42%**
BBB-rated Average	**38%**

Data from AUS Utility Reports, April 2006.

PUGET SOUND ENERGY, INC.
RATEMAKNG CAPITAL STRUCTURE

Type of Capital	AMOUNT†	ADJUSTED AMOUNT	PERCENT OF TOTAL	COST RATE*	WT. AVG. COST RATE
Common Equity	$2,420,285	$2,312,717	43.00%	-	-
Preferred Stock	$201,889	$201,889	3.75%	7.61%	0.29%
Preferred Securities	$37,750	$37,750	0.70%	8.54%	0.06%
Long-term Debt	$2,575,027	$2,575,027	47.88%	6.64%	3.18%
Short-term Debt	$143,460	$251,028	4.67%	6.19%	0.29%
TOTAL CAPITAL	$5,378,411	$5,378,411	100.00%		

† Data from Exhibit__(DEG-6C), Revised 4/3/06.
*Cost rate data from Company filing except.

PUGET SOUND ENERGY
ELECTRIC UTILITY SAMPLE GROUP SELECTION

	Company Name	Revenues % Electric	Pending Merger?	Recent Div. Cut?	Generation Assets?	Stable Book Value?	Bond Rating S&P	Moody's	Selected
	SCREEN	≥70%	no	no	yes/no	yes	A- to BBB-		
EAST									
e	Allegheny Energy	88	no	yes	yes	no	BB+	Baa3	
e+g	CH Energy	54	no	no	yes	yes	BBB	Baa2	
e	Central Vermont P. S.	78	no	no	yes	yes	BBB	-	✓
e+g	Consolidated Edison	65	no	no	no	yes	A	A1	
e+g	Constellation Energy	12	yes	no	yes	yes	A	A2	
e	Duquesne Light Holdings	79	no	yes	no	no	BBB+	Baa1	
e+g	Dominion Resources	31	no	no	no	yes	A-	A2	
e+g	Duke Energy	31	yes	no	yes	yes	BBB	Baa2	
e+g	Energy East Corp.	56	no	no	yes	yes	BBB+	A3	
e+g	Excelon Corp.	67	yes	no	yes	yes	BBB+	A3	
e	FPL Group	80	yes	no	yes	yes	A	Aa3	
e	FirstEnergy Corp.	79	no	no	yes	yes	BBB	Baa1	✓
e	Green Mountain Power	100	no	no	yes	yes	BBB	Baa1	✓
e+g	Northeast Utilities	65	no	no	yes	yes	BBB	Baa1	
e+g	NSTAR	78	no	no	no	yes	A	A1	
e+g	PPL Corporation	70	no	no	yes	no	A-	Baa1	
e+g	Pepco Holdings, Inc.	55	no	no	no	no	A-	A3	
e	Progress Energy	78	no	no	yes	yes	BBB	A2	✓
e+g	Public Service Ent. Gp.	61	yes	no	yes	yes	A-	A3	
e+g	SCANA Corp.	40	no	no	yes	yes	A-	A1	
e	Southern Company	97	no	no	yes	yes	A+	A1	
e+g	TECO Energy	58	no	yes	yes	no	BBB-	Baa2	
e	UIL Holdings Corp.	67	no	no	no	yes	-	Baa2	
CENTRAL									
e	ALLETE	74	no	no	yes	no	A	Baa1	
e+g	Alliant Energy	70	no	no	yes	yes	A-	A2	
e+g	Ameren Corp.	80	no	no	yes	yes	A-	A3	✓
e	American Eelectric Power	93	no	yes	yes	no	BBB	Baa1	
e+g	Aquila, Inc.	52	no	yes	yes	yes	B-	B2	
e+g	CMS Energy Corp.	43	no	yes	yes	no	BBB-	Baa3	
e+g	CenterPoint Energy	16	no	no	no	no	BBB	Baa2	
e+g	Cinergy Corp.	77	yes	no	yes	yes	BBB-	Baa3	
e	Cleco Corporation	95	no	no	yes	yes	BBB	Baa1	✓
e	DPL Inc.	100	no	no	yes	yes	BBB-	Baa1	✓
e+g	DTE Energy	49	no	no	yes	yes	BBB+	A3	
e	Empire District Electric	93	no	no	yes	yes	A-	Baa1	✓
e+g	Entergy Corp.	78	no	no	yes	yes	BBB-	Baa2	✓
e	Great Plains Energy	43	no	no	yes	yes	BBB	A2	
e+g	MGE Energy	61	no	no	yes	yes	AA-	Aa3	
e+g	NiSource Inc.	16	no	yes	yes	yes	BBB	Baa2	
e	OGE Energy Corp.	29	no	no	yes	yes	BBB+	Baa2	
e	Otter Tail Corp.	29	no	no	yes	yes	BBB+	A3	
e	TXU Corp.	23	no	yes	no	no	BBB-	Baa2	
e+g	Vectren Corp.	21	no	no	yes	yes	A	A3	
e+g	WPS Resources	15	no	no	yes	yes	A+	Aa2	
e	Westar Energy	70	no	yes	yes	no	BBB	Baa3	
e+g	Wisconsisn Energy	61	no	no	yes	yes	A-	A1	
WEST									
e+g	Avista Corp.	51	no	no	yes	yes	BBB-	Baa3	
e+g	Black Hills Corp.	22	no	no	yes	yes	BBB	Baa1	
e	Edison International	80	no	yes	yes	no	BBB+	Baa1	
e	El Paso Electric	98	no	yes	yes	yes	BBB	Baa2	
e	Hawaiian Electric	82	no	no	yes	yes	BBB+	Baa2	✓
e	IDACORP, Inc.	97	no	yes	yes	yes	A-	A3	
e+g	MDU Resources Group	5	no	no	yes	yes	A-	A2	
e+g	PG&E Corp.	68	no	no	yes	no	BBB	Baa1	
e+g	PNM Resources	75	no	no	yes	yes	BBB	Baa2	✓
e	Pinnacle West Capital	74	no	no	yes	yes	BBB-	Baa1	✓
e+g	Puget Energy, Inc.	63	no	no	yes	yes	BBB	Baa2	✓
e+g	Sempra Energy	45	no	no	yes	yes	A+	A1	
e+g	Sierra Pacific Resources	94	no	yes	yes	no	BB	Ba1	
e+g	UniSource Energy	87	yes	no	yes	yes	BBB-	Baa3	✓
e+g	Xcel Energy, Inc.	75	no	yes	yes	no	A-	A3	

e= electric company; e+g=combination electric and gas company
Data from Value Line Ratings and Reports, March 3, March 31 and May 12, 2006 ; AUS Utility Reports, April 2006.

PUGET SOUND ENERGY
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
CV	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.0538	05.8%	0.31%	15.81	11.61	
2002	0.4286	09.3%	3.99%	16.83	11.74	
2003	0.3759	08.1%	3.04%	17.89	11.81	
2004	0.2640	06.8%	1.80%	18.49	12.19	
2005	19.4000	nmf	nmf	17.45	12.30	
AVERAGE GROWTH			2.28%	2.00%		1.45%
2006	0.2923	08.5%	2.48%		10.00	-18.70%
2007	0.4065	09.0%	3.66%		10.25	-0.50%
2009-2011	0.5282	11.0%	5.81%	nmf	11.00	-2.21%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
FE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.4718	08.9%	4.20%	24.86	297.64	
2002	0.4094	10.5%	4.30%	23.92	297.64	
2003	-0.0204	05.4%	-0.11%	25.13	329.84	
2004	0.3105	10.6%	3.29%	26.04	329.84	
2005	0.4021	10.3%	4.14%	27.85	329.84	
AVERAGE GROWTH			3.16%	6.00%		2.60%
2006	0.4800	12.0%	5.76%		329.84	0.00%
2007	0.4865	12.0%	5.84%		329.84	0.00%
2009-2011	0.4500	11.0%	4.95%	5.50%	329.84	0.00%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
GMP	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.7074	10.7%	7.57%	17.81	5.69	
2002	0.6939	12.3%	8.53%	18.51	4.95	
2003	0.6219	10.3%	6.41%	19.85	5.03	
2004	0.5810	10.1%	5.87%	21.32	5.14	
2005	0.5215	09.5%	4.95%	22.50	5.20	
AVERAGE GROWTH			6.67%	-0.50%		-2.23%
2006	0.4909	09.5%	4.66%		5.30	1.92%
2007	0.4609	10.0%	4.61%		5.35	1.43%
2009-2011	0.3961	10.5%	4.16%	3.00%	5.50	1.13%

PUGET SOUND ENERGY
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
PGN	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.3761	11.5%	nmf	27.45	218.73	
2002	0.4323	12.1%	5.23%	28.73	232.43	
2003	0.3372	10.9%	3.68%	30.26	246.00	
2004	0.2516	09.9%	2.49%	30.9	247.00	
2005	0.2853	10.5%	3.00%	31.55	252.00	
AVERAGE GROWTH			3.60%	8.50%		3.60%
2006	0.2492	10.0%	2.49%		254.00	0.79%
2007	0.2537	10.0%	2.54%		256.00	0.79%
2009-2011	0.2514	10.0%	2.51%	2.50%	261.00	0.70%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
AEE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.2551	14.0%	3.57%	24.26	138.05	
2002	0.0451	09.9%	0.45%	24.93	154.10	
2003	0.1911	11.6%	2.22%	26.73	162.90	
2004	0.0993	09.1%	0.90%	29.71	195.20	
2005	0.1885	10.0%	1.88%	31.35	205.00	
AVERAGE GROWTH			1.80%	4.00%		10.39%
2006	0.1937	09.5%	1.84%		207.40	1.17%
2007	0.2418	10.0%	2.42%		209.80	1.16%
2009-2011	0.2638	09.5%	2.51%	4.50%	216.80	1.13%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
CNL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.4238	14.6%	6.19%	10.69	44.96	
2002	0.4079	13.1%	5.34%	11.77	47.04	
2003	0.2857	12.5%	3.57%	10.09	47.18	
2004	0.3182	11.9%	3.79%	10.83	49.62	
2005	0.3662	10.7%	3.92%	13.69	49.99	
AVERAGE GROWTH			4.56%	4.00%		2.69%
2006	0.2800	08.0%	2.24%		54.25	8.52%
2007	0.3333	08.0%	2.67%		60.50	10.01%
2009-2011	0.4286	09.0%	3.86%	8.00%	68.00	6.35%

PUGET SOUND ENERGY
DCF GROWTH RATE PARAMETERS
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COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
DPL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.4598	27.8%	12.78%	6.31	126.50	
2002	-0.3056	10.8%	-3.30%	6.38	126.50	
2003	0.1376	14.6%	2.01%	7.13	126.50	
2004	0.4696	20.7%	9.72%	8.25	126.50	
2005	0.0400	12.0%	0.48%	8.20	128.00	
AVERAGE GROWTH			4.34%	-3.50%		0.30%
2006	0.2857	24.5%	7.00%		115.00	-10.16%
2007	0.3697	24.5%	9.06%		115.00	-5.21%
2009-2011	0.3371	21.0%	7.08%	2.00%	115.00	-2.12%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
EDE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	-1.1695	03.9%	-4.56%	13.58	19.76	
2002	-0.0756	07.8%	-0.59%	14.59	22.57	
2003	0.0078	07.8%	0.06%	15.17	24.98	
2004	-0.4884	05.8%	-2.83%	14.76	25.70	
2005	-0.3913	06.0%	-2.35%	15.08	26.08	
AVERAGE GROWTH			-2.05%	2.00%		7.18%
2006	-0.2190	06.5%	-1.42%		27.15	4.10%
2007	0.0857	08.5%	0.73%		28.20	3.99%
2009-2011	0.1467	09.5%	1.39%	1.50%	30.00	2.84%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
ETR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.5844	09.3%	5.44%	33.78	220.73	
2002	0.6359	10.9%	6.93%	35.24	222.42	
2003	0.5664	09.8%	5.55%	38.02	228.90	
2004	0.5191	11.0%	5.71%	38.26	216.83	
2005	0.4857	11.0%	5.34%	38.45	205.50	
AVERAGE GROWTH			5.79%	5.50%		-1.77%
2006	0.5304	11.5%	6.10%		204.00	-0.73%
2007	0.5167	11.0%	5.68%		204.00	-0.37%
2009-2011	0.4717	10.5%	4.95%	4.50%	204.00	-0.15%

PUGET SOUND ENERGY
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY		INTERNAL	GROWTH		EXTERNAL	GROWTH
HE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.2250	11.6%	2.61%	13.06	71.20	
2002	0.2346	11.3%	2.65%	14.21	73.62	
2003	0.2152	10.8%	2.32%	14.36	75.84	
2004	0.0882	08.9%	0.79%	15.01	80.69	
2005	0.1507	09.7%	1.46%	15.02	80.98	
AVERAGE GROWTH			1.97%	3.00%		3.27%
2006	0.1733	10.0%	1.73%		81.20	0.27%
2007	0.2000	10.0%	2.00%		81.40	0.26%
2009-2011	0.2914	10.0%	2.91%	2.50%	82.00	0.25%

COMPANY		INTERNAL	GROWTH		EXTERNAL	GROWTH
PNM	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.7969	15.4%	12.27%	17.25	58.68	
2002	0.4673	06.5%	3.04%	16.60	58.68	
2003	0.4696	06.3%	2.96%	17.84	60.39	
2004	0.5594	08.0%	4.48%	18.19	60.46	
2005	0.5031	08.2%	4.13%	18.70	68.79	
AVERAGE GROWTH			5.37%	4.50%		4.05%
2006	0.4788	08.5%	4.07%		68.80	0.01%
2007	0.4743	08.5%	4.03%		70.80	1.45%
2009-2011	0.4211	08.5%	3.58%	4.00%	74.00	1.47%

COMPANY		INTERNAL	GROWTH		EXTERNAL	GROWTH
PNW	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.5842	12.5%	7.30%	29.46	84.83	
2002	0.3557	08.0%	2.85%	29.44	91.26	
2003	0.3135	08.1%	2.54%	31.00	91.29	
2004	0.2907	08.0%	2.33%	32.14	91.79	
2005	0.1645	06.5%	1.07%	34.57	99.08	
AVERAGE GROWTH			3.22%	4.00%		3.96%
2006	0.3233	08.5%	2.75%		99.10	0.02%
2007	0.3735	09.0%	3.36%		99.10	0.01%
2009-2011	0.3155	09.0%	2.84%	3.50%	99.10	0.00%

PUGET SOUND ENERGY
DCF GROWTH RATE PARAMETERS
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COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
PSD	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	-0.5082	07.7%	-3.91%	15.66	87.02	
2002	0.0242	07.2%	0.17%	16.27	93.64	
2003	0.1803	07.0%	1.26%	16.71	99.07	
2004	0.2424	08.1%	1.96%	16.24	99.87	
2005	0.2958	07.2%	2.13%	17.52	115.70	
AVERAGE GROWTH			0.32%	0.50%		7.38%
2006	0.2857	08.0%	2.29%		116.00	0.26%
2007	0.3750	08.5%	3.19%		116.50	0.35%
2009-2011	0.3714	08.5%	3.16%	4.00%	122.50	1.15%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
UNS	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.7765	14.3%	11.10%	12.68	33.50	
2002	0.4845	07.6%	3.68%	13.05	33.58	
2003	0.5385	08.4%	4.52%	15.97	33.79	
2004	0.5115	07.9%	4.04%	16.95	34.26	
2005	0.4154	07.5%	3.12%	17.68	34.87	
AVERAGE GROWTH			5.29%	12.00%		1.01%
2006	0.5333	09.5%	5.07%		35.30	1.23%
2007	0.5027	09.5%	4.78%		35.70	1.18%
2009-2011	0.4051	08.5%	3.44%	5.00%	36.90	1.14%

Data from Value Line Ratings & Reports March 3, March 31 and May 12, 2006.

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DCF GROWTH RATE PARAMETERS
GAS DISTRIBUTORS

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
ATG	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.2800	12.3%	3.44%	12.19	55.10	
2002	0.4066	14.5%	5.90%	12.52	56.70	
2003	0.4663	14.0%	6.53%	14.66	64.50	
2004	0.4956	11.0%	5.45%	18.06	76.70	
2005	0.4758	12.9%	6.14%	19.29	77.70	
AVERAGE GROWTH			5.49%	8.50%		8.97%
2006	0.4118	12.5%	5.15%		77.80	0.13%
2007	0.3923	12.0%	4.71%		77.80	-0.50%
2009-2011	0.3966	12.0%	4.76%	6.00%	78.00	0.08%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
ATO	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.2109	09.6%	2.02%	14.31	40.79	
2002	0.1862	10.4%	1.94%	13.75	41.68	
2003	0.2982	09.3%	2.77%	16.66	51.48	
2004	0.2278	07.6%	1.73%	18.05	62.80	
2005	0.2791	08.5%	2.37%	19.90	80.54	
AVERAGE GROWTH			2.17%	8.50%		18.54%
2006	0.3189	09.0%	2.87%		82.00	1.81%
2007	0.3600	09.5%	3.42%		84.00	2.13%
2009-2011	0.4600	10.5%	4.83%	5.00%	100.00	4.42%

COMPANY	INTERNAL	GROWTH			EXTERNAL GROWTH	
CGC	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.3469	13.3%	4.61%	11.01	11.05	
2002	0.1504	10.9%	1.64%	10.34	11.05	
2003	-0.1034	08.6%	-0.89%	10.11	11.13	
2004	0.1933	11.2%	2.16%	10.52	11.27	
2005	-0.1707	07.8%	-1.33%	10.39	11.41	
AVERAGE GROWTH			1.24%	0.00%		0.80%
2006	0.0400	08.0%	0.32%		11.50	0.79%
2007	0.1652	08.0%	1.32%		11.50	0.39%
2009-2011	0.3677	08.5%	3.13%	10.50%	12.50	1.84%

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DCF GROWTH RATE PARAMETERS
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COMPANY	INTERNAL	GROWTH			EXTERNAL	GROWTH
LG	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.1677	10.5%	1.76%	15.26	18.88	
2002	-0.1356	07.8%	-1.06%	15.07	18.96	
2003	0.2637	11.6%	3.06%	15.65	19.11	
2004	0.2582	10.1%	2.61%	16.96	20.98	
2005	0.2789	10.9%	3.04%	17.31	21.17	
AVERAGE GROWTH			1.88%	2.50%		2.90%
2006	0.4043	13.0%	5.26%		21.50	1.56%
2007	0.4083	13.0%	5.31%		21.50	0.78%
2009-2011	0.4643	13.0%	6.04%	5.00%	24.00	2.54%

COMPANY	INTERNAL	GROWTH			EXTERNAL	GROWTH
NJR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.4000	14.9%	5.96%	13.2	26.66	
2002	0.4258	15.7%	6.69%	13.06	27.67	
2003	0.4790	15.6%	7.47%	15.38	27.23	
2004	0.4902	15.3%	7.50%	16.87	27.74	
2005	0.4868	17.0%	8.28%	15.9	27.55	
AVERAGE GROWTH			7.18%	7.00%		0.82%
2006	0.4786	16.5%	7.90%		27.25	-1.09%
2007	0.4759	15.5%	7.38%		27.00	-1.00%
2009-2011	0.4848	14.5%	7.03%	8.00%	26.00	-1.15%

COMPANY	INTERNAL	GROWTH			EXTERNAL	GROWTH
GAS	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.4153	18.7%	7.77%	16.39	44.40	
2002	0.3611	17.5%	6.32%	16.55	44.01	
2003	0.1185	12.3%	1.46%	17.13	44.04	
2004	0.1622	13.1%	2.12%	16.99	44.10	
2005	0.1806	12.5%	2.26%	18.36	44.18	
AVERAGE GROWTH			3.98%	1.00%		-0.12%
2006	0.2250	12.5%	2.81%		44.20	0.05%
2007	0.2627	13.5%	3.55%		44.30	0.14%
2009-2011	0.2786	13.0%	3.62%	3.50%	44.60	0.19%

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COMPANY		INTERNAL	GROWTH		EXTERNAL	GROWTH
NWN	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.3351	10.2%	3.42%	18.56	25.23	
2002	0.2222	08.5%	1.89%	18.88	25.59	
2003	0.2784	09.0%	2.51%	19.52	25.94	
2004	0.3011	08.9%	2.68%	20.64	27.55	
2005	0.3744	10.0%	3.74%	21.27	27.58	
AVERAGE GROWTH			2.85%	3.50%		2.25%
2006	0.3867	10.0%	3.87%		27.75	0.62%
2007	0.4083	10.5%	4.29%		27.80	0.40%
2009-2011	0.4035	10.5%	4.24%	3.50%	28.00	0.30%

COMPANY		INTERNAL	GROWTH		EXTERNAL	GROWTH
PGL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.3544	13.9%	4.93%	22.76	35.40	
2002	0.2607	12.3%	3.21%	22.74	35.46	
2003	0.2613	12.3%	3.21%	23.11	36.69	
2004	0.0092	09.4%	0.09%	23.06	36.69	
2005	0.0354	10.8%	0.38%	20.95	38.16	
AVERAGE GROWTH			2.36%	2.00%		1.89%
2006	0.0311	11.0%	0.34%		39.00	2.20%
2007	0.0917	11.5%	1.05%		40.00	2.38%
2009-2011	0.1704	13.5%	2.30%	-1.50%	42.00	1.94%

COMPANY		INTERNAL	GROWTH		EXTERNAL	GROWTH
PNY	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.2475	11.7%	2.90%	8.63	64.93	
2002	0.1579	10.6%	1.67%	8.91	66.18	
2003	0.2613	11.8%	3.08%	9.36	67.31	
2004	0.3228	11.1%	3.58%	11.15	76.67	
2005	0.3106	11.5%	3.57%	11.53	76.70	
AVERAGE GROWTH			2.96%	6.50%		4.25%
2006	0.2615	11.0%	2.88%		76.50	-0.26%
2007	0.2857	11.5%	3.29%		76.00	-0.46%
2009-2011	0.3314	12.5%	4.14%	3.50%	75.00	-0.45%

PUGET SOUND ENERGY
DCF GROWTH RATE PARAMETERS
GAS DISTRIBUTORS

COMPANY	INTERNAL		GROWTH		EXTERNAL	GROWTH
SJI	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.3565	12.8%	4.56%	7.81	23.72	
2002	0.3852	12.5%	4.82%	9.67	24.41	
2003	0.4307	11.6%	5.00%	11.26	26.46	
2004	0.4810	12.5%	6.01%	12.41	27.76	
2005	0.4971	12.4%	6.16%	13.50	28.98	
AVERAGE GROWTH			5.31%	13.00%		5.13%
2006	0.4973	12.5%	6.22%		29.00	0.07%
2007	0.4974	12.5%	6.22%		29.60	1.06%
2009-2011	0.5000	13.0%	6.50%	6.00%	31.00	1.36%

COMPANY	INTERNAL		GROWTH		EXTERNAL	GROWTH
SWX	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.2870	06.6%	1.89%	17.27	32.49	
2002	0.2931	06.5%	1.91%	17.91	33.29	
2003	0.2743	06.1%	1.67%	18.42	34.23	
2004	0.5060	08.3%	4.20%	19.18	36.79	
2005	0.3387	06.5%	2.20%	18.60	39.20	
AVERAGE GROWTH			2.37%	4.00%		4.81%
2006	0.4710	08.0%	3.77%		40.00	2.04%
2007	0.5314	09.5%	5.05%		42.00	3.51%
2009-2011	0.6435	10.5%	6.76%	3.00%	45.00	2.80%

COMPANY	INTERNAL		GROWTH		EXTERNAL	GROWTH
WGL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2001	0.3298	11.2%	3.69%	16.24	48.54	
2002	-0.1140	07.2%	-0.82%	15.78	48.56	
2003	0.4435	14.0%	6.21%	16.25	48.83	
2004	0.3434	11.7%	4.02%	16.95	48.67	
2005	0.3744	12.0%	4.49%	17.8	48.65	
AVERAGE GROWTH			3.52%	3.00%		0.06%
2006	0.2703	10.0%	2.70%		48.70	0.10%
2007	0.2923	10.0%	2.92%		48.70	0.05%
2009-2011	0.3958	11.0%	4.35%	4.00%	48.80	0.06%

Data from Value Line Ratings & Reports, March 17, 2006.

PUGET SOUND ENERGY

DCF GROWTH RATES
ELECTRIC UTILITIES

COMPANY	br	+	sv=g*(1-(1/(M/B)))					=	g
CV	4.00%	+	0.00%	(1	- (1/ 1.22	)))		=	4.00%
FE	5.00%	+	0.50%	(1	- (1/ 1.68	)))		=	5.20%
GMP	5.00%	+	0.00%	(1	- (1/ 1.26	)))		=	5.00%
PGN	3.00%	+	1.50%	(1	- (1/ 1.34	)))		=	3.38%
AEE	3.75%	+	2.50%	(1	- (1/ 1.56	)))		=	4.64%
CNL	5.00%	+	4.00%	(1	- (1/ 1.51	)))		=	6.36%
DPL	6.50%	+	0.00%	(1	- (1/ 4.50	)))		=	6.50%
EDE	3.50%	+	4.00%	(1	- (1/ 1.47	)))		=	4.79%
ETR	6.00%	+	-0.25%	(1	- (1/ 1.70	)))		=	5.90%
HE	3.50%	+	1.00%	(1	- (1/ 1.76	)))		=	3.93%
PNM	5.75%	+	2.00%	(1	- (1/ 1.27	)))		=	6.17%
PNW	5.00%	+	1.00%	(1	- (1/ 1.12	)))		=	5.11%
PSD	4.50%	+	2.00%	(1	- (1/ 1.15	)))		=	4.76%
UNS	5.00%	+	1.00%	(1	- (1/ 1.61	)))		=	5.38%

Average Market-to-Book Ratio =   1.66

CV	=	Central Vermont P. S.
FE	=	FirstEnergy Corp.
GMP	=	Green Mountain Power
PGN	=	Progress Energy
AEE	=	Ameren Corp.
CNL	=	Cleco Corporation
DPL	=	DPL, Inc.
EDE	=	Empire District Electric
ETR	=	Entergy Corp.
HE	=	Hawaiian Electric
PNM	=	PNM Resources
PNW	=	Pinnacle West Capital
PSD	=	Puget Energy
UNS	=	Unisource Energy

PUGET SOUND ENERGY

GROWTH RATE COMPARISON
ELECTRIC UTILITIES

COMPANY	DCF Growth	Value Line Projected			Reuters EPS	Value Line Historic			Reuters & VL AVGS.	5-yr Compound Hist.		
		EPS	DPS	BVPS	EPS	EPS	DPS	BVPS	AVGS.	EPS	DPS	BVPS
CV	4.00%	5.00%	0.50%	NMF	n/a	8.50%	0.50%	2.00%	3.30%	nmf	0.89%	1.22%
FE	5.20%	8.50%	4.50%	5.50%	4.38%	1.00%	2.00%	6.00%	4.55%	4.27%	3.94%	3.52%
GMP	5.00%	3.50%	11.00%	3.00%	n/a	37.50%	-6.50%	-0.50%	8.00%	3.19%	15.28%	5.02%
PGN	3.38%	0.00%	2.00%	2.50%	3.14%	5.50%	3.00%	8.50%	3.52%	nmf	2.66%	3.31%
AEE	4.64%	2.50%	0.00%	4.50%	5.17%	1.50%	0.00%	4.00%	2.52%	nmf	0.00%	5.83%
CNL	6.36%	4.50%	2.00%	8.00%	8.00%	1.00%	2.00%	4.00%	4.21%	-3.71%	0.68%	6.51%
DPL	6.50%	5.50%	3.00%	2.00%	5.50%	-1.00%	0.50%	-3.50%	1.71%	-4.26%	1.25%	-0.84%
EDE	4.79%	6.50%	0.00%	1.50%	2.00%	-5.00%	0.00%	2.00%	1.00%	12.22%	0.00%	2.21%
ETR	5.90%	5.00%	8.00%	4.50%	6.86%	11.00%	1.50%	5.50%	6.05%	8.35%	11.03%	3.82%
HE	3.93%	3.00%	0.00%	2.50%	2.90%	1.00%	0.00%	3.00%	1.77%	-1.28%	0.00%	3.22%
PNM	6.17%	5.50%	8.50%	4.00%	10.36%	-1.00%	5.00%	4.50%	5.27%	-8.76%	10.17%	2.48%
PNW	5.11%	6.00%	5.00%	3.50%	6.00%	-4.50%	6.50%	4.00%	3.79%	-4.00%	5.82%	3.83%
PSD	4.76%	5.00%	1.50%	4.00%	5.14%	-7.50%	-11.50%	0.50%	-0.41%	2.79%	-11.48%	3.00%
UNS	5.38%	7.00%	9.50%	5.00%	n/a	5.00%	0.00%	12.00%	6.42%	0.11%	16.00%	8.20%
		4.82%	3.96%	3.88%		3.79%	0.21%	3.71%		0.81%	4.02%	3.67%
AVERAGES	5.08%		4.22%		5.40%		2.57%		3.69%		2.83%	

Zack's growth rates: CV-n/a, FE-4.8%, GMP-n/a, PGN-3.8%, AEE-6.0%, CNL-8%, DPL-7.0%, EDE-n/a, ETR-7.4%,
HE-5.2%, PNM-8.3%, PNW-6.8%, PSD-7.0%and UNS-n/a. Zack's average earnings growth = 6.5%.

PUGET SOUND ENERGY

DCF GROWTH RATES
GAS DISTRIBUTORS

COMPANY	br	+	sv=g*(1-(1/(M/B)))			=	g
ATG	5.00%	+	1.00%	(1	- (1/ 1.73))	=	5.42%
ATO	4.25%	+	5.00%	(1	- (1/ 1.27))	=	5.31%
CGC	4.00%	+	1.00%	(1	- (1/ 1.60))	=	4.38%
LG	4.50%	+	2.50%	(1	- (1/ 1.87))	=	5.66%
NJR	6.50%	+	0.00%	(1	- (1/ 2.56))	=	6.50%
GAS	3.75%	+	0.00%	(1	- (1/ 2.11))	=	3.75%
NWN	4.50%	+	1.00%	(1	- (1/ 1.58))	=	4.87%
PGL	3.00%	+	2.00%	(1	- (1/ 1.75))	=	3.86%
PNY	5.00%	+	0.50%	(1	- (1/ 2.07))	=	5.26%
SJI	6.00%	+	1.50%	(1	- (1/ 1.86))	=	6.69%
SWX	5.50%	+	3.00%	(1	- (1/ 1.45))	=	6.44%
WGL	4.00%	+	0.50%	(1	- (1/ 1.66))	=	4.20%

Average Market-to-Book Ratio =   1.79

ATG	=	AGL Resources
ATO	=	Atmos Energy Corporation
CGC	=	Cascade Natural Gas Corporation
LG	=	Laclede Group
NJR	=	New Jersey Resources Corp.
GAS	=	NICOR
NWN	=	Northwest Natural Gas Co.
PGL	=	Peoples Energy Corp.
PNY	=	Piedmont Natual Gas Company
SJI	=	South Jersey Industries, Inc.
SWX	=	Southwest Gas
WGL	=	WGL Holdlings

g*= expected growth in number of shares outstanding

PUGET SOUND ENERGY

GROWTH RATE COMPARISON
GAS DISTRIBUTORS

COMPANY	DCF Growth	Value Line Projected			Reuters EPS	Value Line Historic			Reuters & VL AVGS.	5-yr Compound Hist.		
		EPS	DPS	BVPS		EPS	DPS	BVPS		EPS	DPS	BVPS
ATG	5.42%	4.00%	6.50%	6.00%	4.57%	13.50%	2.00%	8.50%	6.44%	11.20%	6.79%	10.74%
ATO	5.31%	7.00%	2.00%	5.00%	4.82%	6.50%	2.00%	8.50%	5.12%	4.71%	1.67%	7.82%
CGC	4.38%	8.50%	0.50%	10.50%	3.50%	-3.50%	0.00%	0.00%	2.79%	-7.42%	0.00%	2.32%
LG	5.66%	7.00%	2.00%	5.00%	4.00%	4.50%	0.50%	2.50%	3.64%	7.86%	0.88%	3.64%
NJR	6.50%	4.50%	4.50%	8.00%	5.20%	8.50%	3.00%	7.00%	5.81%	7.50%	4.53%	5.80%
GAS	3.75%	4.00%	1.50%	3.50%	3.10%	-0.50%	4.50%	1.00%	2.44%	-4.43%	1.11%	2.89%
NWN	4.87%	7.00%	4.00%	3.50%	5.21%	3.00%	1.00%	3.50%	3.89%	3.66%	2.00%	3.41%
PGL	3.86%	0.50%	1.00%	-1.50%	4.38%	1.00%	2.00%	2.00%	1.34%	-6.57%	1.34%	-1.93%
PNY	5.26%	6.00%	5.50%	3.50%	4.87%	5.00%	5.00%	6.50%	5.20%	5.18%	4.78%	6.18%
SJI	6.69%	7.00%	6.00%	6.00%	5.67%	11.50%	2.50%	13.00%	7.38%	9.98%	4.68%	13.02%
SWX	6.44%	8.50%	0.00%	3.00%	4.33%	1.50%	0.00%	4.00%	3.05%	6.15%	0.00%	2.09%
WGL	4.20%	2.00%	2.00%	4.00%	3.73%	6.00%	1.50%	3.00%	3.18%	-0.32%	1.39%	1.91%
		5.50%	2.96%	4.71%		4.75%	2.00%	4.96%		3.12%	2.43%	4.82%
AVERAGES	5.19%		4.39%		4.45%		3.90%		4.19%		3.46%	

Zack's Earnings Growth Projections: ATG-4.5%, ATO-5.5%, CGC-n/a, LG-n/a, NJR-6.0%, GAS-3.5%, NWN-5.3%, PGL-4.0%, PNY-5.2%, SJI-5.7%, SWX-6.0%, WGL-4.0%; Average = 4.97%.

PUGET SOUND ENERGY

STOCK PRICE, DIVIDENDS, YIELDS
ELECTRIC UTILITIES

COMPANY	AVG. STOCK PRICE 3/22/06-5/3/06 (PER SHARE)	ANNUALIZED DIVIDEND (PER SHARE)	DIVIDEND YIELD
CV	$20.50	$0.92	4.49%
FE	$49.79	$1.80	3.62%
GMP	$28.58	$1.12	3.92%
PGN	$43.14	$2.42	5.61%
AEE	$50.09	$2.54	5.08%
CNL	$22.19	$0.90	4.06%
DPL	$27.22	$1.00	3.67%
EDE	$22.33	$1.28	5.73%
ETR	$69.45	$2.16	3.11%
HE	$26.90	$1.24	4.61%
PNM	$24.68	$0.88	3.57%
PNW	$39.88	$2.00	5.01%
PSD	$20.89	$1.00	4.79%
UNS	$30.27	$0.84	2.78%
		AVERAGE	**4.29%**

PUGET SOUND ENERGY

STOCK PRICE, DIVIDENDS, YIELDS
GAS DISTRIBUTORS

COMPANY	AVG. STOCK PRICE 3/22/06-5/3/06 (PER SHARE)		ANNUALIZED DIVIDEND (PER SHARE)	DIVIDEND YIELD
ATG	$35.17		$1.48	4.21%
ATO	$26.47		$1.26	4.76%
CGC	$19.81		$0.96	4.84%
LG	$34.05		$1.42	4.17%
NJR	$44.79		$1.44	3.22%
GAS	$39.84		$1.86	4.67%
NWN	$34.71		$1.38	3.98%
PGL	$36.15		$2.18	6.03%
PNY	$24.09		$0.96	3.98%
SJI	$26.77	*	$0.94	3.51%
SWX	$27.84		$0.82	2.95%
WGL	$29.72	*	$1.39	4.67%
			AVERAGE	**4.25%**

* Dividend increased by (1+g), derived on Exhibit 11.

PUGET SOUND ENERGY

DCF COST OF EQUITY CAPITAL
ELECTRIC UTILITIES

COMPANY	DIVIDEND YIELD Exhibit__(SGH-12)	GROWTH RATE Exhibit__(SGH-11)	DCF COST OF EQUITY CAPITAL
CV	4.49%	4.00%	8.49%
FE	3.62%	5.20%	8.82%
GMP	3.92%	5.00%	8.92%
PGN	5.61%	3.38%	8.99%
AEE	5.08%	4.64%	9.72%
CNL	4.06%	6.36%	10.42%
DPL	3.67%	6.50%	10.17%
EDE	5.73%	4.79%	10.52%
ETR	3.11%	5.90%	9.01%
HE	4.61%	3.93%	8.54%
PNM	3.57%	6.17%	9.74%
PNW	5.01%	5.11%	10.12%
PSD	4.79%	4.76%	9.55%
UNS	2.78%	5.38%	8.15%
		AVERAGE	**9.37%**
		STANDARD DEVIATION	**0.77%**

PUGET SOUND ENERGY

DCF COST OF EQUITY CAPITAL
GAS DISTRIBUTORS

COMPANY	DIVIDEND YIELD Exhibit__(SGH-12)	GROWTH RATE Exhibit__(SGH-11)	DCF COST OF EQUITY CAPITAL
ATG	4.21%	5.42%	9.63%
ATO	4.76%	5.31%	10.07%
CGC	4.84%	4.38%	9.22%
LG	4.17%	5.66%	9.83%
NJR	3.22%	6.50%	9.72%
GAS	4.67%	3.75%	8.42%
NWN	3.98%	4.87%	8.84%
PGL	6.03%	3.86%	9.89%
PNY	3.98%	5.26%	9.24%
SJI	3.51%	6.69%	10.20%
SWX	2.95%	6.44%	9.38%
WGL	4.67%	4.20%	8.87%
		AVERAGE	**9.44%**
		STANDARD DEVIATION	**0.54%**

PUGET SOUND ENERGY

CAPM COST OF EQUITY CAPITAL
ELECTRIC UTILITIES

k = rf + B (rm - rf)

T-BILLS

$$[rf]^* = 4.69\%$$
$$[rm - rf]\dagger = 6.70\% \text{ (geometric mean)}$$
$$[rm - rf]\dagger = 8.60\% \text{ (arithmetic mean)}$$
$$\text{average beta} = 0.82$$

$$k = 4.69\% + 0.82 \ (6.7\%/8.60\%)$$
$$k = 4.69\% + 5.48\%/7.04\%$$
$$k = 10.18\% \ / \ 11.73\%$$

T-BONDS

$$[rf]^* = 4.97\%$$
$$[rm - rf]\dagger = 4.90\% \text{ (geometric mean)}$$
$$[rm - rf]\dagger = 6.50\% \text{ (arithmetic mean)}$$
$$\text{average beta} = 0.82$$

$$k = 4.97\% + 0.82 \ (4.90\%/6.50\%)$$
$$k = 4.97\% + 4.01\%/5.32\%$$
$$k = \mathbf{8.99\% \ / \ 10.30\%}$$

*Current T-Bill & T-Bond yields, six-week average yield from Value Line Selection & Opinion (3/31/06-5/5/06)
†Geometric and arithmetic market risk premiums from Ibbotson Associates 2006 SBBI Yearbook, p. 28.

PUGET SOUND ENERGY

CAPM COST OF EQUITY CAPITAL
GAS UTILITIES

k = rf + B (rm - rf)

T-BILLS

$$[rf]^* = 4.69\%$$
$$[rm - rf]\dagger = 6.70\% \text{ (geometric mean)}$$
$$[rm - rf]\dagger = 8.60\% \text{ (arithmetic mean)}$$
$$\text{average beta} = 0.81$$

$$k = 4.69\% + 0.81 (6.7\%/8.60\%)$$
$$k = 4.69\% + 5.42\%/6.97\%$$
$$k = 10.11\% / 11.65\%$$

T-BONDS

$$[rf]^* = 4.97\%$$
$$[rm - rf]\dagger = 4.90\% \text{ (geometric mean)}$$
$$[rm - rf]\dagger = 6.50\% \text{ (arithmetic mean)}$$
$$\text{average beta} = 0.81$$

$$k = 4.97\% + 0.81 (4.90\%/6.50\%)$$
$$k = 4.97\% + 3.97\%/5.26\%$$
$$k = \mathbf{8.94\% / 10.24\%}$$

*Current T-Bill & T-Bond yields, six-week average yield from Value Line Selection & Opinion (3/31/06-5/5/06)
†Geometric and arithmetic market risk premiums from Ibbotson Associates 2006 SBBI Yearbook, p. 28.

PUGET SOUND ENERGY
PROOF

If market price exceeds book value,
the market-to-book ratio is greater than 1.0,
and the earnings-price ratio understates the cost of capital.

MP = market price
BV = book value
i = cost of equity capital
r = earned return
E = earnings

1. At MP = BV, $i = r = \dfrac{E}{MP}$.

2. E = rBV.

3. Then, $\dfrac{E}{MP} = \dfrac{rBV}{MP}$.

4. When BV < MP, i.e., $\dfrac{BV}{MP} < 1$, then,

   a. $\dfrac{E}{MP} < r$, since $\dfrac{E}{MP} = \dfrac{rBV}{MP} < r$, because $\dfrac{BV}{MP} < 1$;

   b. $i < r$, since at $\dfrac{BV}{MP} = 1$, $i = \dfrac{E}{MP} = \dfrac{rBV}{MP}$, but if $\dfrac{BV}{MP} < 1$, then $i < r$; and

   c. $\dfrac{E}{MP} < i$, since at $\dfrac{BV}{MP} = 1$, $i = \dfrac{E}{MP} = \dfrac{rBV}{MP}$, but if $\dfrac{BV}{MP} < 1$, then $\dfrac{E}{MP} < i$, because,

   1) $\dfrac{BV}{MP} < 1$, through MP increasing, and, if so, $\dfrac{E}{MP}$ decreases, therefore, $\dfrac{E}{MP} < i$, or

   2) $\dfrac{BV}{MP} < 1$, through BV decreasing, and, if so, given E = rBV, $\dfrac{E}{MP}$ decreases, therefore, $\dfrac{E}{MP} < i$.

5. Ergo, $\dfrac{E}{MP} < i < r$, the earnings-price ratio is lower than the cost of capital, which is lower than the earned return.

PUGET SOUND ENERGY

MODIFIED EARNINGS-PRICE RATIO ANALYSIS
ELECTRIC UTILITIES

COMPANY	Reuters* 2007 Earnings (Per Share)	Market Price (Per share)	Earnings-Price Ratio	Current R.O.E. 2007	Projected R.O.E. 2009-2011
CV	$1.55	$20.50	7.56%	9.00%	11.00%
FE	$3.94	$49.79	7.91%	12.00%	11.00%
GMP	$2.30	$28.58	8.05%	10.00%	10.50%
PGN	$3.35	$43.14	7.77%	10.00%	10.00%
AEE	$3.80	$50.09	7.59%	10.00%	9.50%
CNL	$1.38	$22.19	6.22%	8.00%	9.00%
DPL	$1.65	$27.22	6.06%	24.50%	21.00%
EDE	$1.43	$22.33	6.40%	8.50%	9.50%
ETR	$5.53	$69.45	7.96%	11.00%	10.50%
HE	$1.85	$26.90	6.88%	10.00%	10.00%
PNM	$1.99	$24.68	8.06%	8.50%	8.50%
PNW	$3.33	$39.88	8.35%	9.00%	9.00%
PSD	$1.57	$20.89	7.52%	8.50%	8.50%
UNS	$2.21	$30.27	7.30%	9.50%	8.50%
		AVERAGE	7.40%	10.61%	
		CURRENT M.E.P.R.		**9.00%**	
		AVERAGE	7.40%		10.46%
		PROJECTED M.E.P.R.		**8.93%**	

PUGET SOUND ENERGY

MODIFIED EARNINGS-PRICE RATIO ANALYSIS
GAS DISTRIBUTORS

COMPANY	Reuter's 2007 EARNINGS (Per Share)	MARKET PRICE (Per share)	EARNINGS-PRICE RATIO	CURRENT R.O.E. 2006	PROJECTED R.O.E. 2009-2011
ATG	$2.71	$35.17	7.71%	12.50%	12.00%
ATO	$1.98	$26.47	7.48%	9.00%	10.50%
CGC	$1.19	$19.81	6.01%	8.00%	8.50%
LG	$2.16	$34.05	6.34%	13.00%	13.00%
NJR	$2.87	$44.79	6.41%	16.50%	14.50%
GAS	$2.53	$39.84	6.35%	12.50%	13.00%
NWN	$2.39	$34.71	6.89%	10.00%	10.50%
PGL	$2.52	$36.15	6.97%	11.00%	13.50%
PNY	$1.42	$24.09	5.89%	11.00%	12.50%
SJI	$1.93	$26.77	7.21%	12.50%	13.00%
SWX	$1.92	$27.84	6.90%	8.00%	10.50%
WGL	$1.90	$29.72	6.39%	10.00%	11.00%
		AVERAGE	6.71%	11.17%	
	CURRENT M.E.P.R.		**8.94%**		
		AVERAGE	6.71%		11.88%
	PROJECTED M.E.P.R.		**9.29%**		

PUGET SOUND ENERGY

MARKET-TO-BOOK RATIO ANALYSIS
ELECTRIC UTILITIES

$$k = R.O.E.(1-b)/(M/B) + g$$
[2006]

COMPANY									MARKET-TO-BOOK COST OF EQUITY
CV	k=	NMF	(1-	0.4065	)/	1.22	+	4.00%	=	nmf
FE	k=	12.0%	(1-	0.4800	)/	1.68	+	5.20%	=	8.91%
GMP	k=	09.5%	(1-	0.4909	)/	1.26	+	5.00%	=	8.85%
PGN	k=	10.0%	(1-	0.2492	)/	1.34	+	3.38%	=	9.00%
AEE	k=	09.5%	(1-	0.1937	)/	1.56	+	4.64%	=	9.57%
CNL	k=	08.0%	(1-	0.2800	)/	1.51	+	6.36%	=	10.16%
DPL	k=	24.5%	(1-	0.2857	)/	4.50	+	6.50%	=	10.39%
EDE	k=	06.5%	(1-	-0.2190	)/	1.47	+	4.79%	=	10.16%
ETR	k=	11.5%	(1-	0.5304	)/	1.70	+	5.90%	=	9.07%
HE	k=	10.0%	(1-	0.1733	)/	1.76	+	3.93%	=	8.63%
PNM	k=	08.5%	(1-	0.4788	)/	1.27	+	6.17%	=	9.67%
PNW	k=	08.5%	(1-	0.3233	)/	1.12	+	5.11%	=	10.24%
PSD	k=	08.0%	(1-	0.2857	)/	1.15	+	5.13%	=	10.10%
UNS	k=	09.5%	(1-	0.5333	)/	1.61	+	5.38%	=	8.13%

AVERAGE **9.45%**

STANDARD DEVIATION **0.64%**

Note: Equity returns and retention ratios based on Value Line current year projections.

PUGET SOUND ENERGY

MARKET-TO-BOOK RATIO ANALYSIS
ELECTRIC UTILITIES

k = R.O.E.(1-b)/(M/B) + g
[2009-2011]

COMPANY										MARKET-TO-BOOK COST OF EQUITY
CV	k=	11.0%	(1-	0.5282	)/	1.22	+	4.00%	=	8.25%
FE	k=	11.0%	(1-	0.4500	)/	1.68	+	5.20%	=	8.79%
GMP	k=	10.5%	(1-	0.3961	)/	1.26	+	5.00%	=	10.05%
PGN	k=	10.0%	(1-	0.2514	)/	1.34	+	3.38%	=	8.98%
AEE	k=	09.5%	(1-	0.2638	)/	1.56	+	4.64%	=	9.14%
CNL	k=	09.0%	(1-	0.4286	)/	1.51	+	6.36%	=	9.75%
DPL	k=	21.0%	(1-	0.3371	)/	4.50	+	6.50%	=	9.59%
EDE	k=	09.5%	(1-	0.1467	)/	1.47	+	4.79%	=	10.29%
ETR	k=	10.5%	(1-	0.4717	)/	1.70	+	5.90%	=	9.15%
HE	k=	10.0%	(1-	0.2914	)/	1.76	+	3.93%	=	7.96%
PNM	k=	08.5%	(1-	0.4211	)/	1.27	+	6.17%	=	10.06%
PNW	k=	09.0%	(1-	0.3155	)/	1.12	+	5.11%	=	10.60%
PSD	k=	08.5%	(1-	0.3714	)/	1.15	+	5.13%	=	9.77%
UNS	k=	08.5%	(1-	0.4051	)/	1.61	+	5.38%	=	8.52%

AVERAGE **9.35%**

STANDARD DEVIATION **0.75%**

Note: Equity returns and retention ratios based on Value Line three- to five-year projections.

PUGET SOUND ENERGY

MARKET-TO-BOOK RATIO ANALYSIS
GAS DISTRIBUTORS

$$k = R.O.E.(1-b)/(M/B) + g$$
[2006]

COMPANY									MARKET-TO-BOOK COST OF EQUITY
ATG	k= 12.5%	(1-	0.4118	)/	1.73	+	5.42%	=	9.67%
ATO	k= 09.0%	(1-	0.3189	)/	1.27	+	5.31%	=	10.14%
CGC	k= 08.0%	(1-	0.0400	)/	1.60	+	4.38%	=	9.16%
LG	k= 13.0%	(1-	0.4043	)/	1.87	+	5.66%	=	9.81%
NJR	k= 16.5%	(1-	0.4786	)/	2.56	+	6.50%	=	9.86%
GAS	k= 12.5%	(1-	0.2250	)/	2.11	+	3.75%	=	8.35%
NWN	k= 10.0%	(1-	0.3867	)/	1.58	+	4.87%	=	8.75%
PGL	k= 11.0%	(1-	0.0311	)/	1.75	+	3.86%	=	9.95%
PNY	k= 11.0%	(1-	0.2615	)/	2.07	+	5.26%	=	9.19%
SJI	k= 12.5%	(1-	0.4973	)/	1.86	+	6.69%	=	10.07%
SWX	k= 08.0%	(1-	0.4710	)/	1.45	+	6.44%	=	9.35%
WGL	k= 10.0%	(1-	0.2703	)/	1.66	+	4.20%	=	8.58%

AVERAGE **9.41%**

STANDARD DEVIATION **0.61%**

Note: Equity returns and retention ratios based on Value Line current year projections.

PUGET SOUND ENERGY

MARKET-TO-BOOK RATIO ANALYSIS
GAS DISTRIBUTORS

$$k = R.O.E.(1-b)/(M/B) + g$$
[2009-2011]

COMPANY							MARKET-TO-BOOK COST OF EQUITY
ATG	k= 12.0%	(1- 0.3966)/	1.73	+	5.42%	=	9.60%
ATO	k= 10.5%	(1- 0.4600)/	1.27	+	5.31%	=	9.78%
CGC	k= 08.5%	(1- 0.3677)/	1.60	+	4.38%	=	7.73%
LG	k= 13.0%	(1- 0.4643)/	1.87	+	5.66%	=	9.39%
NJR	k= 14.5%	(1- 0.4848)/	2.56	+	6.50%	=	9.42%
GAS	k= 13.0%	(1- 0.2786)/	2.11	+	3.75%	=	8.20%
NWN	k= 10.5%	(1- 0.4035)/	1.58	+	4.87%	=	8.83%
PGL	k= 13.5%	(1- 0.1704)/	1.75	+	3.86%	=	10.26%
PNY	k= 12.5%	(1- 0.3314)/	2.07	+	5.26%	=	9.30%
SJI	k= 13.0%	(1- 0.5000)/	1.86	+	6.69%	=	10.19%
SWX	k= 10.5%	(1- 0.6435)/	1.45	+	6.44%	=	9.01%
WGL	k= 11.0%	(1- 0.3958)/	1.66	+	4.20%	=	8.19%

AVERAGE **9.16%**

STANDARD DEVIATION **0.80%**

Note: Equity returns and retention ratios based on Value Line three- to five-year projections.

PUGET SOUND ENERGY

GAS UTILITY REVENUE MARGIN VOLATILITY
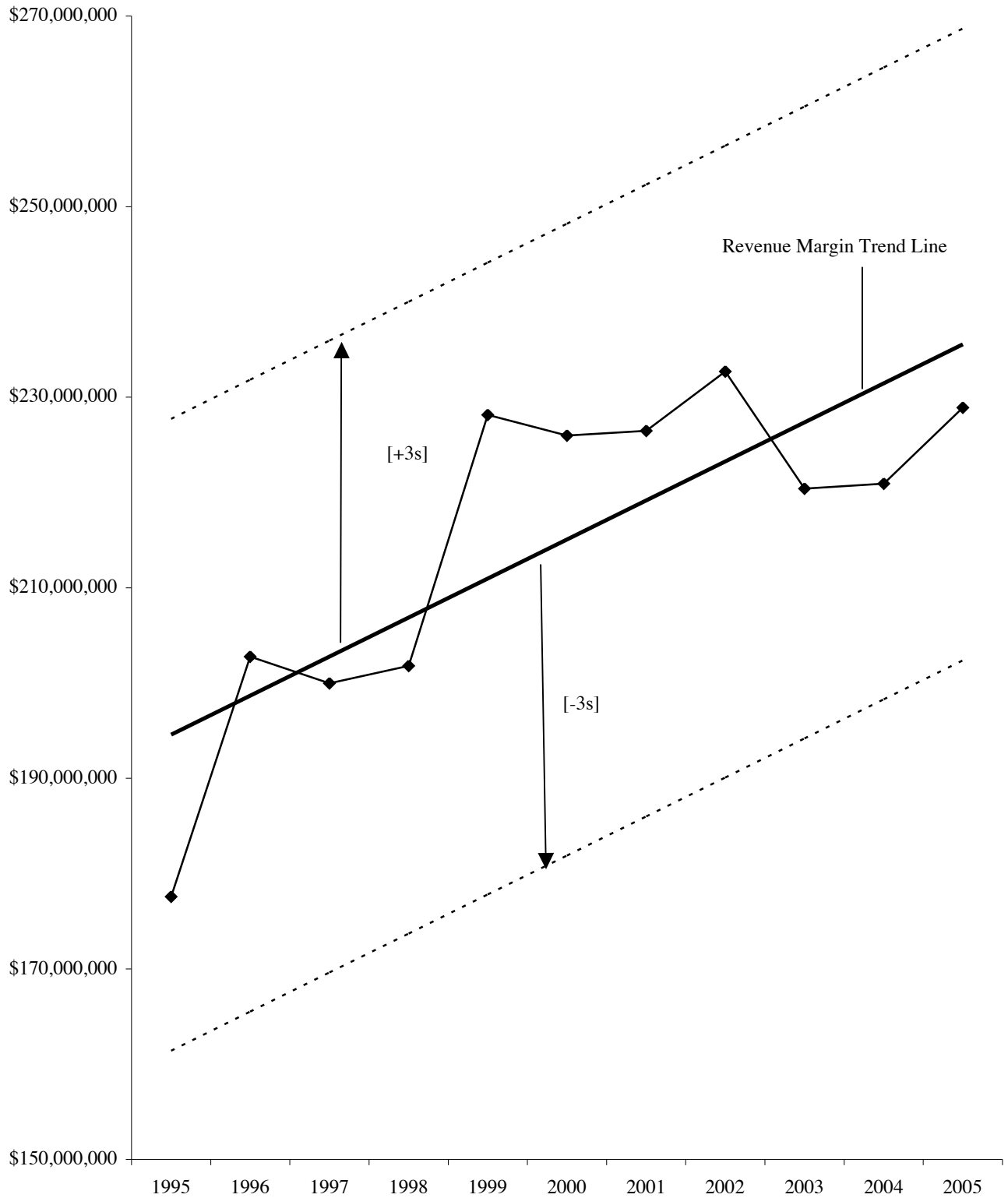
PUGET SOUND ENERGY
REVENUE MARGIN TRENDLINE CALCULATION

YEAR	X	Y Margin Revenues	x (X-Xavg.)	y (Y-Yavg)	x squared	xy	y squared
1995	1	$177,574,906	-5	-$37,481,717	25	$187,408,586	1.4049E+15
1996	2	$202,777,679	-4	-$12,278,944	16	$49,115,777	1.5077E+14
1997	3	$199,975,893	-3	-$15,080,730	9	$45,242,191	2.2743E+14
1998	4	$201,795,585	-2	-$13,261,038	4	$26,522,076	1.7586E+14
1999	5	$228,149,366	-1	$13,092,743	1	-$13,092,743	1.7142E+14
2000	6	$225,977,009	0	$10,920,386	0	$0	1.1925E+14
2001	7	$226,464,778	1	$11,408,155	1	$11,408,155	1.3015E+14
2002	8	$232,683,051	2	$17,626,428	4	$35,252,856	3.1069E+14
2003	9	$220,403,232	3	$5,346,609	9	$16,039,826	2.8586E+13
2004	10	$220,928,689	4	$5,872,066	16	$23,488,263	3.4481E+13
2005	11	$228,892,667	5	$13,836,044	25	$69,180,219	1.9144E+14
Sum	66	2365622855			110	450565206	2.94495E+15
Average	6	215056623.2					

slope (b) = $(\sum xy)/(\sum x\text{-squared})$ =   4096047.327

intercept (a) = Yavg - (b) Xavg =   190480339.2

r squared = $b(\sum xy)/(\sum y \text{ squared})$=   0.626678279

variance of y given x - $(1/(n-2))(\sum y \text{ squared} - b\sum xy)$

		25% Variance
variance of y given x =	1.22157E+14	3.05393E+13

standard deviation of y given x = $\sqrt{(\text{variance of y given x})}$
standard deviation of y given x = $\sqrt{(1.22157E+14)}$

standard deviation of y given x =	$11,052,470	$5,526,235
3 standard deviation units =	$33,157,411	$16,578,706

Reference: Hemptober, et al, Statistical Inference for Mangement and Economics, Allyn and Bacon, 1975, pp. 284-287.

PUGET SOUND ENERGY
REVENUE MARGIN SENSITIVITY ANALYSIS
1995-2005

Assume: Variance of Revenue Margin Following Decoupling is 25% of Pre-decoupling Level.

1) Annual Revenue Margin (from Exhibit__(SGH-18), p. 2)

σ = \$11,052,470 σ = one standard deviation unit (historical)
3σ = \$33,157,411 3σ = 3 standard deviation units (historical)
$3\sigma*$ = \$16,578,706 = 1.50σ $3\sigma*$ = 3 standard deviation units (25% variance)

2) Probability (p) Difference Between 3 Standard Deviation Units (Historical), and
   3 Standard Deviation Units (Variance Reduced to 25%)

       $p(3\sigma)$ =   0.49865
less $p(3s*)$ = 1.50σ =   0.43319
                     0.06546 or 6.546% of average revenue margin

3) Basis Point Impact of a 6.546% Reduction in Annual Revenue Margin

    a) Average Revenue Margin 1995-2005   \$215,056,623
                                         x 0.06546
    Annual Average Revenue Margin Reduction   \$14,077,607

    b) Company Requested Rate Base   \$4.2 Billion
        Common Equity Ratio   43%
    A 1% Equity Return Reduction =(1% x 43% x \$4.2 B)/(1-34%)
                       = \$27.363 Million

    c) If 1% ROE Change Affects Annual Revenues by \$27.363 Million,
      Then, a \$14.077 Million Reduction is Equivalent to a 0.51% Change In ROE

      \$14.077M ÷ \$27.363M = 51.44%

Historical Data from Company Witness Amen's Workpapers.
Probability Table Data From: Hemptober, et al, <u>Statistical Inference for Mangement and Economics</u>,
Allyn and Bacon, 1975, appendix, Table II, "Areas of the Standard Normal Distribution."
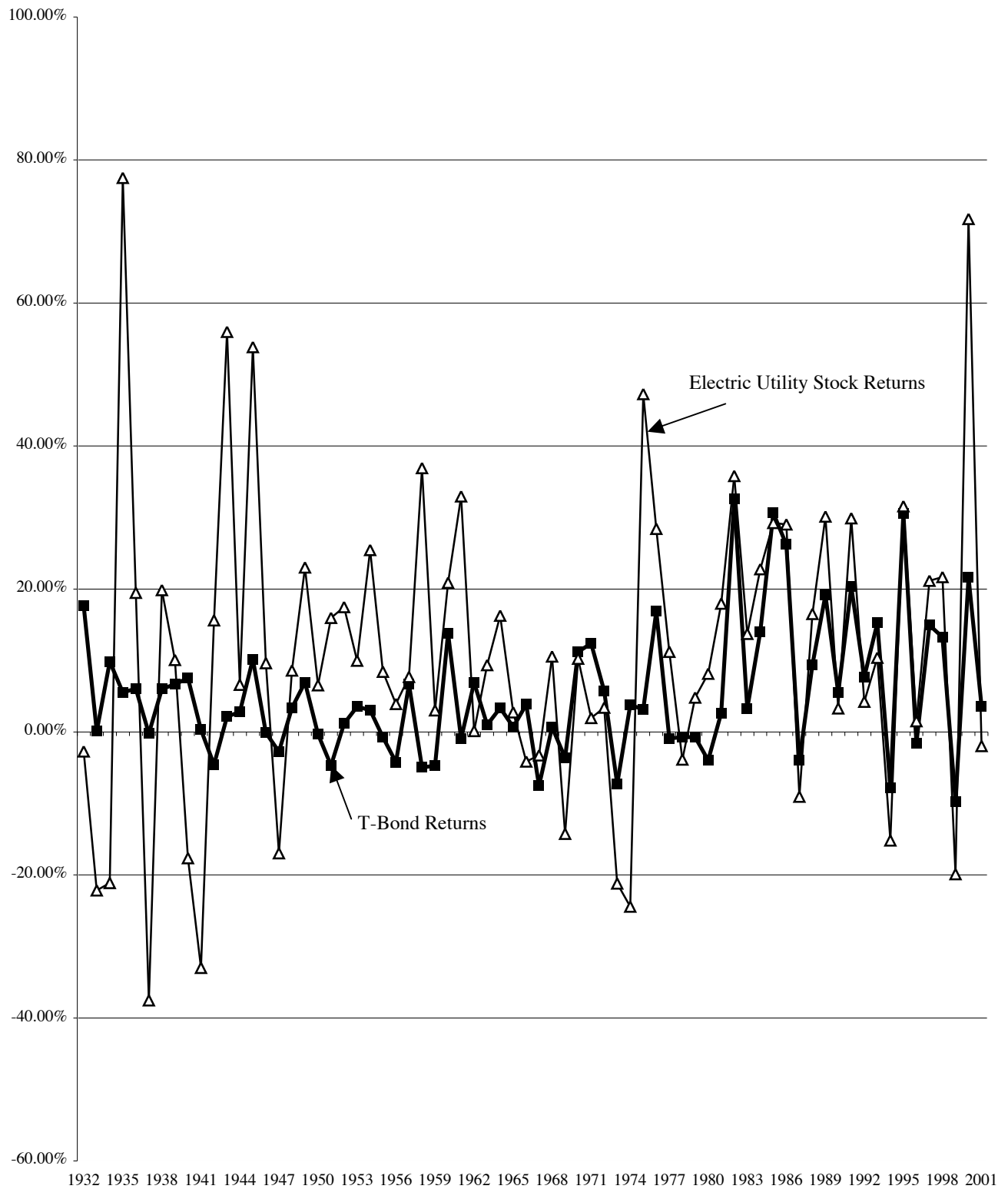
PUGET SOUND ENERGY
OVERALL COST OF CAPITAL

Type of Capital	Percent	Cost Rate	Wt. Avg. Cost Rate
Common Equity	43.00%	9.38%	4.03%
Preferred Stock	3.75%	7.61%	0.29%
Hybrid Securities	0.70%	8.54%	0.06%
Long-term Debt	47.88%	6.64%	3.18%
Short-term Debt	4.67%	6.19%	0.29%
	100.00%		7.84%

PRE-TAX INTEREST COVERAGE* = 2.85x

*Assuming the Company experiences, prospectively, a combined income tax rate of 34%, the pre-tax overall return would be 10.07% [7.84%-(.29%+3.18%+.06%) =4.32%/(1-34%) = 6.54%+(.29%+3.18%+.06%)]. That pre-tax overall return (10.07%), divided by the weighted cost of debt (.18%+2.32%+.12%), indicates a pre-tax interest coverage of 2.85 times.

PUGET SOUND ENERGY
DR. MORIN'S RISK PREMIUM

All data from Exhibit__(RAM_5).