Interstate Natural Gas Pipeline Industry

2007
Cost of Capital Study

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Common Terms

CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
DCF	Discounted Cash Flow
EIA	Energy Information Administration
FED	Federal Reserve
FERC	Federal Energy Regulatory Commission
GDP	Gross Domestic Product
GP	General Partner
GRI	Gas Research Institute
GSR	Gas Supply Realignment
GTI	Gas Technology Institute
INGAA	Interstate Natural Gas Association of America
IBES	Institutional Brokers Estimate System
INGPC	Interstate Natural Gas Pipeline Company
INGPI	Interstate Natural Gas Pipeline Industry
INGPPTF	Interstate Natural Gas Pipeline Property Tax Forum
LDC	Local Distribution Company
LNG	Liquified Natural Gas
M&A	Mergers and Acquisitions
MLP	Master Limited Partnership
NUOI	Net Utility Operating Income
OCS	Outer Continental Shelf
PFRB	Philadelphia Federal Reserve Bank
PUHCA	Public Utility Holding Company Act
RP	Risk Premium
SFV	Straight Fixed Variable
S&P	Standard & Poor's
VL	Value Line Investment Survey
WACC	Weighted Average Cost of Capital
YTM	Yield to Maturity

2007 Cost of Capital Study of the
Interstate Natural Gas Pipeline Industry
for the
Interstate Natural Gas Pipeline Property Tax Forum
January 1, 2007

Purpose of the Cost of Capital Study

The purpose of the cost of capital study is to provide the Interstate Natural Gas Pipeline Property Tax Forum (INGPPTF) with a cost of capital study for the Interstate Natural Gas Pipeline Industry (INGPI) as of January 1, 2007. This cost of capital can be used to capitalize the net cash flow for the typical interstate natural gas pipeline company for the purpose of estimating market value. The cost of capital derived in this study is the cost of capital for the typical interstate natural gas pipeline company at January 1, 2007, and is not representative of any particular interstate pipeline company. Thus, we advise against its random use by anyone without first examining and determining the differences between the specific pipeline company and the typical pipeline represented by the cost of capital herein and adjusting for the differences accordingly. For example, if one were interested in the typical cost of capital for a mid-cap or a low-cap pipeline, size adjustments of 0.97% and 1.76% respectively would need to be made.[1] Further, for companies which are considered below investment grade, additional adjustments must be made to reflect the enhanced risk associated with an investment in the operating assets of such companies. (*Currently the typical interstate natural gas pipeline company's long-term debt is rated only one level above junk bond status.*)

Introduction and Scope

This copyrighted study was prepared for the Interstate Natural Gas Pipeline Property Tax Forum and any use of this material by any entity other than those approved by the INGPPTF is expressively prohibited by the authors, who reserve all rights to any reproduction. We have reviewed financial and economic information, analytical reports, and statistics in order to estimate the cost of capital of the Interstate Natural Gas Pipeline Industry as of January 1, 2007.

Executive Summary - Cost of Capital

Based on our analysis and investigation, we have calculated the rounded weighted

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[1] *Risk Premia over Time Report: 2007*, (Chicago: Morningstar, 2007), p. 5.

average cost of capital (WACC) for the INGPI to be **10.95%** as of January 1, 2007. The cost of capital developed in this study is appropriate to use in discounting the after-tax operating cash flows projected as of January 1, 2007 for determination of the market value of the operating assets, tangible and intangible, of the INGPI. After-tax operating cash flows are known as earnings before the deduction of interest, depreciation and amortization and after the deduction of taxes and capital expenditures. For market valuation purposes, this level of cash flow is estimated typically by assuming that depreciation and amortization equals capital expenditures. Thus, the cash flow to be discounted is assumed to be equal to what is commonly known in the INGPI as net utility operating income (NUOI). The detailed discussion of the derivation of the weighted average cost of capital along with supporting documentation begins on page 8.

Interstate Natural Gas Pipeline Property Tax Forum
The current members of the INGPPTF are listed below:

Centerpoint Energy
  Centerpoint Energy Gas Transmission
  Centerpoint Energy Mississippi River Transmission
Columbia Gas/Gulf Transmission Corporation
Dominion Transmission Corporation
El Paso Corp - Colorado Springs
  El Paso Natural Gas
  Mojave Pipeline
  Colorado Interstate Gas
  Cheyenne Plains Pipeline
  Wyoming Interstate Company
El Paso Corporation
  ANR Pipeline
  Tennessee Gas Pipeline
  Southern Natural Gas
Great Lakes Gas Transmission L.P.
Kern River Gas Transmission
Kinder Morgan, Inc.
  Natural Gas Pipeline Company of America
  KN Energy
Loews - Gulf South Pipeline Company LP
Loews - Texas Gas Transmission LLC
MDU Resources Group, Inc.
National Fuel Gas Supply Corporation
ONEOK Partners, L.P.
Northern Natural Gas Company
Questar Regulated Services

Spectra Energy - Canada
  West Coast Pipelines & Field Services
  West Coast Gas Services, Inc.
  Maritimes and Northeast Pipeline (Canada)
  Spectra Energy Empress L.P.
  Union Gas Limited
  St. Clair Pipelines (1996)
  Market Hub Partners
Spectra Energy Corporation
  Texas Eastern Transmission
  Algonquin Gas Transmission
  Gulf Stream Natural Gas Transmission
  Maritimes and Northeast Pipeline
  East Tennessee Natural Gas
Southern Star Central Gas Pipeline, Inc.
Southern Union Company
  Panhandle Eastern Pipeline
  Trunkline Gas Company
  Florida Gas
  Transwestern Pipeline
  Sea Robin Pipeline
Trans Canada - Gas Trans., Northwest Corp (PG&E)
  Trans Canada - Portland Natural Gas Transmission
Trans Canada Pipelines Limited
Williams - Northwest Pipeline Corporation
Williams - Transcontinental Gas Pipeline Corporation

General Economic Data - 2007

As 2006 drew to a close, the percentage of economists who were predicting a recession in 2007 increased to 27%. But history has shown that the closer the economy gets to a recession, the harder it is for economists to reach a consensus on what the economy would do.[2]

According to the economic forecasting survey in *The Wall Street Journal (WSJ)*, the U.S. economy was poised to shake off the housing slump and regain momentum by the end of 2007 with the credit going to the techies, bankers, chefs and shoppers. The panel of 60 economists who participated in the *WSJ's* latest semiannual economic forecasting survey offered an optimistic outlook for 2007. *BusinessWeek's (BW)* 58 economic forecasters, in general, agreed with *WSJ's* economic forecasters.

On average, the *WSJ* economists predicted that inflation-adjusted gross domestic product, a broad measure of economic activity, would grow at an annualized rate of 2.3% in the first half of 2007 and 2.8% in the second half. That's up from the sluggish 2% in the third quarter of 2006, but still far below the robust annual rates of 3.2% for 2005 and 4.1% for early 2006.[3] Similarly, *BW's* economists predicted an investor-friendly economy, with growth cooling to 2.6% from the end of 2006 to the end of 2007 with the slowdown causing the unemployment rate to drift up - though not by much - from 4.5% to 4.8%.[4] Sam Stovall, chief investment strategist for *Standard and Poor's*, confirmed the *BW* and *WSJ* projections of real gross domestic product by projecting 2.3% for 2007 and 2.5% in 2008. Stovall reported that 17 Federal Reserve (Fed) funds rate increases, combined with oil prices that were twice where they were in 2000 and a showdown in the housing market, would shave one percentage point from the U.S. gross domestic product growth in 2007.[5]

The *WSJ* economists surveyed expected year-to-year inflation to decline to 1.7% in May of 2007 from 2.0% in November 2006. As a result, they expected the Federal Reserve to shift its focus from fighting inflation to helping the economy grow, lowering short-term interest rates to

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[2] Whitehouse, Mark. "Economy Poised for '07 Rebound, Forecasters Say," *The Wall Street Journal online*, January 2, 2007, http://online.wsj.com/public/article_print/SB116741731488562667.html.

[3] *Ibid.*

[4] Cooper, James C. "Drawing a Bead on the Future," *BusinessWeek*, December 25, 2006/January 1, 2007, 64.

[5] Stovall, Sam. "Single Digit Gains in 2007," *BusinessWeek.com*, December 8, 2006, http://www.businessweek.com/investor/content/dec2006/pi20061208_454264.htm?chan=gl.

4.75% by the end of 2007 from 5.25% at the beginning of 2007. That was a big change from mid-2006, when forecasters saw the Fed's battle with inflation as the greatest challenge facing the economy. The Fed was hoping to slow the economy down enough to take the wind out of inflation without triggering a recession and it looks like they have succeeded, according to Nariman Behravesh, chief economist at Global Insight in Waltham, Massachusetts.

BW's forecasters predicted cooler growth would allow core inflation, which excludes energy and food, to moderate. Additionally, they projected the consumer price index (CPI) to rise to 2.5%. A tamer look for inflation would give the Fed leeway to trim its target interest rate to just below 5%, from 5.25% at the end of 2006 which was only 25 basis points different from the *WSJ's* economists projections. Additionally, *BW* projected the Fed policy to ease and restore a flatter yield curve, with the return on 10-year Treasury notes expected to drift up by the end of 2007 to just under 5%. Cooper reported that profits would continue to grow but at a slower single-digit pace, compared with the high double-digits of 2006.[6]

Cooper, in his 'Business Outlook' on January 8, 2007, reported that the Wall Street and the Federal Reserve seemed to have quite different views of the economy in 2007. Fed policymakers continued to send out warnings on inflation and possibility of more hikes in interest rates. Market players weren't listening, they expected the Fed to begin cutting rates at some point in near future. In the meantime investors were sitting back enjoying the rallies in stocks and bonds that began in summer of 2006. [7]

Ten out of ten stock market gurus interviewed by USA Today said stocks would post gains for a fifth-consecutive year in 2007. The expected gains range from 15% to 1%, and average out to 8.1%. There wasn't a single bear in the group.[8]

For the past five years, U.S. corporate profits have grown much faster than the overall economy, one of several reasons why U.S. stock prices have kept setting records. Many economists believe that the days of outside profit growth are nearing an end. Corporate profits as measured by the Commerce Department, have risen more than 12% a year since 2002, hitting a high of 19% in 2004. In the third quarter of 2006, profit growth was running at an annualized rate of 16%. But the consensus forecast of the WSJ economists called for those gains to slow to

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[6] *Ibid.*

[7] Cooper, James. "U.S.: Why The Market Isn't Listening to the Fed," *BusinessWeek/online*, January 8, 2007, http://www.businessweek.com/print/magazine/content/07_02/b4016025.htm?chan=gl.

[8] Shell, Adam. "Up, up, up: Beware, because no one sees a bear in 2007," *USA Today*, January 3, 2007, http://usatoday.printthis.clickability.com/pt/cpt?action=cpt&title=Up%2C +up%2C+up%3A...

the single digits in 2007 and 2008, with pretax profits rising about 6%.[9]

      Overall, the forecasts of economists have several common points. One, the economy appeared to be expanding at the beginning of 2007, but with less vigor than in 2006. Two, the economy was projected to slow during the first half of 2007 with the gross domestic product not exceeding 2%. Stovall, projected the greatest risks to the economists forecasts for 2007 were: oil price reversal, weaker-than-expected housing, consumer slowdown becomes meltdown, hard land/recession and earnings shortfall.[10]

2007 Economic Outlook - Natural Gas Pipeline Industry

      At the beginning of 2007, natural gas prices provided an apt metaphor for the utility industry's business environment. Natural gas prices fell to levels far lower than many expected to see 16 months after Hurricane Katrina. But the steady rise of prices since 2003, combined with the post-Katrina pinch, left utilities understandably wary about natural gas, according to an article by Stavros and Burr in the January issue of *Public Utilities Fortnightly*. Volatility in the future economic forecast can be tremendous, according to George Hopley, a commodities strategist with Barclays Capital in New York. The spread has been anywhere from $2 to $15.[11]

      The January 9, 2007, Energy Information Administration Short-Term Energy Outlook (STEO) of the projection of natural gas needs for 2007 confirmed the *Public Utilities Fortnightly's* report of Stavros and Burr. Persistent warm weather and the reduced demand for natural gas for space heating kept natural gas prices from rising in December of 2006. With about 16 percent fewer heating degree-days than normal in December 2006, the Henry Hub spot natural gas price averaged $6.97 per mcf for the month.

      While the forecast for the remaining winter months of 2007 is for only slightly warmer-than-normal weather according to the STEO, the average Henry Hub spot price for 2007 winter months was expected to remain below $7. However, natural gas prices would remain sensitive to any periods of sustained cold weather during the remainder of the 2007 winter heating season, particularly in the major natural gas-consuming regions, such as the Northeast and Midwest. The Henry Hub natural gas price averaged $6.94 per mcf in 2006 and is expected to average $7.06 per mcf in 2007 and $7.72 per mcf in 2008.

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[9] Ford, Constance Mitchell and Rafael Gerena-Morales. "Profits Like to Slow in '07," The Wall Street Journal online, January 2, 2007, http://online.wsj.com/public/article_print/ SB116768278496563960.html.

[10] Stovall, Sam. "Trends & Projections," *Standard & Poor's* Industry Surveys, December 21, 2006, 1-3.

[11] Stavros, Richard and Michael T. Burr. "A Cloudy Forecast," *Public Utilities Fortnightly*, January 2007, 37.

Natural gas consumption is expected to grow 2.4 percent from 2006 to 2007, compared with a 1.3-percent decline from 2005 to 2006. The weather forecast for colder winter and cooler summer months in 2007 compared with 2006 drives increases in residential and commercial natural gas demand for heating and lower natural gas demand for electricity generation needed to power air conditioners. Industrial sector natural gas consumption is estimated to have declined by 1.5 percent in 2006 and is projected to be followed by increases of 1.1 and 1.8 percent in 2007 and 2008, respectively. Above-average summer temperatures (cooling degree-days were 21 percent above normal in July) stimulated a 7.4-percent increase in natural gas consumption by the power sector in 2006. A return to normal weather is expected to leave power sector demand growth relatively unchanged in 2007.[12]

In many respects 2007 will be a pivotal year. Just as major swings in weather patterns and infrastructure development will determine whether gas remains cheap or returns to levels seen shortly after Katrina, the utility business climate is subject to whipsaw changes in regulation, investment, and technology.

Whether these changes lead toward the best of times or the worst of times might be a matter of perspective. *Value Line (VL)* reported in December 2006 that the natural gas (diversified) industry's revenues and earnings would advance at a respectable pace by year end 2006 and year 2007 due to relatively high prices for natural gas. VL predicted natural gas quotations between $6 and $10 per million btu for 2007, based on the mid-point of the range, dependent upon weather conditions.[13]

Development of the oil sands in Canada should reduce natural gas imports to the United States. Canada supplies much of the United States' net natural gas imports. As drilling in the oil sands proceeds, larger amounts of natural gas will likely be required for these projects. As a result, the amount of natural gas exported from Canada to the United States would probably not increase much from December 2006 levels. This should put a floor under natural gas prices in the coming years with continued strength in oil prices providing support.[14]

Factors Applicable to the Appraisal of Interstate Pipelines

Interstate pipelines have both utility and merchant characteristics. They are similar to monopoly utilities in that they require significant capital expenditures, involve a permitting

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[12] "Short-Term Energy Outlook," *Energy Information Administration*, January 9, 2007, www.eia.doe.gov/emeu/step/pub/contents.html.

[13] Napoli, Michael F. "Natural Gas (Diversified) Industry," *Value Line Investment Survey*, December 15, 2006, 440.

[14] *Ibid*.

process, and are subject to price controls. However, an interstate pipeline's service territory can be expanded through new permitting and construction. It is also subject to competition from other pipelines that are built close enough to compete for institutional customers. Pipelines also differ from local distribution companies (LDCs) in that their business generally relies on a limited number of large institutional customers. This customer concentration increases risks associated with bad debt expense. When evaluating a pipeline company, appraisers investigate demand and supply growth along a pipeline's footprint, opportunities for pipeline expansion, applications for competitive pipeline developments, and the growth prospects and credit quality of shippers along the pipeline's system.

Pipeline capacity utilization is affected by the location of natural gas supply sources and shifts in consumption patterns. A change in source requires new pipelines to transmit gas from growing production centers. The increasing use of LNG imports to coastal ports affects the need for and utilization of pipeline assets.

The demand side of the equation is also subject to potential secular shifts. For example, growth in the number of gas-fired electric generating plants has had a major impact on geographical demand patterns. The appraiser must be aware of longer-term supply and demand trends that could increase or decrease the value of pipeline assets.

Many pipeline companies have historically engaged in various energy merchant activities through subsidiary operations. Thus the appraiser must be careful not to assume that a company has a low risk profile just because it owns substantial regulated pipeline assets.

A number of pure-play businesses are owned by master limited partnerships (MLPs). MLPs trade on exchanges just like common stocks, but the businesses avoid income taxation by paying out nearly all free cash flows to shareholders. These income-oriented investments generally trade based on their yield, distribution growth potential, and volatility of cash flows.

Because MLPs cannot utilize operating cash flows for growth oriented capital expenditures, they are dependent on the ability to continuously raise fresh debt and equity capital to fund new investment. The general partners (GPs) for MLPs often have performance participation awards that provide the GP with larger and larger interests in MLP distributions as the dividend is raised. An appraiser may need to evaluate an MLP's capacity to raise distributions in light of growth opportunities, access to capital markets, and GP performance participation award.[15] All of the political and economic factors discussed in this section will affect the typical investor's cost of capital as the elements of business risk increases. The additional risk attributable to the natural gas pipeline industry should be reflected in the development of the cost of capital.

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[15] Shere, Craig. Industry Surveys: Natural Gas. *Standard & Poors*, May 13, 2004, 32.

Weighted Average Cost of Capital (WACC)

The return investors require on investments of comparable risk is what the cost of capital measures. Rational investors will not invest in a particular investment opportunity if the expected return on that opportunity is less than their cost of capital requirement. The weighted average cost of capital (WACC) is also known in the appraisal and financial community as the opportunity cost of capital. The WACC is used primarily for making long-term capital investment decisions by investors and purchasers. Accordingly, the WACC is used by appraisers to estimate **market value**.[16] To calculate market value, the appraiser discounts expected future income (cash flow) by the rate of return offered by comparable investment alternatives. [All of the annual "income" figures used in appraising income-producing properties are *cash flows* rather than accrual accounting incomes.[17]] This rate of return is often referred to as the discount rate or the opportunity cost of capital.[18] The Appraisal Institute has defined opportunity cost as quoted below:

> *Opportunity cost is the net cost of opportunities not chosen or options foregone, denied or lost.* An investor who selects one investment forgoes the opportunity to invest in other available investments...Opportunity cost is related to the principle of substitution, and is particularly significant in estimating the rates of return necessary to attract capital. By analyzing and comparing the prospective rates of return offered by alternative investment opportunities, an appraiser can estimate the required rate of return for the property being appraised.[19]

The estimated cost of capital in this report for the Interstate Natural Gas Pipeline Industry as of January 1, 2007 is based on the generally accepted appraisal methodology known as the band of investment technique. The band of investment technique consists of the following steps:

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[16] Market value is defined by the Appraisal Institute as, "The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." See *The Appraisal of Real Estate*, 12th ed., (Chicago: Appraisal Institute, 2001), 22.

[17] William N. Kinnard, Jr., *Income Property Valuation*, (Lexington: Heath Lexington Books, 1982), 70.

[18] Richard A. Brealey and Stewart C. Meyers, *Principles of Corporate Finance*, 4th ed., (New York: McGraw-Hill, 1991), 13.

[19] *The Appraisal of Real Estate*, 11th ed., (Chicago: Appraisal Institute, 1996), 44.

1.   Analyze and determine the appropriate capital structure.
2.   Identify the appropriate cost for each financing band of the capital structure.
3.   Weight the appropriate cost for each financing band by the relative proportion of the capital structure represented by each financing band.

The sum of the weighted costs for the financing bands represents the weighted average cost of capital. This weighted cost of capital is typically known as the discount rate in appraisal literature and the algebraic formula is shown in Figure 1.

$$K = (D \times K_d) + (E \times K_e)$$

where

K = *Weighted Average Cost of Capital*
D = *Proportion of Debt in Capital Structure*
K_d = *Cost of Debt*
E = *Proportion of Equity in Capital Structure*
K_e = *Cost of Equity*

Figure 1

In explaining the estimation of the cost of capital, Ibbotson Associates states:

> The cost of capital is always an expectational or forward-looking concept. While the past performance of an investment and other historical information can be good guides and are often used to estimate the required rate of return on capital, the expectations of future events are the only factors that actually determine the cost of capital. An investor contributes capital to a firm with the expectation that the business' future performance will provide a fair return on the investment. If past performance were the criterion most important to investors, no one would invest in start-up ventures. It should also be noted that the cost of capital is a function of the investment, not the investor.[20]

Cost of Capital Study Results

The cost of capital for the Interstate Natural Gas Pipeline Industry as of January 1, 2007 is estimated to be 10.97% (rounded to **10.95%**) as the chart on the following page indicates. Following the chart are explanations of the derivation of each of the component parts of the cost of capital study.

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[20] *SBBI (Stocks, Bonds, Bills and Inflation)*, 2005 Yearbook: Valuation Edition, (Chicago: Ibbotson Associates, 2005), 23.

Capital	Portion	Cost	Product
Debt	25.00%	6.29%	1.57%
Equity	75.00%	12.53%	9.40%
Totals	100.00%		10.97%

Capital Structure

Economists and appraisers measure a firm's capital structure in terms of the market values of its debt and equity because that is the best measure of the amounts of debt and equity that investors have invested in the company on a going-forward basis. Furthermore, economists and appraisers generally agree that the goal of management is to maximize the value of the firm, where the value of the firm is the sum of the market value of the firm's debt and equity. Only by measuring a firm's capital structure in terms of market values can its managers choose a financing strategy that maximizes the value of the firm.

For estimating the cost of capital for the INGPI, it is appropriate to use the typical market capital structure for similar interstate natural gas pipeline companies. There is very little debate about this concept, however for clarity we note the following statements from Brigham and Gapenski and from Damodaran.

> We are absolutely convinced that the procedures we recommend are correct — namely, firms should focus on market value capital structures and base their cost of capital calculations on market value weights. Because market values do change, it would be impossible to keep the actual capital structure on target at all times, but this fact in no way detracts from the validity of market value targets.[21]

> The weights assigned to equity and debt in calculating the weighted average cost of capital have to be based upon market value, not book value. The rationale rests on the fact that the cost of capital measures the cost of issuing securities, stocks as well as bonds, to finance projects, and that these securities are issued at market value, not at book value.[22]

In the appraisal process or in developing the cost of capital to be used in the appraisal process the appraiser must utilize the market capital structure for all types of appraisal. Even

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[21] Eugene F. Brigham and Louis C. Gapenski, *Financial Management*, 7th ed. (New York: The Dryden Press, 1994), 599.

[22] Damodaran, Aswath, *Investment Valuation*, (New York, NY: John Wiley & Sons, Inc., 1996), p. 64.

when public utilities are strictly regulated, it is necessary for the appraiser to use the market capital structure unless the book capital structure is found to be the same as the market capital structure. In the past often the book capital structure was quite similar to the market capital structure, however that is not the case today. Today the market capital structure varies significantly from the book capital structure for most interstate natural gas pipelines. Thus, investors are concerned with the capital structure they will use to finance the purchase of an interstate natural gas pipeline and that will always be the typical market capital structure.

It is also important to note what elements of capital comprise the makeup of the *capital structure* from an appraisal standpoint. The capital structure consists only of long-term debt, common stock, and where appropriate, preferred stock. The capital structure should not be confused with *financial structure* or any other term used in financial literature. To understand what elements comprise the capital structure it is important to define capital structure and financial structure, which are defined as follows:

> **CAPITAL STRUCTURE** corporation's financial framework, including LONG-TERM DEBT, PREFERRED STOCK, and NET WORTH. It is distinguished from FINANCIAL STRUCTURE, which includes additional sources of capital such as short-term debt, accounts payable, and other liabilities.[23]

> **FINANCIAL STRUCTURE** makeup of the right-hand side of a company's BALANCE SHEET, which includes all the ways its assets are financed, such as trade accounts payable and short-term borrowings as well as long-term debt and ownership equity. Financial structure is distinguished from CAPITAL STRUCTURE, which includes only long-term debt and equity.[24]

It is also important to note that neither accumulated depreciation or accumulated deferred income taxes are included in capital structure. Some appraisers have mistakenly included accumulated deferred income taxes in constructing a firm's capital structure. This is simply wrong for estimating the cost of capital and for appraisal purposes. The following quotation from *Financial Management* addresses this issue quite well:

> Since depreciation-generated funds have the same cost as the firm's WACC when retained earnings are used for the equity component, it is not necessary to consider them when estimating the WACC...Therefore, deferred taxes, like depreciation, have a cost equal to the firm's WACC using retained earnings as the

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[23] John Downes and Jordan Elliot Goodman, *Dictionary of Finance and Investment Terms*, (New York: Barron's, 1985), 54.

[24] *Ibid*., 132.

equity component. Indeed, deferred taxes arise solely because a firm records a different depreciation expense on its tax books than on the books used to report income to shareholders... Deferred taxes are treated the same way as depreciation cash flows: they are not included when estimating the firm's WACC...[25]

The appropriate capital structure for use in estimating the INGPI's cost of capital is the expected capital structure that a typical purchaser would likely use to finance the purchase of the operating assets of a company within this industry. This typical purchaser would take into account the regulatory agency's allowed rate of return in analyzing the risk profile and selecting the market capital structure. Thus, an analysis of the typical market capital structure used in the interstate natural gas pipeline industry is appropriate. The market capital structure developed for the INGPI was calculated from information obtained from *Value Line Investment Survey* data base (*Value Line*) and *Standard & Poor's Compustat* data base as of January 2007. The capital structure study involved the following companies we believe to be representative of the interstate natural gas transmission pipeline industry: 28 companies classified by *Value Line* as the natural gas (diversified) industry (from the *Value Line* full data base), using both *Value Line* and S&P data; 22 companies from that group excluding the limited partnerships; 12 large companies from that group that have reported annual sales of at least $750 million; and seven (7) companies heavily involved with natural gas pipelines from the interstate natural gas pipeline forum group, which have traded common stock listed by *Standard and Poor's*. The results indicate that the market capital structure for the industry is approximately 25 debt, essentially no preferred stock, and 75% equity. For each of the above mentioned groups of companies, we calculated the simple average and median capital structure for each grouping using data reported both by *Value Line* and *Standard & Poor's*. As many traditional interstate natural gas pipelines have become subsidiaries of other pipelines and other energy companies, there are now less members of the interstate natural gas pipeline forum group, which have traded common stock. Thus, we are inclined to give a little less consideration to the data from the forum group.

For purposes of analysis we used the market capital structure for each company. The market value of the common equity portion of the capital structure was determined by multiplying the number of shares outstanding times the recent price reported by *Value Line* and/or *Standard & Poor's*. As surrogates for the market value of debt and preferred stock we substituted the book value of each. The market values of both debt and equity are always preferred, if available. Since the book value of debt is usually close to market value, book value is usually used for the debt weight. Ibbotson states, "Therefore, in most cases the market value

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[25] Eugene F. Brigham and Louis C. Gapenski, *Financial Management*, 7th ed. (New York: The Dryden Press, 1994), 368-369.

of debt in the capital structure is assumed to be the book value of debt."[26] Only a few companies in this industry have issued preferred stock and, like debt, we used book value as a surrogate for the market value of preferred stock. Our recent analysis indicates that book values for long-term debt and preferred stock are fairly reasonable approximations for market value at the present time, thus book value can be substituted as a reasonable proxy for the market value of debt and preferred stock capital.

The capital structure calculations can be found on the following six pages. As can be observed from the capital structure calculations using the natural gas transmission pipeline industry groupings described above, the indicators point to an approximate market capital structure of 25% debt (**D**) and 75% equity (**E**). (*Preferred stock was judged not to be of significant importance in the financing of companies in the overall interstate natural gas pipeline industry*.) We gave the most consideration to the median indicators (median figures being less influenced by extremes than averages) from the data groups made up of the Value Line Natural Gas Diversified Industry (All), the 22 companies from that group excluding the limited partnerships, and the Value Line Natural Gas Diversified Industry (Large[27]).

On the following pages are the capital structure data from *Value Line* and *Standard & Poor's Compustat*.

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[26] *SBBI (Stocks, Bonds, Bills and Inflation)*, *2006Yearbook: Valuation Edition*, (Chicago: Ibbotson Associates, 2006, 14.

[27] Large pipeline group made up of companies with annual sales of over $750 million.

Value Line Natural Gas Diversified Industry (All)
Capital Structure (VL Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
ATP Oil & Gas Corp	ATPG	25.21%	17.88%	56.91%
Cabot Oil & Gas 'A'	COG	12.04%	0.00%	87.96%
Callon Pete Co	CPE	39.78%	0.00%	60.22%
Crosstex Energy LP	XTEX	36.59%	0.00%	63.41%
Delta Natural Gas	DGAS	41.60%	0.00%	58.40%
Devon Energy	DVN	17.15%	0.43%	82.42%
El Paso Corp.	EP	56.23%	2.94%	40.82%
Energen Corp.	EGN	17.22%	0.00%	82.78%
Enterprise Products	EPD	28.11%	0.00%	71.89%
EOG Resources	EOG	4.55%	0.64%	94.81%
Equitable Resources	EQT	13.22%	0.00%	86.78%
Kinder Morgan	KMI	44.38%	0.00%	55.62%
Kinder Morgan Energy	KMP	28.63%	0.00%	71.37%
Markwest Energy Partners LP	MWE	33.70%	0.00%	66.30%
National Fuel Gas	NFG	25.84%	0.00%	74.16%
Newfield Exploration	NFX	17.19%	0.00%	82.81%
ONEOK Inc.	OKE	45.68%	0.00%	54.32%
ONEOK Partners LP	OKS	28.02%	0.00%	71.98%
Penn Virginia Corp.	PVA	27.97%	0.00%	72.03%
Petroleum Development Corp.	PETD	11.62%	0.00%	88.38%
Quest Resource Corp	QRCP	53.06%	0.00%	46.94%
Questar Corp.	STR	12.87%	0.00%	87.13%
Rentech Inc.	RTK	9.70%	0.00%	90.30%
Southwestern Energy	SWN	2.38%	0.00%	97.62%
TEPPCO Partners L.P.	TPP	32.61%	0.00%	67.39%
Universal Compression Holdings	UCO	32.86%	0.00%	67.14%
Williams Cos.	WMB	32.07%	0.00%	67.93%
XTO Energy	XTO	16.95%	0.00%	83.05%
	Average	26.69%	0.78%	72.53%
	Median	27.99%	0.00%	71.93%

Source: *Value Line* CD Rom, January 2007.

Value Line Natural Gas Diversified Industry (w/o LPs)
Capital Structure (VL Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
ATP Oil & Gas Corp	ATPG	25.21%	17.88%	56.91%
Cabot Oil & Gas 'A'	COG	12.04%	0.00%	87.96%
Callon Pete Co	CPE	39.78%	0.00%	60.22%
Delta Natural Gas	DGAS	41.60%	0.00%	58.40%
Devon Energy	DVN	17.15%	0.43%	82.42%
El Paso Corp.	EP	56.23%	2.94%	40.82%
Energen Corp.	EGN	17.22%	0.00%	82.78%
EOG Resources	EOG	4.55%	0.64%	94.81%
Equitable Resources	EQT	13.22%	0.00%	86.78%
Kinder Morgan	KMI	44.38%	0.00%	55.62%
National Fuel Gas	NFG	25.84%	0.00%	74.16%
Newfield Exploration	NFX	17.19%	0.00%	82.81%
ONEOK Inc.	OKE	45.68%	0.00%	54.32%
Penn Virginia Corp.	PVA	27.97%	0.00%	72.03%
Petroleum Development Corp.	PETD	11.62%	0.00%	88.38%
Quest Resource Corp	QRCP	53.06%	0.00%	46.94%
Questar Corp.	STR	12.87%	0.00%	87.13%
Rentech Inc.	RTK	9.70%	0.00%	90.30%
Southwestern Energy	SWN	2.38%	0.00%	97.62%
Universal Compression Holdings	UCO	32.86%	0.00%	67.14%
Williams Cos.	WMB	32.07%	0.00%	67.93%
XTO Energy	XTO	16.95%	0.00%	83.05%
	Average	25.44%	1.00%	73.57%
	Median	21.22%	0.00%	78.29%

Source: *Value Line* CD Rom, January 2007.

Value Line Natural Gas Diversified Industry (Large)
Capital Structure (VL Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
Devon Energy	DVN	17.15%	0.43%	82.42%
EOG Resources	EOG	4.55%	0.64%	94.81%
El Paso Corp.	EP	56.23%	2.94%	40.82%
Energen Corp.	EGN	17.22%	0.00%	82.78%
Equitable Resources	EQT	13.22%	0.00%	86.78%
Kinder Morgan	KMI	44.38%	0.00%	55.62%
National Fuel Gas	NFG	25.84%	0.00%	74.16%
Newfield Exploration	NFX	17.19%	0.00%	82.81%
ONEOK Inc.	OKE	45.68%	0.00%	54.32%
Questar Corp.	STR	12.87%	0.00%	87.13%
Williams Cos.	WMB	32.07%	0.00%	67.93%
XTO Energy	XTO	16.95%	0.00%	83.05%
	Average	25.28%	0.34%	74.39%
	Median	17.21%	0.00%	82.60%

Source: *Value Line* CD Rom, January 2007.

Interstate Natural Gas Pipeline Forum (Pipelines)
Capital Structure (VL Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
El Paso Corp.	EP	56.23%	2.94%	40.82%
Kinder Morgan	KMI	44.38%	0.00%	55.62%
National Fuel Gas	NFG	25.84%	0.00%	74.16%
ONEOK Partners LP	OKS	28.02%	0.00%	71.98%
Questar Corp.	STR	12.87%	0.00%	87.13%
Southern Union	SUG	31.38%	4.42%	64.20%
Williams Cos.	WMB	32.07%	0.00%	67.93%
	Average	32.97%	1.05%	65.98%
	Median	31.38%	0.00%	67.93%

Source: *Value Line* CD Rom, January 2007.

Value Line Natural Gas Diversified Industry (All)
Capital Structure (S&P Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
ATP OIL & GAS CORP	ATPG	24.79%	17.59%	57.61%
CABOT OIL & GAS CORP	COG	11.57%	0.00%	88.43%
CALLON PETROLEUM CO/DE	CPE	39.33%	0.00%	60.67%
CROSSTEX ENERGY LP	XTEX	45.67%	0.00%	54.33%
DELTA NATURAL GAS CO INC	DGAS	41.83%	0.00%	58.17%
DEVON ENERGY CORP	DVN	16.74%	0.00%	83.26%
EL PASO CORP	EP	55.66%	2.92%	41.41%
ENERGEN CORP	EGN	16.93%	0.00%	83.07%
ENTERPRISE PRODS PRTNER -LP	EPD	28.07%	0.00%	71.93%
EOG RESOURCES INC	EOG	4.41%	0.62%	94.97%
EQUITABLE RESOURCES INC	EQT	13.00%	0.00%	87.00%
KINDER MORGAN ENERGY -LP	KMP	28.75%	0.00%	71.25%
KINDER MORGAN INC	KMI	44.52%	0.00%	55.48%
MARKWEST ENERGY PARTNERS LP	MWE	33.19%	0.00%	66.81%
NATIONAL FUEL GAS CO	NFG	25.42%	0.00%	74.58%
NEWFIELD EXPLORATION CO	NFX	16.50%	0.00%	83.50%
ONEOK INC	OKE	45.93%	0.00%	54.07%
ONEOK PARTNERS -LP	OKS	27.82%	0.00%	72.18%
PENN VIRGINIA CORP	PVA	27.50%	0.00%	72.50%
PETROLEUM DEVELOPMENT CORP	PETD	11.56%	0.00%	88.44%
QUEST RESOURCE CORP	QRCP	51.71%	0.00%	48.29%
QUESTAR CORP	STR	12.65%	0.00%	87.35%
RENTECH INC	RTK	9.76%	0.00%	90.24%
SOUTHWESTERN ENERGY CO	SWN	2.27%	0.00%	97.73%
TEPPCO PARTNERS -LP	TPP	32.54%	0.00%	67.46%
UNIVERSAL COMPRESSION HLDGS	UCO	32.14%	0.00%	67.86%
WILLIAMS COS INC	WMB	31.85%	0.00%	68.15%
XTO ENERGY INC	XTO	16.37%	0.00%	83.63%
	Average	26.73%	0.75%	72.51%
	Median	27.66%	0.00%	72.06%

Source: *S&P Compustat*, January 2007.

Value Line Natural Gas Diversified Industry (w/o LPs)
Capital Structure (S&P Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
ATP OIL & GAS CORP	ATPG	24.79%	17.59%	57.61%
CABOT OIL & GAS CORP	COG	11.57%	0.00%	88.43%
CALLON PETROLEUM CO/DE	CPE	39.33%	0.00%	60.67%
DELTA NATURAL GAS CO INC	DGAS	41.83%	0.00%	58.17%
DEVON ENERGY CORP	DVN	16.74%	0.00%	83.26%
EL PASO CORP	EP	55.66%	2.92%	41.41%
ENERGEN CORP	EGN	16.93%	0.00%	83.07%
EOG RESOURCES INC	EOG	4.41%	0.62%	94.97%
EQUITABLE RESOURCES INC	EQT	13.00%	0.00%	87.00%
KINDER MORGAN INC	KMI	44.52%	0.00%	55.48%
NATIONAL FUEL GAS CO	NFG	25.42%	0.00%	74.58%
NEWFIELD EXPLORATION CO	NFX	16.50%	0.00%	83.50%
ONEOK INC	OKE	45.93%	0.00%	54.07%
PENN VIRGINIA CORP	PVA	27.50%	0.00%	72.50%
PETROLEUM DEVELOPMENT CORP	PETD	11.56%	0.00%	88.44%
QUEST RESOURCE CORP	QRCP	51.71%	0.00%	48.29%
QUESTAR CORP	STR	12.65%	0.00%	87.35%
RENTECH INC	RTK	9.76%	0.00%	90.24%
SOUTHWESTERN ENERGY CO	SWN	2.27%	0.00%	97.73%
UNIVERSAL COMPRESSION HLDGS	UCO	32.14%	0.00%	67.86%
WILLIAMS COS INC	WMB	31.85%	0.00%	68.15%
XTO ENERGY INC	XTO	16.37%	0.00%	83.63%
	Average	25.11%	0.96%	73.93%
	Median	20.86%	0.00%	78.83%

Source: *S&P Compustat*, January 2007.

Value Line Natural Gas Diversified Industry (Large)
Capital Structure (S&P Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
DEVON ENERGY CORP	DVN	16.74%	0.00%	83.26%
EL PASO CORP	EP	55.66%	2.92%	41.41%
ENERGEN CORP	EGN	16.93%	0.00%	83.07%
EOG RESOURCES INC	EOG	4.41%	0.62%	94.97%
EQUITABLE RESOURCES INC	EQT	13.00%	0.00%	87.00%
KINDER MORGAN INC	KMI	44.52%	0.00%	55.48%
NATIONAL FUEL GAS CO	NFG	25.42%	0.00%	74.58%
NEWFIELD EXPLORATION CO	NFX	16.50%	0.00%	83.50%
ONEOK INC	OKE	45.93%	0.00%	54.07%
QUESTAR CORP	STR	12.65%	0.00%	87.35%
WILLIAMS COS INC	WMB	31.85%	0.00%	68.15%
XTO ENERGY INC	XTO	16.37%	0.00%	83.63%
Average		25.00%	0.30%	74.71%
Median		16.84%	0.00%	83.17%

Source: *S&P Compustat*, January 2007.

Interstate Natural Gas Pipeline Forum (Pipelines)
Capital Structure (S&P Data) - January 1, 2007

Company Name	Ticker	LTD %	PS %	CS %
EL PASO CORP	EP	55.66%	2.92%	41.41%
KINDER MORGAN INC	KMI	44.52%	0.00%	55.48%
NATIONAL FUEL GAS CO	NFG	25.42%	0.00%	74.58%
ONEOK PARTNERS -LP	OKS	27.82%	0.00%	72.18%
QUESTAR CORP	STR	12.65%	0.00%	87.35%
SOUTHERN UNION CO	SUG	31.35%	4.42%	64.23%
WILLIAMS COS INC	WMB	31.85%	0.00%	68.15%
Average		32.75%	1.05%	66.20%
Median		31.35%	0.00%	68.15%

Source: *S&P Compustat*, January 2007.

Cost of Debt

The expected return on debt, or the cost of debt capital (K_d), is the rate that investors would incur when financing the purchase of the operating assets of an interstate natural gas pipeline company. It is the cost of debt that is appropriate for the cost of capital study and it is relatively simple to estimate. Unlike the cost of equity, the required return on debt is directly observable in the market. It is best approximated by the current yield-to-maturity (yield) on the applicable debt. The YTM (yield to maturity) is the rate of return the existing bondholders expect to receive, and it is also a good estimate of K_d (cost of debt), the rate of return that new bondholders would require.[28] Often an average of recent yields is also used. The yield exemplifies the market's expectation of future returns. If the market's expectations of future debt returns were different from those implicit in the price, the market price of the debt would be bid up or down so that the market's expectations were reflected in the price.[29]

From information in *Mergent Bond Record* (January 2007), we found the Moody's bond rating to be approximately **Baa3** and the *Standard & Poor's* long-term senior debt rating to be **BBB-** for the typical interstate natural gas pipeline. This rating is one level above junk status for bond ratings. The yield for utility, corporate, and industrial bonds rated Baa was **6.05%, 6.22%,** and **6.38%** respectively as of December 31, 2006. Further, we took note of the yield to maturity for the *Value Line* Natural Gas Diversified Industry (All) group. Within this group we found the average and median yields to maturity for all the bonds with 20 or more years till maturity to be **6.49%** and **6.46%** respectively at December 31, 2006. Additionally, we found the median yield to maturity for all bonds issued by this group, regardless of rating or maturity, to be **6.35%**. From this information we determined the appropriate cost of debt capital to be **6.25%**. The following tables were used to illustrate the long-term debt ratings for the *Value Line* Natural Gas Industry and yield to maturity (YTM) for public utility bonds and corporate bonds as reported in *Mergent Bond Record*.

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[28] Brigham, Eugene F. & Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 10th ed. (Thomson Learning, Inc.: Stamford, CT, 2002), p. 423.

[29] *Stocks, Bonds, Bills and Inflation: 2005 Yearbook, Valuation Edition* (Chicago: Ibbotson & Associates, Inc., 2005), p. 33.

Value Line Natural Gas Diversified Industry (All)
S&P and Mergent Long-Term Debt Ratings - January 1, 2007

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating
ATP Oil & Gas Corp	ATPG				
Cabot Oil & Gas 'A'	COG				
Callon Petroleum Co	CPE			B2	17
Crosstex Energy LP	XTEX				
Delta Natural Gas Co Inc	DGAS				
Devon Energy Corp	DVN	BBB	11	Baa2	11
El Paso Corp.	EP	B+	16	B2	17
Energen Corp.	EGN	BBB+	10	Baa2	11
Enterprise Products	EPD	BBB-	12	Baa3	12
EOG Resources Inc	EOG	BBB+	10	A3	9
Equitable Resources Inc	EQT	A-	9	A2	8
Kinder Morgan Energy LP	KMP	BBB	11	Baa1	10
Kinder Morgan Inc	KMI	BB-	15	Baa2	11
Markwest Energy Partners LP	MWE	B+	16	B2	17
National Fuel Gas	NFG	BBB+	10	Baa1	10
Newfield Exploration	NFX	BB+	13	Ba1	13
ONEOK Inc.	OKE	BBB	11	Baa2	11
ONEOK Partners LP	OKS	BBB	11	Baa2	11
Penn Virginia Corp.	PVA				
Petroleum Development Corp.	PETD				
Quest Resource Corp	QRCP				
Questar Corp.	STR			A2	8
Rentech Inc.	RTK				
Southwestern Energy Co	SWN	BB+	13	Ba3	15
TEPPCO Partners L.P.	TPP	BBB-	12	Baa3	12
Universal Compression Holdings	UCO	BB	14		
Williams Cos.	WMB	BB-	15	Ba2	14
XTO Energy	XTO	BBB	11	Baa2	11
	Average	BBB-	12	Baa3	12
	Median	BBB	11	Baa2	11

Source: *Mergent Database*, Jan. 2007.

Value Line Natural Gas Diversified Industry (Large)
S&P and Mergent Long-Term Debt Ratings - January 1, 2007

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating
Devon Energy Corp	DVN	BBB	11	Baa2	11
El Paso Corp.	EP	B+	16	B2	17
Energen Corp.	EGN	BBB+	10	Baa2	11
EOG Resources Inc	EOG	BBB+	10	A3	9
Equitable Resources Inc	EQT	A-	9	A2	8
Kinder Morgan Inc	KMI	BB-	15	Baa2	11
National Fuel Gas	NFG	BBB+	10	Baa1	10
Newfield Exploration	NFX	BB+	13	Ba1	13
ONEOK Inc.	OKE	BBB	11	Baa2	11
Questar Corp.	STR			A2	8
Williams Cos.	WMB	BB-	15	Ba2	14
XTO Energy	XTO	BBB	11	Baa2	11
	Average	BBB-	12	Baa2	11
	Median	BBB	11	Baa2	11

Source: Mergent Database, Jan. 2007.

Interstate Natural Gas Pipeline Forum (Pipelines)
S&P and Mergent Long-Term Debt Ratings - January 1, 2007

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating
El Paso Corp.	EP	B+	16	B2	17
Kinder Morgan Inc	KMI	BB-	15	Baa2	11
National Fuel Gas	NFG	BBB+	10	Baa1	10
ONEOK Inc.	OKE	BBB	11	Baa2	11
Questar Corp.	STR			A2	8
Southern Union Co	SUG	BBB-	12	Baa3	12
Williams Cos.	WMB	BB-	15	Ba2	14
	Average	BB+	13	Baa3	12
	Median	BB	14	Baa2	11

Source: *Mergent Database*, Jan. 2007.

Mergent Utility Bond Yields
Public Utility Yields (1992 - 2006)
Year End Data
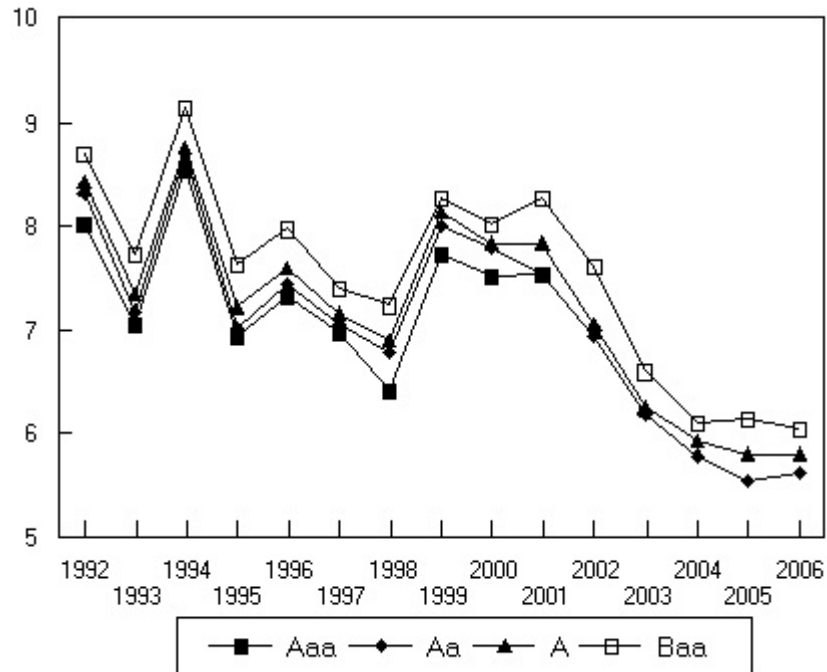
1992-2006 Public Utility Bond Yields - Year End Data				
Year End Date	Aaa	Aa	A	Baa
1992	8.01	8.32	8.43	8.69
1993	7.06	7.18	7.34	7.73
1994	8.55	8.69	8.76	9.16
1995	6.94	7.03	7.23	7.63
1996	7.33	7.44	7.59	7.98
1997	6.99	7.07	7.16	7.41
1998	6.43	6.78	6.91	7.24
1999	7.74	8.00	8.14	8.28
2000	7.51	7.79	7.84	8.01
2001	7.53	7.53	7.83	8.27
2002	—	6.94	7.07	7.61
2003	—	6.18	6.27	6.61
2004	—	5.78	5.92	6.10
2005	—	5.55	5.80	6.14
2006	—	5.62	5.81	6.05

Source: *Mergent's Bond Record*, January 1993 - 2007

Mergent Corporate Bond Yields

Moody's Corporate Bond Yield Avg.
Corporate Avg. (Year End, 1992 - 2006)
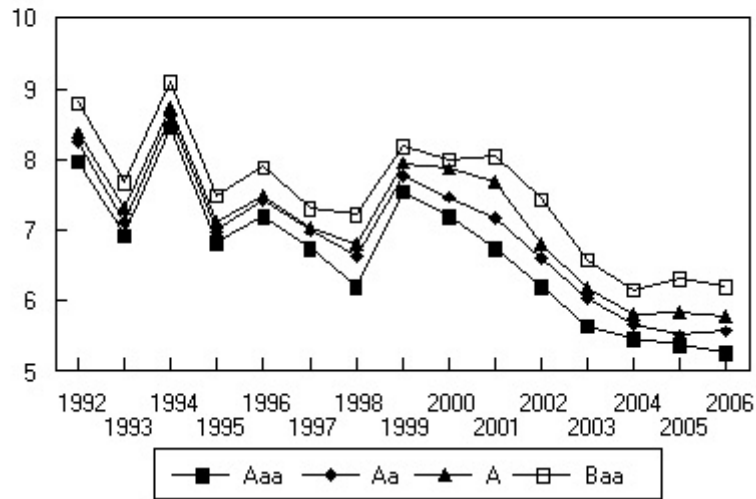
1992 - 2006 Moody's Corporate Bond Yields Corporate Averages - Year End Data			
Year End Date	**Aaa**	**Aa**	**A**	**Baa**
1992	7.98	8.24	8.37	8.81
1993	6.93	7.12	7.31	7.69
1994	8.46	8.62	8.73	9.11
1995	6.82	6.99	7.13	7.49
1996	7.20	7.41	7.51	7.89
1997	6.76	6.99	7.05	7.32
1998	6.22	6.65	6.80	7.23
1999	7.55	7.78	7.96	8.19
2000	7.21	7.48	7.88	8.02
2001	6.76	7.19	7.70	8.05
2002	6.21	6.63	6.80	7.45
2003	5.65	6.02	6.19	6.60
2004	5.47	5.69	5.82	6.15
2005	5.38	5.51	5.84	6.33
2006	5.29	5.58	5.78	6.22

Source: *Mergent's Bond Record*, January 1993 - 2007

Cost of Equity

In estimating the cost of equity capital, several methods are employed. The market cost of equity is often considered to be the most difficult part of computing the cost of capital because it relies on interpretation of projections by market analysts as well as the projections of the equity models used by the appraiser. The market cost of equity capital is equal to the rate of return *expected* by investors at their perceived level of risk for a company's equity. There are several methods used to estimate the cost of equity capital. The most common methods are the Gordon growth model sometimes referred to as the discounted cash flow method (or DCF method), the risk premium method (RP), and the capital asset pricing model (CAPM).

All estimates of the cost of equity rates fall into one of two classes. They are either (1) add-ons to an interest rate, or (2) ratios of return to investment. Add-on estimates of the cost of equity capital include RP and the CAPM. The DCF method is a ratio of return to investment.

After computing the cost of equity by the DCF, RP, and CAPM methods, the data was analyzed and reconciled to obtain the cost of equity capital before flotation costs of **12.00%**. On the following page is a summary of the cost of equity calculations by each of the methods employed. The summary page is followed by an explanation of each method and the indicators found therein.

Summary of Cost of Equity Calculations

DCF Indicators - January 1, 2007

Company Groups	Value Line Data		S&P (IBES) Data	
	Average	Median	Average	Median
Value Line Natural Gas (Diversified) - All	15.10	11.92	12.22	12.06
Value Line Natural Gas (Diversified) - All w/o LPs	14.86	10.43	13.34	12.09
Value Line Natural Gas (Diversified) - Large	15.96	11.74	11.24	10.42
Interstate Natural Gas Pipeline Forum (Pipes)	21.18	13.98	11.70	10.56
S&P Screened Comparables Group	15.60	14.26	16.12	12.15
Averages	16.54	12.47	12.92	11.46

The discounted cash flow method for above industry groups were calculated as follows:

Using *Value Line* data and *Value Line* earnings growth estimates and S&P's *Compustat* data with *Institutional Brokers Estimate System* (IBES) earnings growth.

Risk Premium Indicators - January 1, 2007

General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
20-Year Treasury Bonds (ex post)	4.91	7.10	12.01
20-Year Treasury Bonds (ex ante)	4.91	8.37	13.28

Risk Premium Indicators by Groups

Indicators	Risk Premium	
	Average	Median
Natural Gas Diversified Industry (All)	12.59	12.56
Natural Gas Diversified Industry (Large)	12.53	12.42
Interstate Nat. Gas Pipeline Forum Group (Pipes)	12.72	12.80
Screened Comparables Group	12.42	12.40
Average	12.57	12.55

Risk Premium Formula: Ke = Rf + Rp

Base Rate: Yield to maturity on each company's long-term bonds,
   Mergent Bond Record, January, 2007.

Risk Premium: Morningstar, *2007 Risk Premia Over Time Report,* Corp. Bond RP of 6.1%.

Capital Asset Pricing Model (CAPM) - January 1, 2007

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
CAPM Indicator *				
Long-Term Gov't Bonds (ex post)	4.91	7.10	0.95	11.66
Long-Term Gov't Bonds (ex ante)	4.91	8.37	0.95	12.86

CAPM Formula: Ke = Rf + B(Rp)

* CAPM Indicator is based upon a *Value Line* beta of 0.95. Morningstar, *2007 Risk Premia over Time Report*;, & Federal Reserve data December 29, 2006.

DCF Method

The discounted cash flow method of estimating the cost of equity is based on the formula shown in Figure 2. Our computations using the DCF method are based upon information from the *Standard and Poor's Compustat* database, *Institutional Brokers Estimate System* (IBES), and the *Value Line Investment Survey* database. We began our analysis by screening the Standard and Poor's database of approximately 9,700 companies for companies with risk equal to the risk of the typical interstate natural gas pipeline. As a measure of financial risk the average Standard and Poor's rating on the long-term debt of companies comprising the large natural gas pipeline industry was **BBB-**. Our first screening process was to find all companies having a S&P senior debt rating of BBB to BBB+ (the mid-rated triple B debt to the highest level triple B debt). This screening will give us a list of companies that have long-term debt which is believed to be either equal in risk or slightly less risky than the typical interstate natural gas pipeline. (Many of these companies have double B rated debt.) This measure is indicative of financial risk for the companies.

$$K_e = \frac{D_1}{P_0} + g$$

where

K_e = *Cost of equity*
D_1 = *Expected Dividend in year* 1
P_0 = *Current price of stock*
g = *Growth in dividends*

Figure 2

Next we screened the surviving group of companies by the return on net plant investment (before taxes). This is a measure of business risk and measures the ability of a company to compete in the market and maintain its rate of return before income taxes. From this calculation we screened out all companies varying more than forty percent from the average return of the interstate natural gas pipelines industry.

Next we screened the surviving group of companies by their asset turnover ratios. The asset turnover ratio is found by dividing a company's total sales by its total assets. This ratio is indicative of the business risk faced by a company. It can be used to determine how competitive the company is within its industry and also how much capital must be invested to gain a dollar of sales. Thus, this ratio helps indicate the level of investment a competitor must invest to generate a competitive sales volume. We excluded all companies which varied more than fifty percent from the average asset turnover ratio of the interstate natural gas pipelines industry.

Next we screened the surviving group of companies by their S&P adjusted betas. Beta is a measurement of the sensitivity of a company's stock price to the overall fluctuation in the Standard & Poor's 500 (S&P 500) Index Price. For example, a beta of 1.5 indicates that a company's stock price tends to rise (or fall) 1.5%, with a 1% rise (or fall) in the index price. The S&P adjusted beta of the interstate natural gas pipeline industry averages approximately 0.96 presently. Thus we excluded all companies with S&P adjusted betas less than 0.80 and greater

than 1.15. In our judgment, this range is a reasonable range of betas to use for comparison purposes in determining comparables of approximate risk to the natural gas pipelines. A table of risk screening data is shown below.

Pipeline Risk Screening Data - January 1, 2007
Value Line Natural Gas Diversified Industry (Large) S&P Data

Company Name	Ticker	S&P Debt Rating Letter	S&P Debt Rating Number	S&P Adj. Beta	Return on Net Invest.	Asset Turnover Ratio
DEVON ENERGY CORP	DVN	BBB	11	0.66	26.03	0.36
EL PASO CORP	EP	B+	16	1.88	(0.53)	0.13
ENERGEN CORP	EGN	BBB+	10	0.68	52.82	0.47
EOG RESOURCES INC	EOG	BBB+	10	0.69	32.36	0.53
EQUITABLE RESOURCES INC	EQT	A-	9	0.59	16.88	0.38
KINDER MORGAN INC	KMI	BB-	15	0.82	4.95	0.12
NATIONAL FUEL GAS CO	NFG	BBB+	10	0.72	13.23	0.62
NEWFIELD EXPLORATION CO	NFX	BB+	13	0.70	19.37	0.37
ONEOK INC	OKE	BBB	11	0.76	13.39	1.47
QUESTAR CORP	STR			0.80	16.86	0.68
WILLIAMS COS INC	WMB	BB-	15	2.45	10.23	0.47
XTO ENERGY INC	XTO	BBB	11	0.79	22.87	0.44
	Average	BBB-	12	0.96	19.04	0.50

Source: S&P Compustat, January 2007.

Surviving the screening process are seven (7) companies, which in general should be approximately of equal or slightly less risk when compared to the interstate natural gas pipeline industry. These companies are:

ALLETE	Rayonier, Inc.
Duquesne Light Holdings	Republic Services
ENSCO International	Waste Management
Molson Coors Brewing	

In addition to performing a DCF analysis for the companies listed above of approximately equal or slightly less risk to the interstate natural gas pipelines, we performed additional DCF analyses on four (4) other groups of companies, the Value Line natural gas (diversified) group (all companies), the Value Line natural gas (diversified) group (all companies excluding the limited partnerships), the Value Line natural gas (diversified) group (large companies – with over $750 million in annual sales), and the interstate natural gas pipeline forum group (traded) that are heavily involved with pipelines. We used financial data from two independent sources, *Standard and Poor's Compustat* database, and the *Value Line Investment Survey*. The two independent sources of data gave us two sets of growth estimates for the five groups of companies. The growth estimates considered were provided by *Value Line* and the

Institutional Brokers Estimate System (IBES) through the *Standard and Poor's Compustat* database. From these analysts' projections we calculated DCF indicators on all groupings and calculated a simple average and median indicator. We gave the most weight to the median indicator in each grouping. The median indicator is not affected by extreme values and outliers and thus is a very good indicator of central tendency of a representative sample of companies. We placed the most confidence in the estimates provided by the IBES projections, because these estimates were provided by a large group of financial analysts who monitor these companies.[30] It is our opinion, based on this documented data, that the appropriate cost of equity for the interstate natural gas pipeline industry by the DCF method is **11.50%** as of January 1, 2007. The result of all of the DCF analysis and research can be found below.

Summary of DCF Method Indicators

Company Groups	*Value Line* Data		S&P (IBES) Data	
	Average	Median	Average	Median
Value Line Natural Gas (Diversified) - All	15.10	11.92	12.22	12.06
Value Line Natural Gas (Diversified) - All w/o LPs	14.86	10.43	13.34	12.09
Value Line Natural Gas (Diversified) - Large	15.96	11.74	11.24	10.42
Interstate Natural Gas Pipeline Forum (Pipes)	21.18	13.98	11.70	10.56
S&P Screened Comparables Group	15.60	14.26	16.12	12.15
Averages	16.54	12.47	12.92	11.46

The discounted cash flow method for above industry groups were calculated as follows:

Using *Value Line* data and *Value Line* earnings growth estimates and S&P's *Compustat* data with *Institutional Brokers Estimate System* (IBES) earnings growth.

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[30] The Institutional Brokers Estimate System (IBES) is a database provided through *Standard & Poor's Compustat* of earnings expectations obtained from more than 3,500 security analysts from over 300 contributing firms.

Value Line Natural Gas Diversified Industry (All)
DCF Indicator (VL Data) - January 1, 2007

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP Oil & Gas Corp	ATPG		40.00	
Cabot Oil & Gas 'A'	COG	0.26	2.50	2.76
Callon Pete Co	CPE		15.00	
Crosstex Energy LP	XTEX		10.00	
Delta Natural Gas	DGAS		2.00	
Devon Energy	DVN	0.66	8.00	8.66
El Paso Corp.	EP	1.04	54.50	55.54
Energen Corp.	EGN	1.02	8.00	9.02
Enterprise Products	EPD	6.73	12.50	19.23
EOG Resources	EOG	0.42	11.50	11.92
Equitable Resources	EQT	2.08	10.00	12.08
Kinder Morgan	KMI	3.53	12.00	15.53
Kinder Morgan Energy	KMP	7.06	6.00	13.06
Markwest Energy Partners LP	MWE		8.00	
National Fuel Gas	NFG	3.08	3.50	6.58
Newfield Exploration	NFX		7.00	
ONEOK Inc.	OKE	2.94	4.50	7.44
ONEOK Partners LP	OKS			
Penn Virginia Corp.	PVA			
Petroleum Development Corp.	PETD			
Quest Resource Corp	QRCP			
Questar Corp.	STR	1.12	8.00	9.12
Rentech Inc.	RTK			
Southwestern Energy	SWN		20.50	
TEPPCO Partners L.P.	TPP	6.90	9.00	15.90
Universal Compression Holdings	UCO			
Williams Cos.	WMB	1.39	26.50	27.89
XTO Energy	XTO	0.74	11.00	11.74
	Average	2.60	13.18	15.10
	Median	1.39	9.50	11.92

Source: *Value Line* CD Rom, January 2007.

Value Line Natural Gas Diversified Industry (w/o LPs)
DCF Indicator (VL Data) - January 1, 2007

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP Oil & Gas Corp	ATPG		40.00	
Cabot Oil & Gas 'A'	COG	0.26	2.50	2.76
Callon Pete Co	CPE		15.00	
Delta Natural Gas	DGAS		2.00	
Devon Energy	DVN	0.66	8.00	8.66
El Paso Corp.	EP	1.04	54.50	55.54
Energen Corp.	EGN	1.02	8.00	9.02
EOG Resources	EOG	0.42	11.50	11.92
Equitable Resources	EQT	2.08	10.00	12.08
Kinder Morgan	KMI	3.53	12.00	15.53
National Fuel Gas	NFG	3.08	3.50	6.58
Newfield Exploration	NFX		7.00	
ONEOK Inc.	OKE	2.94	4.50	7.44
Penn Virginia Corp.	PVA			
Petroleum Development Corp.	PETD			
Quest Resource Corp	QRCP			
Questar Corp.	STR	1.12	8.00	9.12
Rentech Inc.	RTK			
Southwestern Energy	SWN		20.50	
Universal Compression Holdings	UCO			
Williams Cos.	WMB	1.39	26.50	27.89
XTO Energy	XTO	0.74	11.00	11.74
	Average	1.52	14.38	14.86
	Median	1.08	10.00	10.43

Source: *Value Line* CD Rom, January 2007.

Value Line Natural Gas Diversified Industry (Large)
DCF Indicator (VL Data) - January 1, 2007

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Devon Energy	DVN	0.66	8.00	8.66
EOG Resources	EOG	0.42	11.50	11.92
El Paso Corp.	EP	1.04	54.50	55.54
Energen Corp.	EGN	1.02	8.00	9.02
Equitable Resources	EQT	2.08	10.00	12.08
Kinder Morgan	KMI	3.53	12.00	15.53
National Fuel Gas	NFG	3.08	3.50	6.58
Newfield Exploration	NFX		7.00	
ONEOK Inc.	OKE	2.94	4.50	7.44
Questar Corp.	STR	1.12	8.00	9.12
Williams Cos.	WMB	1.39	26.50	27.89
XTO Energy	XTO	0.74	11.00	11.74
	Average	1.64	13.71	15.96
	Median	1.12	9.00	11.74

Source: *Value Line* CD Rom, January 2007.

Interstate Natural Gas Pipeline Forum (Pipelines)
DCF Indicator (VL Data) - January 1, 2007

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
El Paso Corp.	EP	1.04	54.50	55.54
Kinder Morgan	KMI	3.53	12.00	15.53
National Fuel Gas	NFG	3.08	3.50	6.58
ONEOK Partners LP	OKS			
Questar Corp.	STR	1.12	8.00	9.12
Southern Union	SUG	1.42	11.00	12.42
Williams Cos.	WMB	1.39	26.50	27.89
	Average	1.93	19.25	21.18
	Median	1.41	11.50	13.98

Source: *Value Line* CD Rom, January 2007.

Value Line Natural Gas Diversified Industry (All)
DCF Indicator (S&P Data) - January 1, 2007

Company Name	Ticker	Current Yield	EPS Growth	DCF
ATP OIL & GAS CORP	ATPG		32.50	
CABOT OIL & GAS CORP	COG	0.29	11.80	12.09
CALLON PETROLEUM CO/DE	CPE		15.00	
CROSSTEX ENERGY LP	XTEX	6.18	12.00	18.18
DELTA NATURAL GAS CO INC	DGAS			
DEVON ENERGY CORP	DVN	0.72	8.00	8.72
EL PASO CORP	EP	1.13	8.00	9.13
ENERGEN CORP	EGN	0.97	4.00	4.97
ENTERPRISE PRODS PRTNER -LP	EPD	6.86	8.00	14.86
EOG RESOURCES INC	EOG	0.42	10.00	10.42
EQUITABLE RESOURCES INC	EQT	2.32	10.00	12.32
KINDER MORGAN ENERGY -LP	KMP	7.20	6.50	13.70
KINDER MORGAN INC	KMI	3.71	12.00	15.71
MARKWEST ENERGY PARTNERS LP	MWE	6.96	7.00	13.96
NATIONAL FUEL GAS CO	NFG	3.27	5.00	8.27
NEWFIELD EXPLORATION CO	NFX		12.49	
ONEOK INC	OKE	3.21	8.00	11.21
ONEOK PARTNERS -LP	OKS	6.43	5.00	11.43
PENN VIRGINIA CORP	PVA			
PETROLEUM DEVELOPMENT CORP	PETD			
QUEST RESOURCE CORP	QRCP			
QUESTAR CORP	STR	1.23	9.00	10.23
RENTECH INC	RTK			
SOUTHWESTERN ENERGY CO	SWN		20.00	
TEPPCO PARTNERS -LP	TPP	7.03	5.00	12.03
UNIVERSAL COMPRESSION HLDGS	UCO		11.00	
WILLIAMS COS INC	WMB	1.58	15.00	16.58
XTO ENERGY INC	XTO	0.88	15.23	16.11
	Average	3.36	10.89	12.22
	Median	2.77	10.00	12.06

Source: *S&P Compustat*, January 2007.

Value Line Natural Gas Diversified Industry (w/o LPs)
DCF Indicator (S&P Data) - January 1, 2007

Company Name	Ticker	Current Yield	EPS Growth	DCF
ATP OIL & GAS CORP	ATPG		32.50	32.50
CABOT OIL & GAS CORP	COG	0.29	11.80	12.09
CALLON PETROLEUM CO/DE	CPE		15.00	15.00
DELTA NATURAL GAS CO INC	DGAS			
DEVON ENERGY CORP	DVN	0.72	8.00	8.72
EL PASO CORP	EP	1.13	8.00	9.13
ENERGEN CORP	EGN	0.97	4.00	4.97
EOG RESOURCES INC	EOG	0.42	10.00	10.42
EQUITABLE RESOURCES INC	EQT	2.32	10.00	12.32
KINDER MORGAN INC	KMI	3.71	12.00	15.71
NATIONAL FUEL GAS CO	NFG	3.27	5.00	8.27
NEWFIELD EXPLORATION CO	NFX		12.49	12.49
ONEOK INC	OKE	3.21	8.00	11.21
PENN VIRGINIA CORP	PVA			
PETROLEUM DEVELOPMENT CORP	PETD			
QUEST RESOURCE CORP	QRCP			
QUESTAR CORP	STR	1.23	9.00	10.23
RENTECH INC	RTK			
SOUTHWESTERN ENERGY CO	SWN		20.00	20.00
UNIVERSAL COMPRESSION HLDGS	UCO		11.00	11.00
WILLIAMS COS INC	WMB	1.58	15.00	16.58
XTO ENERGY INC	XTO	0.88	15.23	16.11
	Average	1.64	12.18	13.34
	Median	1.18	11.00	12.09

Source: *S&P Compustat*, January 2007.

Value Line Natural Gas Diversified Industry (Large)
DCF Indicator (S&P Data) - January 1, 2007

Company Name	Ticker	Current Yield	EPS Growth	DCF
DEVON ENERGY CORP	DVN	0.72	8.00	8.72
EL PASO CORP	EP	1.13	8.00	9.13
ENERGEN CORP	EGN	0.97	4.00	4.97
EOG RESOURCES INC	EOG	0.42	10.00	10.42
EQUITABLE RESOURCES INC	EQT	2.32	10.00	12.32
KINDER MORGAN INC	KMI	3.71	12.00	15.71
NATIONAL FUEL GAS CO	NFG	3.27	5.00	8.27
NEWFIELD EXPLORATION CO	NFX		12.49	
ONEOK INC	OKE	3.21	8.00	11.21
QUESTAR CORP	STR	1.23	9.00	10.23
WILLIAMS COS INC	WMB	1.58	15.00	16.58
XTO ENERGY INC	XTO	0.88	15.23	16.11
	Average	1.77	9.73	11.24
	Median	1.23	9.50	10.42

Source: *S&P Compustat*, January 2007.

Interstate Natural Gas Pipeline Forum (Pipelines)
DCF Indicator (S&P Data) - January 1, 2007

Company Name	Ticker	Current Yield	EPS Growth	DCF
EL PASO CORP	EP	1.13	8.00	9.13
KINDER MORGAN INC	KMI	3.71	12.00	15.71
NATIONAL FUEL GAS CO	NFG	3.27	5.00	8.27
ONEOK PARTNERS -LP	OKS	6.43	5.00	11.43
QUESTAR CORP	STR	1.23	9.00	10.23
SOUTHERN UNION CO	SUG	1.56	9.00	10.56
WILLIAMS COS INC	WMB	1.58	15.00	16.58
	Average	2.70	9.00	11.70
	Median	1.58	9.00	10.56

Source: *S&P Compustat*, January 2007.

Pipeline Screened Comparables Group
DCF Indicator (VL Data) - January 1, 2007

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ALLETE	ALE	3.48		
Duquesne Light Hldgs	DQE	5.03	5.00	10.03
ENSCO Int'l	ESV	0.19	26.00	26.19
Molson Coors Brewing	TAP	1.66		
Rayonier Inc.	RYN	4.76	9.50	14.26
Republic Services	RSG	1.56	11.50	13.06
Waste Management	WMI	2.44	12.00	14.44
	Average	2.73	12.80	15.60
	Median	2.44	11.50	14.26

Source: *Value Line* CD Rom, January 2007.

Pipeline Screened Comparables Group
DCF Indicator (S&P Data) - January 1, 2007

Company Name	Ticker	Current Yield	EPS Growth	DCF
ALLETE INC	ALE	3.38	8.50	11.88
DUQUESNE LIGHT HOLDINGS INC	DQE			
ENSCO INTERNATIONAL INC	ESV	0.27	37.24	37.51
MOLSON COORS BREWING CO	TAP	1.85	10.57	12.42
RAYONIER INC	RYN	4.84	5.70	10.54
REPUBLIC SERVICES INC	RSG	1.73	10.00	11.73
WASTE MANAGEMENT INC	WMI	2.63	10.00	12.63
	Average	2.45	13.67	16.12
	Median	2.24	10.00	12.15

Source: *S&P Compustat*, January 2007.

Risk Premium Method

The risk premium method is a standard method of estimating the cost of equity (K_e) based on the formula in Figure 3. This method sums two elements of risk — a risk free rate, which is the price of time (the reward for deferring consumption and for not exposing funds to risk), and a risk premium, which is the additional reward for assuming risk. The nominal risk free rate includes the real risk free rate and an inflation premium. The risk premium includes an interest rate risk, business risk, financial risk, and liquidity risk. All of these elements are included when calculating equity cost by the risk premium method.

$$K_e = R_f + R_p$$

where

K_e = *Cost of equity*
R_f = *Risk free rate*
R_p = *Risk premium*

Figure 3

Our risk premium calculations included computations for two categories of risk premium indicators — general indicators and indicators for the Value Line Natural Gas Diversified (all) group, the Value Line Natural Gas Diversified (large) group, and Interstate Natural Gas Pipeline Forum (Pipes) group. Our ex post risk premiums were derived from the *2007 Risk Premia Over Time Report*, published by Morningstar. Our ex ante risk premium was derived from the market-weighted expected cost of capital for the S&P 500 less the current 20-year Treasury bond rate. Our relevant current 'safe rates' for the general indicators were derived from the sources footnoted below.[31] The 'safe rates' (or base rates) used for each company within the company groupings were the average yields to maturity for the long-term debt (20+ years to maturity) of each company quoted in *Mergent Bond Record* (January, 2007). The average yield to maturity for each company's bonds was added to the SBBI corporate bond risk premium of 6.1% to obtain an individual estimate for each company in the group. Thus, the risk premium indicators for the individual groups are specific for each company within the group and, thus, as individualized as possible for each company.

The general Risk Premium (or equity build-up method) indicators, using the risk premium from the *2007 Risk Premia Over Time Report* published by Morningstar, indicates a cost of equity capital of 12.01% (ex post) and 13.28% (ex ante).

The range for all calculations of averages of risk premiums using the indicators by specific company groups are between 12.40% and 12.80%. This measurement involved the use of the average long-term yields to maturity for company bonds with at least 20 years to maturity plus the corporate bond risk premium of 6.1%. A conservative view of these results would indicate a risk premium correlated indicator for the specific companies to be approximately 12.40%.

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[31] Morningstar, *2007 Risk Premia over Time Report* and The Federal Reserve, Dec. 29, 2006.

For the general indicators discussed on the previous page the ex post and ex ante indicators using the long-term government bonds is deemed appropriate because a purchase of an interstate natural gas pipeline company is considered a long-term commitment of capital, and thus the long-term bond risk premium should be indicative of the cost of long-term equity capital for the typical company. These indicators together would support a cost of equity of 12.40%.

The long-term bond risk premium indicators are well supported by the estimates derived from the specific indicators from the yields to maturity of all of the groups of interstate natural gas pipeline industry bonds with 20 years or more to maturity. We believe the appropriate cost of equity for the typical interstate natural gas pipeline by the risk premium method as of January 1, 2007 is **12.40%**. This conclusion gives weight and consideration to all indicators. A summary of the cost of equity indicators by the risk premium method (or equity build-up method) is below and the supporting data begins on the following page.

Risk Premium Indicators - January 1, 2007

General Risk Premium Indicators

	Rates		
Indicators	**Rf**	**Rp**	**Indicator**
20-Year Treasury Bonds (ex post indicator)	4.91	7.10	12.01
20-Year Treasury Bonds (ex ante indicator)	4.91	8.37	13.28

Risk Premium Indicators by Groups

	Risk Premium	
Indicators	**Average**	**Median**
Natural Gas Diversified Industry (All)	12.59	12.56
Natural Gas Diversified Industry (Large)	12.53	12.42
Interstate Nat. Gas Pipeline Forum Group	12.72	12.80
Screened Comparables Group	12.42	12.40
Average	12.57	12.55

Risk Premium Formula: Ke = Rf + Rp

Base Rate: Yield to maturity on each company's long-term bonds, *Mergent Bond Record*, Jan.

2007. Risk Premium: *2007 Risk Premia Over Time Report*, Corporate Bond RP of 6.1%.

Table 1

Summary Statistics of Annual Total Returns

From 1926 to 2006

Series	Geometric Mean	Arithmetic Mean	Standard Deviation
Large Company Stocks			
Total Returns	10.4	12.3	20.1
Income	4.2	4.2	1.6
Capital Appreciation	6.0	7.9	19.4
Ibbotson Small Company Stocks			
Total Returns	12.7	17.4	32.7
Mid-Cap Stocks*			
Total Returns	11.4	14.2	24.6
Income	4.0	4.0	1.7
Capital Appreciation	7.2	9.9	23.9
Low-Cap Stocks*			
Total Returns	11.8	15.7	29.3
Income	3.7	3.7	2.0
Capital Appreciation	7.9	11.8	28.7
Micro-Cap Stocks*			
Total Returns	12.8	18.8	38.9
Income	2.6	2.6	1.8
Capital Appreciation	10.2	16.1	38.4
Long-Term Corporate Bonds			
Total Returns	5.9	6.2	8.5
Long-Term Government Bonds			
Total Returns	5.4	5.8	9.2
Income	5.2	5.2	2.7
Capital Appreciation	0.0	0.3	8.0
Intermediate-Term Government Bonds			
Total Returns	5.3	5.4	5.7
Income	4.7	4.7	2.9
Capital Appreciation	0.4	0.5	4.4
Treasury Bills			
Total Returns	3.7	3.8	3.1
Inflation	3.0	3.1	4.3

Total return is equal to the sum of income return, capital appreciation return, and reinvestment return.

Source: Center for Research in Security Prices, University of Chicago.

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Changes in Risk Premium & Summary Calculations

Changes in Risk Premium
(1991 - 2007)
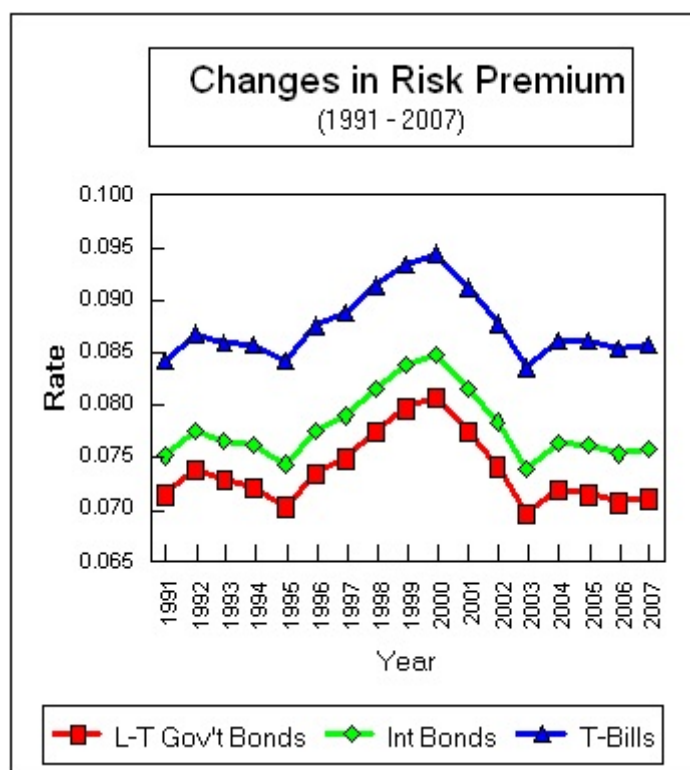
RISK PREMIUM CALCULATION FOR COST OF EQUITY	
L-T Govt Bonds	
Risk Premium*	7.1%
Applicable Rate**	4.9%
Indicated Cost of Equity	12.0%
Intermediate Gov't Bonds	
Risk Premium*	7.6%
Applicable Rate**	4.7%
Indicated Cost of Equity	12.3%
T-Bills	
Risk Premium*	8.5%
Applicable Rate**	4.8%
Indicated Cost of Equity	13.3%
Avg. Risk Prem Ind.	12.5%

Source: *Morningstar, *2007 Risk Premia Over Time Report*; **Fed Res. T&A (12/29/06)

RISK PREMIUM			
Year	L-T Gov't	Intermediate	T-Bills
1991	0.0716	0.0752	0.0842
1992	0.0739	0.0775	0.0867
1993	0.0728	0.0766	0.0861
1994	0.0722	0.0761	0.0858
1995	0.0704	0.0743	0.0842
1996	0.0736	0.0776	0.0876
1997	0.0750	0.0790	0.0888
1998	0.0776	0.0817	0.0915
1999	0.0797	0.0837	0.0935
2000	0.0807	0.0847	0.0945
2001	0.0776	0.0816	0.0912
2002	0.0742	0.0784	0.0879
2003	0.0697	0.0740	0.0837
2004	0.0719	0.0763	0.0862
2005	0.0716	0.0762	0.0863
2006	0.0707	0.0754	0.0855
2007	0.0712	0.0758	0.0858

Value Line Natural Gas Diversified Industry (All)
Yield to Maturity for Long-Term Debt - January 1, 2007

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
ATP Oil & Gas Corp	ATPG				
Cabot Oil & Gas 'A'	COG				
Callon Petroleum Co	CPE	B2	17		
Crosstex Energy LP	XTEX				
Delta Natural Gas Co Inc	DGAS				
Devon Energy Corp	DVN	Baa2	11	6.22	12.32
El Paso Corp.	EP	B2	17	6.85	12.95
Energen Corp.	EGN	Baa2	11	7.22	13.32
Enterprise Products	EPD	Baa3	12	6.55	12.65
EOG Resources Inc	EOG	A3	9	6.38	12.48
Equitable Resources Inc	EQT	A2	8	6.04	12.14
Kinder Morgan Energy LP	KMP	Baa1	10	6.62	12.72
Kinder Morgan Inc	KMI	Baa2	11		
Markwest Energy Partners LP	MWE	B2	17		
National Fuel Gas	NFG	Baa1	10		
Newfield Exploration	NFX	Ba1	13		
ONEOK Inc.	OKE	Baa2	11	6.54	12.64
ONEOK Partners LP	OKS	Baa2	11	5.96	12.06
Penn Virginia Corp.	PVA				
Petroleum Development Corp.	PETD				
Quest Resource Corp	QRCP				
Questar Corp.	STR	A2	8		
Rentech Inc.	RTK				
Southwestern Energy Co	SWN	Ba3	15	7.29	13.39
TEPPCO Partners L.P.	TPP	Baa3	12		
Universal Compress. Holdings	UCO				
Williams Cos.	WMB	Ba2	14	5.95	12.05
XTO Energy	XTO	Baa2	11	6.25	12.35
Average		BB+	12	6.49	12.59
Median		BBB-	11	6.46	12.56

* Yield to Maturity for bonds with 20+ years to maturity. Source: *Mergent Database*, Jan. 2007.

Value Line Natural Gas Diversified Industry (Large)
Yield to Maturity for Long-Term Debt - January 1, 2007

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
Devon Energy Corp	DVN	Baa2	11	6.22	12.32
El Paso Corp.	EP	B2	17	6.85	12.95
Energen Corp.	EGN	Baa2	11	7.22	13.32
EOG Resources Inc	EOG	A3	9	6.38	12.48
Equitable Resources Inc	EQT	A2	8	6.04	12.14
Kinder Morgan Inc	KMI	Baa2	11		
National Fuel Gas	NFG	Baa1	10		
Newfield Exploration	NFX	Ba1	13		
ONEOK Inc.	OKE	Baa2	11	6.54	12.64
Questar Corp.	STR	A2	8		
Williams Cos.	WMB	Ba2	14	5.95	12.05
XTO Energy	XTO	Baa2	11	6.25	12.35
	Average	Baa2	11	6.43	12.53
	Median	Baa2	11	6.32	12.42

Interstate Natural Gas Pipeline Forum (Pipelines)
Yield to Maturity for Long-Term Debt - January 1, 2007

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
El Paso Corp.	EP	B2	17	6.85	12.95
Kinder Morgan Inc	KMI	Baa2	11		
National Fuel Gas	NFG	Baa1	10		
ONEOK Inc.	OKE	Baa2	11	6.54	12.64
Questar Corp.	STR	A2	8		
Southern Union Co	SUG	Baa3	12	7.14	13.24
Williams Cos.	WMB	Ba2	14	5.95	12.05
	Average	Baa3	12	6.62	12.72
	Median	Baa2	11	6.70	12.80

* Yield to Maturity for bonds with 20+ years to maturity. Source: *Mergent Database*, Jan. 2007.

Pipeline Screened Comparables Group
Yield to Maturity for Long-Term Debt - January 1, 2007

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
ALLETE Inc	ALE				
Duquesne Light Holdings Inc	DQE	Baa1	10	6.62	12.72
Ensco International Inc	ESV			6.06	12.16
Molson Coors Brewing Co	TAP	Baa2	11		
Rayonier Inc	RYN				
Republic Services Inc	RSG	Baa2	11	6.19	12.29
Waste Management Inc	WMI	Baa3	12	6.41	12.51
	Average	BBB-	11	6.32	12.42
	Median	BBB-	11	6.30	12.40

* Yield to Maturity for bonds with 20+ years to maturity. Source: *Mergent Database*, Jan. 2007.

U.S. 20-YEAR T-BONDS, 5-YEAR T-BONDS & 30-DAY T-BILLS 1996 – 2006 (YEAR END DATA)
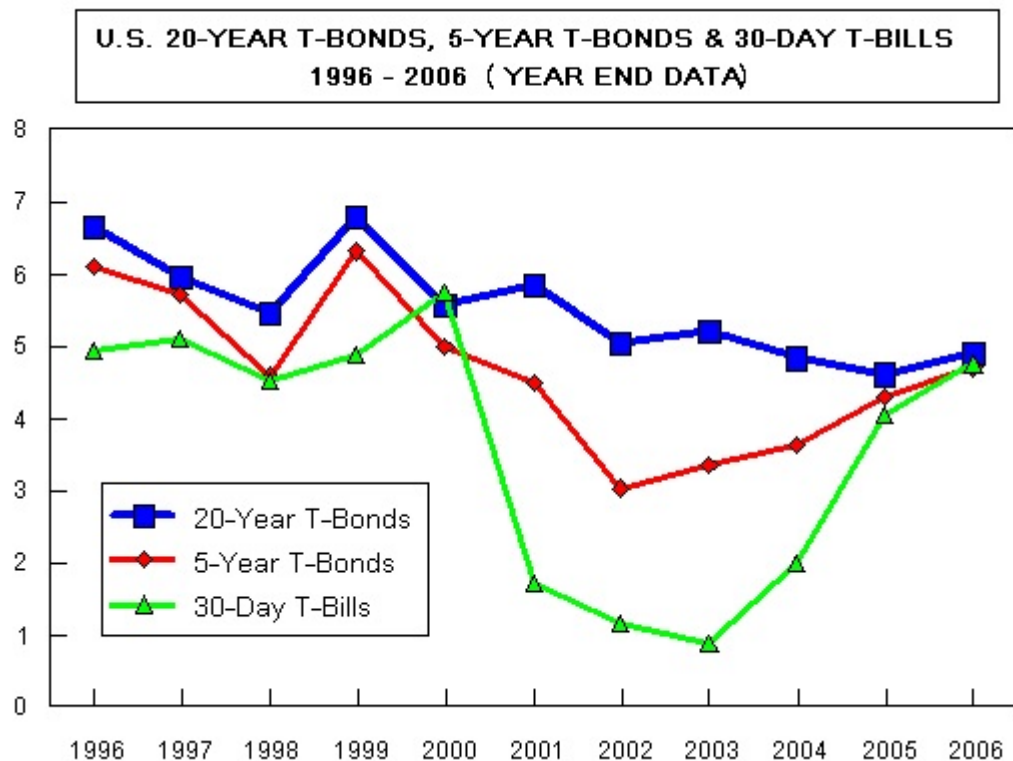
US 20-Year T-Bonds, 5-Year T-Bonds, and 30-Day T-Bills

Year End Date	20-Year T-Bonds	5 -Year T-Bonds	30-DAY T-Bills
1996	6.67	6.12	4.93
1997	5.99	5.72	5.09
1998	5.47	4.59	4.54
1999	6.80	6.33	4.89
2000	5.58	4.98	5.76
2001	5.86	4.52	1.70
2002	5.05	3.05	1.18
2003	5.21	3.36	0.88
2004	4.84	3.64	1.99
2005	4.62	4.30	4.05
2006	4.91	4.70	4.75

Source: *WSJ*, first issue of each respective year & Fed. Reserve, 12/29/06.

Capital Asset Pricing Model

The capital asset pricing model (CAPM) is a generally accepted method of estimating the cost of equity (K_e) based on the formula shown in Figure 4. It is the preferred method of estimating the cost of equity by many analysts *(it is recommended by Morningstar in their SBBI publication)*. The CAPM method is much like the risk premium method, however the risk premium is adjusted by beta before it is added to the appropriate risk level. The two elements of risk are a risk free rate, which is the price of time (the reward for postponing consumption and for not exposing funds to risk), and a risk premium, which is the additional compensation for assuming risk. The nominal risk free rate includes the real risk free rate and an inflation premium. The risk premium includes an interest rate risk, business risk, financial risk, and liquidity risk. All of these elements are accounted for when we calculate the cost of equity using the CAPM method.

$$K_e = R_f + \beta R_p$$

where

K_e = *Cost of equity*
R_f = *Risk free rate*
β = *Beta*
R_p = *Risk premium*

Figure 4

Our *ex post* CAPM calculations were based upon the long-term risk premium using the entire period data provided by Morningstar, which includes data from 1926 through 2006. The indicated cost of equity by this method was 11.66% at January 1, 2007. Our *ex ante* CAPM calculations were based upon the expected risk premium of 8.37% derived from the market-weighted average of the cost of equity capital less the current long-term Treasury bond rate. The indicated cost of equity by this method was 12.86% at January 1, 2007.

Our 'safe rates' for the CAPM calculations were derived as described in the risk premium method discussed earlier. Our beta estimate of 0.95 was based on observing the average, median, and market-weighted average betas from each of the groups. The average and median betas are shown in Figure 5. The calculated forward-looking (*ex ante*) CAPM indicator was found by deriving an expected risk premium from the S&P 500 companies. The *ex ante* CAPM indicator is a good check on the reliability of the standard CAPM because it is forward looking. All prospective investment in interstate natural gas pipeline companies is based on an expectation of future benefits. This is consistent

Group of Companies	Avg.	Med.
Value Line Betas VL Nat Gas (all)	1.00	0.90
VL Nat Gas (w/o LPs)	1.08	0.98
VL Nat Gas (large)	1.24	1.00
Nat Gas PL Forum (pipes)	1.41	1.00

Figure 5 - Value Line Betas

with the fundamental principle underlying the income approach, which is the principle of anticipation. Further, this ex ante method is discussed in the *Cost of Capital* as follows:

"The ex ante risk premium is a forward looking premium. The Gordon Growth Model is applied to determine the resulting risk premium. The premium is determined by first estimating the cost of equity for the proxy market. The proxy market is a market large enough to remove the effects of non-diversification. Typically, the S&P 500 or the NYSE is used as this proxy...

The first step in deriving the ex ante risk premium is to use a single-stage discounted cash flow analysis (otherwise known as the Gordon Growth Model) to calculate the cost of equity for the market proxy, (i.e., the S&P 500). The cost of equity is calculated by using the most recent I/B/E/S consensus long-term growth rates for each firm in the S&P 500 and adding it to the dividend growth yield. I/B/E/S is a service that polls analysts about their growth estimates for individual stocks. The dividend yield for the S&P 500 should be an estimate for Year 1's dividend (D_1). D_1 can be estimated by multiplying the S&P 500's current weighted average dividend yield (DY) by 1 plus its weighted average long-term earnings growth rate. By adding the weighted average long-term growth rate to the dividend yield at the end of Year 1, the cost of equity is estimated. If for example, the long-term growth rate is equal to 10% and the current dividend yield is 4%, then the cost of equity is (4% x 1.1) + 10%, or 14.40 %. This can also be described in the following formula:

$$K_{e500} = DY \ x \ (1 \ + \ g) \ + \ g$$

Where: DY   =   dividend yield

G   =   long-term growth

K_{e500} =   cost of equity for the S&P 500

The second step is to calculate the risk premium of the S&P 500 (RP_{500}). For the CAPM, the ex ante risk premium is calculated by subtracting the risk-free rate (Rd, from the cost of equity for the S&P 500. For the build up method, the ex ante risk premium is calculated by subtracting the weighted average bond yield for the S&P 500 from the cost of equity for the S&P 500."[32]

$$RP_{500} = K_{e500} - R_f$$

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[32] Pratt, Shannon P. *Cost of Capital, Estimation and Applications*, (NY: John Wiley & Sons, Inc. 1998) p. 178.

In order to perform the *ex ante* CAPM indicator we derived the expected cost of equity for the companies making up the S&P 500 (which are expected to pay dividends). We developed the weighted average cost of capital (weighted by market value) for the S&P 500, which was 13.28%. We then subtracted the current long-term Treasury bond rate of 4.91% to obtain the expected equity risk premium of 8.37%. The market-weighted average is appropriate because the monthly fundamental beta is estimated based upon the sensitivity of a company's stock price to the overall fluctuation in the Standard & Poor's 500 (S&P 500) Index Price (with the S&P 500 being the surrogate for the market in general). The market-weighted average gives most weight to the highest market value stocks and is a very good indicator of the central tendency of the overall market cost of capital.

The general CAPM indicator, using the risk premium from the *2007 Risk Premia Over Time Report* published by Morningstar and the pipeline industry beta of 0.95, indicates a cost of equity capital of 11.66%. To help determine the reasonableness of the general historical or *ex post* indicator we also computed an *ex ante* or forward-looking CAPM indicator. The ex ante CAPM indication of the cost of equity was 12.86%.

Based upon the analysis presented and considering all the relevant facts we believe the appropriate cost of equity capital indicated by the CAPM method is **12.00%** as of January 1, 2007. This conclusion gives weight and consideration to both indicators. A summary of the CAPM indicators and the supporting data begins below and on the following page.

Summary of CAPM Indicators - January 1, 2007

Item	Rates			CAPM Indicator
	Rf	**Rp**	**Beta**	
CAPM Indicator *				
Long-Term Gov't Bonds (ex post)	4.91	7.10	0.95	11.66
Long-Term Gov't Bonds (ex ante)	4.91	8.37	0.95	12.86

CAPM Formula: Ke = Rf + B(Rp)
* CAPM Indicator is based upon a *Value Line* beta of 0.95. Morningstar, *2007 SBBI* & *Risk Premia Over Time Report*; & Federal Reserve data December 29, 2006.

Correlation of the ex post and ex ante CAPM indicators using long-term government bonds as the 'safe rate' indicates a cost of equity of 12.00% for the Interstate Natural Gas Pipelines as of January 1, 2007.

Beginning on the following page are the *Value Line* betas for the various companies in the Natural Gas Diversified Industry (all), Natural Gas Diversified Industry (all without limited partnerships), the Natural Gas Diversified Industry (large), and the Interstate Natural Gas Pipeline Forum (Pipeline) groups. Shown after the betas for the various groups are the calculations for the ex ante CAPM with supporting data from *Standard & Poor's Compustat*.

Value Line Natural Gas Diversified Ind. (All)
Beta (Value Line) - January 1, 2007

Company Name	Ticker	Beta
ATP Oil & Gas Corp	ATPG	1.00
Cabot Oil & Gas 'A'	COG	1.00
Callon Pete Co	CPE	0.85
Crosstex Energy LP	XTEX	0.85
Delta Natural Gas	DGAS	0.55
Devon Energy	DVN	1.05
El Paso Corp.	EP	2.35
Energen Corp.	EGN	0.85
Enterprise Products	EPD	0.65
EOG Resources	EOG	1.05
Equitable Resources	EQT	0.80
Kinder Morgan	KMI	1.00
Kinder Morgan Energy	KMP	0.70
Markwest Energy Partners LP	MWE	0.60
National Fuel Gas	NFG	0.95
Newfield Exploration	NFX	1.00
ONEOK Inc.	OKE	1.00
ONEOK Partners LP	OKS	0.60
Penn Virginia Corp.	PVA	0.90
Petroleum Development Corp.	PETD	0.95
Quest Resource Corp	QRCP	0.85
Questar Corp.	STR	0.90
Rentech Inc.	RTK	0.75
Southwestern Energy	SWN	1.00
TEPPCO Partners L.P.	TPP	0.70
Universal Compression Holdings	UCO	1.15
Williams Cos.	WMB	3.00
XTO Energy	XTO	0.90
	Average	1.00
	Median	0.90

Source: *Value Line* CD Rom, January 2007.

VL Nat Gas Diversified Industry (w/o LPs)
Beta (Value Line) - January 1, 2007

Company Name	Ticker	Beta
ATP Oil & Gas Corp	ATPG	1.00
Cabot Oil & Gas 'A'	COG	1.00
Callon Pete Co	CPE	0.85
Delta Natural Gas	DGAS	0.55
Devon Energy	DVN	1.05
El Paso Corp.	EP	2.35
Energen Corp.	EGN	0.85
EOG Resources	EOG	1.05
Equitable Resources	EQT	0.80
Kinder Morgan	KMI	1.00
National Fuel Gas	NFG	0.95
Newfield Exploration	NFX	1.00
ONEOK Inc.	OKE	1.00
Penn Virginia Corp.	PVA	0.90
Petroleum Development Corp.	PETD	0.95
Quest Resource Corp	QRCP	0.85
Questar Corp.	STR	0.90
Rentech Inc.	RTK	0.75
Southwestern Energy	SWN	1.00
Universal Compression Holdings	UCO	1.15
Williams Cos.	WMB	3.00
XTO Energy	XTO	0.90
	Average	1.08
	Median	0.98

Source: *Value Line* CD Rom, January 2007.

VL Natural Gas Diversified Ind. (Large)
Beta (Value Line) - January 1, 2007

Company Name	Ticker	Beta
Devon Energy	DVN	1.05
EOG Resources	EOG	1.05
El Paso Corp.	EP	2.35
Energen Corp.	EGN	0.85
Equitable Resources	EQT	0.80
Kinder Morgan	KMI	1.00
National Fuel Gas	NFG	0.95
Newfield Exploration	NFX	1.00
ONEOK Inc.	OKE	1.00
Questar Corp.	STR	0.90
Williams Cos.	WMB	3.00
XTO Energy	XTO	0.90
	Average	1.24
	Median	1.00

Source: Value Line CD Rom, January 2007.

Interstate Nat. Gas PL Forum (Pipelines)
Beta (Value Line) - January 1, 2007

Company Name	Ticker	Beta
El Paso Corp.	EP	2.35
Kinder Morgan	KMI	1.00
National Fuel Gas	NFG	0.95
ONEOK Partners LP	OKS	0.60
Questar Corp.	STR	0.90
Southern Union	SUG	1.05
Williams Cos.	WMB	3.00
	Average	1.41
	Median	1.00

Source: Value Line CD Rom, January 2007.

Cost of Equity Indication Using Expected Risk Premium
Weighted Average Cost of Equity for S&P 500 = Market Required Cost of Equity

CAPM Calculations:

				Cost of		
S&P 500 Expected Equity Cost (Wt. Avg)	13.28	**LT Gov't.**		**Equity by**		
Current Yield on L-T Gov't. Bonds	4.91	**Bond Yield**		**CAPM**		
Expected Equity Risk Premium	8.37					
Beta	0.95					
Adjusted Risk Premium	7.95 +	4.91	=	12.86	*Ex Ante*	

Note: Forward-looking CAPM (Ex Ante) uses the weighted average expected return on the S&P 500 as the expected market return. The current US Government bond yield is deducted from the weighted average expected return to obtain the expected risk premium. The current beta is applied to the expected risk premium and the result is added to the current US Government bond yield to obtain the indicated cost of equity by the CAPM method.

   (Calculations for expected market return for S&P 500 can be found on the following pages.)

Source: *Standard & Poor's Compustat* (January 2007)

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2007						
3M CO	2.04	77.93	2.62	11.00	13.62	57,385.00
ABBOTT LABORATORIES	1.30	48.71	2.66	10.00	12.66	74,763.23
ACE LTD	1.12	60.57	1.85	12.00	13.85	19,754.91
AETNA INC	0.05	43.18	0.11	15.45	15.56	22,539.96
AFLAC INC	0.74	46.00	1.60	15.00	16.60	22,747.18
AIR PRODUCTS & CHEMICALS INC	1.50	70.28	2.13	9.94	12.06	15,246.33
ALCOA INC	0.67	30.01	2.22	11.00	13.22	26,021.67
ALLEGHENY TECHNOLOGIES INC	0.60	90.68	0.66	15.00	15.66	9,133.65
ALLERGAN INC	0.47	119.74	0.39	17.00	17.39	18,143.13
ALLSTATE CORP	1.53	65.11	2.34	9.00	11.34	40,689.97
ALLTEL CORP	0.53	60.48	0.88	6.88	7.76	22,597.26
ALTRIA GROUP INC	3.70	85.82	4.31	7.50	11.81	179,868.50
AMBAC FINANCIAL GP	0.80	89.07	0.90	11.50	12.40	9,449.79
AMEREN CORP	2.67	53.73	4.96	5.00	9.96	11,082.46
AMERICAN ELECTRIC POWER	1.62	42.58	3.81	4.00	7.81	16,843.50
AMERICAN EXPRESS CO	0.68	60.67	1.12	13.00	14.12	73,093.64
AMERICAN INTERNATIONAL GROUP	0.75	71.66	1.04	13.00	14.04	186,296.00
AMERICAN POWER CONVERSION CP	0.45	30.59	1.48	13.00	14.48	5,969.36
AMERICAN STANDARD COS INC	0.81	45.85	1.77	13.00	14.77	9,141.85
AMERIPRISE FINANCIAL INC	0.49	54.50	0.89	10.50	11.39	13,186.98
AMERISOURCEBERGEN CORP	0.23	44.96	0.50	13.50	14.00	8,636.32
ANADARKO PETROLEUM CORP	0.42	43.52	0.96	15.50	16.46	20,008.10
ANALOG DEVICES	0.77	32.87	2.34	20.00	22.34	11,241.54
ANHEUSER-BUSCH COS INC	1.29	49.20	2.61	9.00	11.61	37,825.95
AON CORP	0.65	35.34	1.83	8.00	9.83	10,943.95
APACHE CORP	0.65	66.51	0.98	8.26	9.24	21,909.26
APPLERA CORP APPLIED BIOSYS	0.19	36.69	0.51	10.00	10.51	6,721.79
APPLIED MATERIALS INC	0.23	18.45	1.25	15.00	16.25	25,696.11
ARCHER-DANIELS-MIDLAND CO	0.44	31.96	1.36	9.00	10.36	21,005.58
AT&T INC	1.44	35.75	4.04	8.50	12.54	137,383.75
AUTOMATIC DATA PROCESSING	1.03	49.25	2.09	12.00	14.09	27,117.39
AVALONBAY COMMUNITIES INC	3.34	130.05	2.57	7.00	9.57	9,702.12
AVERY DENNISON CORP	1.79	67.93	2.64	12.00	14.64	7,456.74
AVON PRODUCTS	0.78	33.04	2.35	11.00	13.35	14,687.90
BAKER HUGHES INC	0.65	74.66	0.87	24.57	25.44	23,946.30
BALL CORP	0.46	43.60	1.05	14.50	15.55	4,542.47
BANK OF AMERICA CORP	2.44	53.39	4.57	9.00	13.57	239,757.83
BANK OF NEW YORK CO INC	0.97	39.37	2.48	10.75	13.23	29,601.00
BARD (C.R.) INC	0.64	82.97	0.77	14.00	14.77	8,544.50
BAUSCH & LOMB INC	0.57	52.06	1.09	8.94	10.03	2,791.46
BAXTER INTERNATIONAL INC	0.66	46.39	1.42	13.50	14.92	30,360.26
BB&T CORP	1.84	43.93	4.19	9.50	13.69	23,763.28
BEAR STEARNS COMPANIES INC	1.24	162.78	0.76	11.00	11.76	23,715.91
BECTON DICKINSON & CO	1.10	70.15	1.56	12.00	13.56	17,214.67
BEMIS CO INC	0.85	33.98	2.51	12.00	14.51	3,562.33
BEST BUY CO INC	0.46	49.19	0.94	15.50	16.44	23,623.50
BIOMET INC	0.35	41.27	0.84	16.00	16.84	10,119.86
BJ SERVICES CO	0.24	29.32	0.82	20.00	20.82	8,595.95
BLACK & DECKER CORP	1.67	79.97	2.09	10.00	12.09	5,440.12
BLOCK H & R INC	0.61	23.04	2.64	12.50	15.14	7,425.88

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
BOEING CO	1.39	88.84	1.56	15.73	17.30	70,249.25
BRISTOL-MYERS SQUIBB CO	1.23	26.32	4.66	9.54	14.20	51,764.28
BROWN-FORMAN -CL B	1.33	66.24	2.01	10.00	12.01	8,220.30
BRUNSWICK CORP	0.66	31.90	2.07	10.00	12.07	2,928.68
BURLINGTON NORTHERN SANTA FE	1.15	73.81	1.56	15.00	16.56	26,513.07
CA INC	0.17	22.65	0.77	8.40	9.17	11,926.04
CAMPBELL SOUP CO	0.86	38.89	2.20	7.00	9.20	15,124.94
CAPITAL ONE FINANCIAL CORP	0.12	76.82	0.16	13.00	13.16	31,397.18
CARDINAL HEALTH INC	0.41	64.43	0.64	14.00	14.64	26,094.92
CAREMARK RX INC	0.47	57.11	0.83	18.00	18.83	24,355.02
CARNIVAL CORP/PLC (USA)	1.27	49.05	2.58	15.00	17.58	30,530.49
CATERPILLAR INC	1.39	61.33	2.26	15.60	17.86	39,897.25
CBS CORP	0.89	31.18	2.85	10.89	13.73	24,393.07
CENTERPOINT ENERGY INC	0.64	16.58	3.87	7.00	10.87	5,186.87
CENTEX CORP	0.18	56.27	0.31	10.00	10.31	6,678.74
CENTURYTEL INC	0.26	43.66	0.60	4.10	4.70	5,011.60
CHESAPEAKE ENERGY CORP	0.27	29.05	0.93	13.02	13.96	13,575.27
CHEVRON CORP	2.23	73.53	3.03	7.00	10.03	160,294.16
CHICAGO MERC EXCH HOLDINGS	3.05	509.75	0.60	21.14	21.73	17,745.93
CHUBB CORP	1.10	52.91	2.08	10.00	12.08	21,780.19
CIGNA CORP	0.11	131.57	0.08	11.00	11.08	13,494.87
CINCINNATI FINANCIAL CORP	1.48	45.31	3.27	10.50	13.77	7,849.87
CINTAS CORP	0.40	39.71	1.00	14.00	15.00	6,351.50
CIRCUIT CITY STORES INC	0.18	18.98	0.97	15.00	15.97	3,324.56
CIT GROUP INC	0.86	55.77	1.55	7.85	9.40	11,059.13
CITIGROUP INC	2.16	55.70	3.87	10.00	13.87	273,691.25
CITIZENS COMMUNICATIONS CO	1.05	14.37	7.29	4.73	12.02	4,625.65
CLEAR CHANNEL COMMUNICATIONS	0.83	35.54	2.35	11.31	13.65	17,552.60
CLOROX CO/DE	1.28	64.15	1.99	10.00	11.99	9,739.06
COCA-COLA CO	1.34	48.25	2.78	8.20	10.98	113,088.16
COCA-COLA ENTERPRISES INC	0.26	20.42	1.27	8.44	9.72	9,757.68
COLGATE-PALMOLIVE CO	1.41	65.24	2.16	10.10	12.26	33,554.24
COMERICA INC	2.55	58.68	4.34	8.00	12.34	9,321.61
COMMERCE BANCORP INC/NJ	0.55	35.27	1.57	15.50	17.07	6,614.43
COMPASS BANCSHARES INC	1.72	59.65	2.88	10.00	12.88	7,744.42
CONAGRA FOODS INC	0.77	27.00	2.84	6.50	9.34	13,757.58
CONOCOPHILLIPS	1.54	71.95	2.14	7.00	9.14	118,413.15
CONSOL ENERGY INC	0.33	32.13	1.04	18.97	20.00	5,867.55
CONSOLIDATED EDISON INC	2.37	48.07	4.93	3.00	7.93	12,675.98
CONSTELLATION ENERGY GRP INC	1.71	68.87	2.48	13.00	15.48	12,397.15
COOPER INDUSTRIES LTD	1.66	90.43	1.83	12.00	13.83	9,388.44
COSTCO WHOLESALE CORP	0.59	52.87	1.11	13.00	14.11	23,913.84
COUNTRYWIDE FINANCIAL CORP	0.67	42.45	1.58	12.00	13.58	26,364.63
CSX CORP	0.48	34.43	1.39	19.46	20.85	14,983.32
CUMMINS INC	1.61	118.18	1.37	12.06	13.43	6,199.72
CVS CORP	0.18	30.91	0.57	14.00	14.57	25,456.49
D R HORTON INC	0.66	26.49	2.49	10.00	12.49	8,306.12
DANAHER CORP	0.09	72.44	0.13	15.00	15.13	22,297.03
DARDEN RESTAURANTS INC	0.52	40.17	1.28	12.21	13.49	5,898.00
DEERE & CO	1.94	95.07	2.04	10.00	12.04	21,631.47

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
DEVON ENERGY CORP	0.49	67.08	0.72	8.00	8.72	29,649.43
DILLARDS INC -CL A	0.17	34.97	0.48	6.00	6.48	2,660.90
DISNEY (WALT) CO	0.35	34.27	1.04	14.44	15.48	70,886.02
DOLLAR GENERAL CORP	0.22	16.06	1.37	10.00	11.37	5,011.25
DOMINION RESOURCES INC	2.99	83.84	3.57	8.50	12.07	29,655.72
DONNELLEY ® R) & SONS CO	1.14	35.54	3.20	9.50	12.70	7,705.07
DOVER CORP	0.84	49.02	1.72	14.00	15.72	10,008.07
DOW CHEMICAL	1.62	39.90	4.06	8.00	12.06	38,112.16
DOW JONES & CO INC	1.14	38.00	3.01	14.40	17.41	3,162.39
DTE ENERGY CO	2.26	48.41	4.66	6.50	11.16	8,615.29
DU PONT (E I) DE NEMOURS	1.61	48.71	3.31	9.00	12.31	44,803.65
DUKE ENERGY CORP	1.34	33.21	4.05	5.00	9.05	41,687.68
EASTMAN CHEMICAL CO	1.88	59.31	3.18	7.00	10.18	4,880.32
EASTMAN KODAK CO	0.53	25.80	2.03	5.00	7.03	7,412.21
EATON CORP	1.72	75.14	2.28	10.00	12.28	11,195.86
ECOLAB INC	0.53	45.20	1.17	14.50	15.67	11,352.12
EDISON INTERNATIONAL	1.24	45.48	2.72	6.50	9.22	14,817.88
EL PASO CORP	0.17	15.28	1.13	8.00	9.13	10,778.36
ELECTRONIC DATA SYSTEMS CORP	0.22	27.55	0.80	10.00	10.80	14,249.52
EMBARQ CORP	2.06	52.56	3.92	3.00	6.92	7,857.19
EMERSON ELECTRIC CO	1.15	44.09	2.62	10.00	12.62	35,301.67
ENSCO INTERNATIONAL INC	0.14	50.06	0.27	37.24	37.51	7,602.11
ENTERGY CORP	2.33	92.32	2.53	8.00	10.53	19,097.41
EOG RESOURCES INC	0.26	62.45	0.42	10.00	10.42	15,204.83
EQUIFAX INC	0.18	40.60	0.44	10.50	10.94	5,080.16
EQUITY OFFICE PROPERTIES TR	1.37	48.17	2.85	4.00	6.85	16,962.44
EW SCRIPPS -CL A	0.54	49.94	1.07	11.46	12.53	6,333.04
EXELON CORP	1.75	61.89	2.83	9.50	12.33	41,525.41
EXXON MOBIL CORP	1.40	76.63	1.82	9.11	10.94	446,943.56
FAMILY DOLLAR STORES	0.47	29.33	1.60	11.73	13.34	4,447.43
FANNIE MAE	1.15	59.39	1.93	10.16	12.09	57,908.40
FEDERAL HOME LOAN MORTG CORP	2.20	67.90	3.24	10.00	13.24	47,035.48
FEDERATED DEPT STORES	0.56	38.13	1.47	10.00	11.47	20,024.62
FEDERATED INVESTORS INC	0.79	33.78	2.34	10.00	12.34	3,547.71
FEDEX CORP	0.41	108.62	0.38	14.00	14.38	33,359.16
FIDELITY NATIONAL INFO SVCS	0.23	40.09	0.56	13.00	13.56	11,445.13
FIFTH THIRD BANCORP	1.76	40.93	4.30	10.00	14.30	22,841.64
FIRST DATA CORP	0.13	25.52	0.53	12.00	12.53	19,543.14
FIRST HORIZON NATIONAL CORP	1.94	41.78	4.65	8.00	12.65	5,200.23
FIRSTENERGY CORP	1.89	60.30	3.13	5.00	8.13	19,248.12
FLUOR CORP	0.92	81.65	1.13	15.00	16.13	7,188.79
FORTUNE BRANDS INC	1.74	85.39	2.03	11.25	13.28	12,926.68
FPL GROUP INC	1.64	54.42	3.00	9.00	12.00	22,026.33
FRANKLIN RESOURCES INC	0.69	110.17	0.62	14.62	15.24	27,932.28
FREEPORT-MCMORAN COP&GOLD	3.05	55.73	5.48	11.00	16.48	10,975.63
GANNETT CO	1.35	60.46	2.24	9.00	11.24	14,166.68
GAP INC	0.36	19.50	1.84	12.00	13.84	15,807.15
GENERAL DYNAMICS CORP	1.02	74.35	1.38	11.14	12.51	30,085.28
GENERAL ELECTRIC CO	1.23	37.21	3.31	10.00	13.31	383,564.47
GENERAL MILLS INC	1.51	57.60	2.63	8.00	10.63	19,761.00

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
GENERAL MOTORS CORP	1.06	30.72	3.45	5.97	9.42	17,375.57
GENUINE PARTS CO	1.49	47.43	3.13	10.00	13.13	8,082.21
GENWORTH FINANCIAL INC	0.40	34.21	1.16	10.00	11.16	15,469.90
GOLDMAN SACHS GROUP INC	1.61	199.35	0.81	15.00	15.81	84,889.61
GOODRICH CORP	0.92	45.55	2.01	14.61	16.63	5,682.91
GRAINGER (W W) INC	1.30	69.94	1.86	12.15	14.01	6,017.43
HALLIBURTON CO	0.36	31.05	1.16	20.49	21.65	31,221.05
HARLEY-DAVIDSON INC	0.94	70.47	1.34	12.50	13.84	18,261.17
HARMAN INTERNATIONAL INDS	0.06	99.91	0.06	20.28	20.35	6,520.63
HARRAHS ENTERTAINMENT INC	1.81	82.72	2.18	12.90	15.08	15,392.62
HARTFORD FINANCIAL SERVICES	2.23	93.31	2.39	11.50	13.89	29,573.48
HASBRO INC	0.53	27.25	1.94	10.00	11.94	4,328.12
HEINZ (H J) CO	1.50	45.01	3.33	7.00	10.33	14,830.08
HERSHEY CO	1.19	49.80	2.39	10.00	12.39	8,516.95
HESS CORP	0.43	49.57	0.86	7.15	8.01	13,937.00
HEWLETT-PACKARD CO	0.36	41.19	0.87	12.25	13.12	112,070.08
HILTON HOTELS CORP	0.18	34.90	0.53	15.00	15.53	13,492.79
HOME DEPOT INC	1.01	40.16	2.51	12.00	14.51	81,961.38
HONEYWELL INTERNATIONAL INC	1.02	45.24	2.25	12.00	14.25	36,938.91
HUNTINGTON BANCSHARES	1.07	23.75	4.51	7.00	11.51	5,586.50
ILLINOIS TOOL WORKS	0.95	46.19	2.05	13.00	15.05	26,184.10
IMS HEALTH INC	0.13	27.48	0.49	12.00	12.49	5,453.13
INGERSOLL-RAND CO LTD	0.80	39.13	2.05	11.50	13.55	11,997.45
INTEL CORP	0.45	20.25	2.21	12.00	14.21	116,761.50
INTL BUSINESS MACHINES CORP	1.32	97.15	1.36	10.00	11.36	146,342.09
INTL FLAVORS & FRAGRANCES	0.92	49.16	1.88	10.00	11.88	4,409.06
INTL GAME TECHNOLOGY	0.59	46.20	1.28	13.63	14.91	15,491.88
INTL PAPER CO	1.06	34.10	3.11	6.00	9.11	15,514.44
ITT CORP	0.49	56.82	0.87	12.00	12.87	10,494.60
JABIL CIRCUIT INC	0.35	24.55	1.43	25.00	26.43	5,211.67
JANUS CAPITAL GROUP INC	0.05	21.59	0.22	17.31	17.53	4,278.92
JOHNSON & JOHNSON	1.64	66.02	2.49	9.56	12.05	191,415.42
JOHNSON CONTROLS INC	1.52	85.92	1.77	15.00	16.77	16,802.95
JONES APPAREL GROUP INC	0.61	33.43	1.83	9.00	10.83	3,685.76
JPMORGAN CHASE & CO	1.50	48.30	3.10	10.00	13.10	167,550.67
KB HOME	1.10	51.28	2.15	10.00	12.15	4,682.79
KELLOGG CO	1.27	50.06	2.53	9.00	11.53	19,940.70
KEYCORP	1.48	38.03	3.90	7.50	11.40	15,272.13
KEYSPAN CORP	1.91	41.18	4.64	2.75	7.39	7,218.15
KIMBERLY-CLARK CORP	2.10	67.95	3.09	7.25	10.34	31,141.89
KINDER MORGAN INC	3.92	105.75	3.71	12.00	15.71	14,178.33
KLA-TENCOR CORP	0.57	49.75	1.14	18.00	19.14	9,904.53
KROGER CO	0.28	23.07	1.22	8.50	9.72	16,332.71
L-3 COMMUNICATIONS HLDGS INC	0.86	81.78	1.05	14.30	15.35	10,217.18
LAUDER ESTEE COS INC -CL A	0.56	40.82	1.36	11.00	12.36	5,060.05
LEGG MASON INC	0.96	95.05	1.01	14.02	15.03	12,491.28
LEGGETT & PLATT INC	0.78	23.90	3.27	15.00	18.27	4,277.81
LEHMAN BROTHERS HOLDINGS INC	0.54	78.12	0.69	13.00	13.69	41,408.13
LENNAR CORP	0.70	52.46	1.34	10.00	11.34	8,207.08
LILLY (ELI) & CO	1.74	52.10	3.35	9.00	12.35	58,955.73

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
LIMITED BRANDS INC	0.68	28.94	2.33	12.50	14.83	11,509.70
LINCOLN NATIONAL CORP	1.70	66.40	2.56	12.00	14.56	18,418.03
LINEAR TECHNOLOGY CORP	0.72	30.32	2.37	20.00	22.37	9,064.25
LIZ CLAIBORNE INC	0.25	43.46	0.57	10.00	10.57	4,454.17
LOCKHEED MARTIN CORP	1.57	92.07	1.70	11.81	13.51	39,028.11
LOEWS CORP	0.27	41.47	0.65	8.00	8.65	22,831.02
LOWE'S COMPANIES INC	0.23	31.15	0.74	15.00	15.74	47,434.79
M & T BANK CORP	2.64	122.16	2.16	10.00	12.16	13,519.45
MANOR CARE INC	0.74	46.92	1.57	15.00	16.57	3,469.78
MARATHON OIL CORP	1.76	92.50	1.90	10.00	11.90	32,515.60
MARRIOTT INTL INC	0.29	47.72	0.60	15.00	15.60	18,868.06
MARSH & MCLENNAN COS	0.75	30.66	2.45	10.50	12.95	16,897.40
MARSHALL & ILSLEY CORP	1.19	48.11	2.47	10.00	12.47	12,590.10
MASCO CORP	0.98	29.87	3.27	11.00	14.27	11,774.75
MATTEL INC	0.71	22.66	3.14	9.50	12.64	8,642.71
MAXIM INTEGRATED PRODUCTS	0.72	30.62	2.34	15.00	17.34	9,819.53
MBIA INC	1.39	73.06	1.90	12.00	13.90	9,849.29
MCCORMICK & COMPANY INC	0.87	38.56	2.27	9.19	11.46	5,067.71
MCDONALD'S CORP	1.09	44.33	2.45	8.55	11.00	54,825.08
MCGRAW-HILL COMPANIES	0.81	68.02	1.20	12.00	13.20	24,092.68
MCKESSON CORP	0.27	50.70	0.53	13.00	13.53	15,005.63
MEADWESTVACO CORP	0.99	30.06	3.31	8.00	11.31	5,446.48
MEDTRONIC INC	0.50	53.51	0.94	14.00	14.94	61,672.90
MELLON FINANCIAL CORP	0.97	42.15	2.31	10.50	12.81	17,504.26
MERCK & CO	1.61	43.60	3.69	5.90	9.59	94,655.73
MEREDITH CORP	0.72	56.35	1.27	12.00	13.27	2,729.00
MERRILL LYNCH & CO INC	1.12	93.10	1.20	12.00	13.20	82,049.68
METLIFE INC	0.65	59.01	1.10	10.50	11.60	44,861.41
MGIC INVESTMENT CORP/WI	1.10	62.54	1.76	9.94	11.70	5,191.88
MICROSOFT CORP	0.45	29.86	1.50	12.00	13.50	293,537.53
MOLEX INC	0.35	31.63	1.09	15.00	16.09	5,488.50
MOLSON COORS BREWING CO	1.42	76.44	1.85	10.57	12.42	5,091.16
MONSANTO CO	0.47	52.53	0.90	18.00	18.90	28,529.25
MOODY'S CORP	0.32	69.06	0.47	15.00	15.47	19,322.99
MORGAN STANLEY	1.22	81.43	1.50	13.00	14.50	85,428.74
MOTOROLA INC	0.22	20.56	1.07	10.00	11.07	49,703.08
MURPHY OIL CORP	0.66	50.85	1.30	10.00	11.30	9,511.85
MYLAN LABORATORIES INC	0.28	19.96	1.38	15.00	16.38	4,231.34
NATIONAL CITY CORP	1.68	36.56	4.61	8.00	12.61	23,092.21
NATIONAL SEMICONDUCTOR CORP	0.18	22.70	0.81	15.00	15.81	7,359.98
NEW YORK TIMES CO -CL A	0.76	24.36	3.13	8.77	11.89	3,502.63
NEWELL RUBBERMAID INC	0.92	28.95	3.18	9.50	12.68	8,024.94
NEWS CORP	0.14	21.48	0.66	17.60	18.26	68,713.09
NICOR INC	1.92	46.80	4.10	3.10	7.20	2,092.43
NIKE INC -CL B	1.69	99.03	1.70	14.00	15.70	18,498.80
NISOURCE INC	0.95	24.10	3.95	3.50	7.45	6,579.40
NOBLE CORP	0.24	76.15	0.32	50.00	50.32	10,324.26
NORDSTROM INC	0.48	49.34	0.98	14.65	15.62	12,682.35
NORFOLK SOUTHERN CORP	0.83	50.29	1.66	15.95	17.61	19,959.70
NORTHERN TRUST CORP	1.12	60.69	1.85	12.00	13.85	13,229.81

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
NORTHROP GRUMMAN CORP	1.33	67.70	1.96	10.50	12.46	23,384.46
NUCOR CORP	2.28	54.66	4.16	5.84	10.00	16,513.66
OCCIDENTAL PETROLEUM CORP	0.96	48.83	1.96	8.60	10.56	41,070.08
OFFICEMAX INC	0.70	49.65	1.40	16.00	17.40	3,697.73
OMNICOM GROUP	1.12	104.54	1.07	12.00	13.07	17,865.89
PACCAR INC	0.89	64.90	1.38	11.80	13.18	16,115.51
PALL CORP	0.49	34.55	1.43	12.00	13.43	4,229.33
PARKER-HANNIFIN CORP	1.16	76.88	1.52	12.00	13.52	9,205.46
PAYCHEX INC	0.97	39.54	2.44	15.00	17.44	15,068.93
PEABODY ENERGY CORP	0.31	40.41	0.76	28.01	28.78	10,660.72
PENNEY (J C) CO	0.84	77.36	1.08	16.00	17.08	17,404.53
PEPSI BOTTLING GROUP INC	0.48	30.91	1.56	9.87	11.43	7,295.10
PEPSICO INC	1.33	62.55	2.13	11.00	13.13	102,712.16
PERKINELMER INC	0.32	22.23	1.44	14.00	15.44	2,733.60
PFIZER INC	1.00	25.90	3.87	4.41	8.28	186,750.53
PG&E CORP	1.42	47.33	3.01	7.75	10.76	16,509.18
PHELPS DODGE CORP	0.86	119.72	0.72	7.93	8.66	24,424.44
PINNACLE WEST CAPITAL CORP	2.21	50.69	4.36	5.30	9.66	5,061.29
PITNEY BOWES INC	1.38	46.19	2.99	8.00	10.99	10,248.64
PLUM CREEK TIMBER CO INC	1.68	39.85	4.22	5.00	9.22	7,054.84
PNC FINANCIAL SVCS GROUP INC	2.42	74.04	3.27	10.00	13.27	21,753.84
PPG INDUSTRIES INC	2.08	64.21	3.24	8.50	11.74	10,611.47
PPL CORP	1.22	35.84	3.39	10.50	13.89	13,675.33
PRAXAIR INC	1.12	59.33	1.89	11.89	13.78	19,157.60
PRICE (T. ROWE) GROUP	0.76	43.77	1.74	12.00	13.74	11,539.39
PRINCIPAL FINANCIAL GRP INC	0.90	58.70	1.53	12.00	13.53	15,835.03
PROCTER & GAMBLE CO	1.38	64.27	2.15	11.22	13.36	203,655.81
PROGRESS ENERGY INC	2.52	49.08	5.13	4.00	9.13	12,476.09
PROGRESSIVE CORP-OHIO	0.04	24.22	0.16	8.60	8.75	18,220.71
PRUDENTIAL FINANCIAL INC	1.08	85.86	1.26	13.69	14.95	40,955.22
PUBLIC SERVICE ENTRP GRP INC	2.39	66.38	3.61	5.00	8.61	16,741.23
PULTE HOMES INC	0.18	33.12	0.53	10.00	10.53	8,431.79
QUALCOMM INC	0.58	37.79	1.52	20.00	21.52	62,449.98
QUEST DIAGNOSTICS INC	0.46	53.00	0.86	14.00	14.86	10,338.07
QUESTAR CORP	1.02	83.05	1.23	9.00	10.23	7,131.17
RADIOSHACK CORP	0.28	16.78	1.64	10.00	11.64	2,279.11
RAYTHEON CO	1.14	52.80	2.16	18.80	20.96	23,476.46
REGIONS FINANCIAL CORP	1.56	37.40	4.16	8.00	12.16	27,300.17
REYNOLDS AMERICAN INC	3.18	65.47	4.86	6.00	10.86	19,352.93
ROBERT HALF INTL INC	0.38	37.12	1.03	20.00	21.03	6,220.50
ROCKWELL AUTOMATION	1.30	61.08	2.13	12.00	14.13	10,211.29
ROCKWELL COLLINS INC	0.73	63.29	1.15	13.80	14.95	10,632.72
ROHM AND HAAS CO	1.45	51.12	2.84	10.00	12.84	11,166.04
ROWAN COS INC	0.53	33.20	1.60	33.00	34.60	3,666.48
RYDER SYSTEM INC	0.80	51.06	1.57	11.55	13.12	3,100.77
SABRE HOLDINGS CORP -CL A	0.57	31.89	1.79	10.00	11.79	4,238.31
SAFECO CORP	1.32	62.55	2.11	10.00	12.11	7,221.65
SAFEWAY INC	0.26	34.56	0.74	11.16	11.90	15,320.45
SARA LEE CORP	0.43	17.03	2.53	7.65	10.18	12,718.51
SCHERING-PLOUGH	0.26	23.64	1.12	20.00	21.12	35,047.98

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2007						
SCHLUMBERGER LTD	0.63	63.16	0.99	25.00	25.99	74,416.06
SCHWAB (CHARLES) CORP	0.24	19.34	1.22	18.24	19.46	24,422.24
SEALED AIR CORP	0.67	64.92	1.03	11.50	12.53	5,233.85
SEMPRA ENERGY	1.25	56.04	2.23	4.13	6.36	14,692.17
SHERWIN-WILLIAMS CO	1.11	63.58	1.75	11.50	13.25	8,572.05
SIGMA-ALDRICH CORP	0.92	38.86	2.38	10.00	12.38	5,124.86
SIMON PROPERTY GROUP INC	3.25	101.29	3.21	7.00	10.21	22,413.25
SLM CORP	1.15	48.77	2.36	15.16	17.52	19,935.22
SMITH INTERNATIONAL INC	0.37	41.07	0.91	16.85	17.76	8,791.49
SNAP-ON INC	1.21	47.64	2.54	12.00	14.54	2,781.08
SOUTHERN CO	1.63	36.86	4.42	5.00	9.42	27,377.40
SOUTHWEST AIRLINES	0.02	15.32	0.13	14.00	14.13	12,130.88
SOVEREIGN BANCORP INC	0.35	25.39	1.36	8.00	9.36	12,007.21
SPRINT NEXTEL CORP	0.11	18.89	0.58	9.81	10.40	52,466.56
ST PAUL TRAVELERS COS INC	1.14	53.69	2.13	10.00	12.13	37,047.07
STANLEY WORKS	1.34	50.29	2.66	11.50	14.16	4,088.78
STAPLES INC	0.25	26.70	0.95	15.00	15.95	19,294.27
STARWOOD HOTELS&RESORTS WRLD	0.97	62.50	1.55	15.00	16.55	13,250.13
STATE STREET CORP	0.94	67.44	1.40	12.00	13.40	22,395.14
STRYKER CORP	0.26	55.11	0.48	20.00	20.48	22,438.97
SUNTRUST BANKS INC	2.66	84.45	3.15	9.00	12.15	29,907.21
SUPERVALU INC	0.72	35.75	2.02	9.50	11.52	7,360.14
SYNOVUS FINANCIAL CORP	0.88	30.83	2.85	12.50	15.35	10,019.20
SYSCO CORP	0.77	36.76	2.09	13.00	15.09	22,722.35
TARGET CORP	0.55	57.05	0.97	15.00	15.97	48,999.50
TECO ENERGY INC	0.78	17.23	4.54	3.00	7.54	3,604.52
TEKTRONIX INC	0.27	29.17	0.92	12.25	13.17	2,402.73
TEMPLE-INLAND INC	1.06	46.03	2.30	6.00	8.30	4,924.47
TEXAS INSTRUMENTS INC	0.19	28.80	0.66	18.00	18.66	42,735.86
TEXTRON INC	1.74	93.77	1.86	12.50	14.36	11,762.98
TIFFANY & CO	0.45	39.24	1.14	12.00	13.14	5,311.02
TIME WARNER INC	0.25	21.78	1.14	12.94	14.08	86,522.64
TJX COMPANIES INC	0.32	28.52	1.11	13.00	14.11	12,979.42
TORCHMARK CORP	0.57	63.76	0.90	9.75	10.65	6,253.26
TRIBUNE CO	0.78	30.78	2.55	8.99	11.54	7,352.51
TXU CORP	1.95	54.21	3.59	12.50	16.09	24,895.46
TYCO INTERNATIONAL LTD	0.45	30.40	1.49	13.00	14.49	60,461.13
TYSON FOODS INC -CL A	0.17	16.45	1.06	8.50	9.56	4,505.84
U S BANCORP	1.76	36.19	4.86	10.00	14.86	63,616.95
UNION PACIFIC CORP	1.36	92.02	1.48	13.50	14.98	24,819.63
UNITED PARCEL SERVICE INC	1.71	74.98	2.28	12.25	14.53	49,921.31
UNITED STATES STEEL CORP	0.85	73.14	1.16	6.00	7.16	8,665.19
UNITED TECHNOLOGIES CORP	1.17	62.52	1.88	10.70	12.58	62,748.26
UNITEDHEALTH GROUP INC	0.04	53.73	0.07	17.00	17.07	72,374.09
UNUMPROVIDENT CORP	0.33	20.78	1.59	9.99	11.58	7,118.02
UST INC	2.44	58.20	4.19	7.00	11.19	9,364.15
VALERO ENERGY CORP	0.33	51.16	0.64	3.10	3.74	30,932.26
VERIZON COMMUNICATIONS INC	1.67	37.24	4.48	3.00	7.48	108,722.74
VF CORP	2.42	82.08	2.95	10.00	12.95	9,173.67

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
VULCAN MATERIALS CO	1.61	89.87	1.80	9.00	10.80	8,485.88
WACHOVIA CORP	2.44	56.95	4.29	9.00	13.29	114,542.28
WAL-MART STORES	0.76	46.18	1.64	13.00	14.64	192,479.39
WALGREEN CO	0.36	45.89	0.78	15.05	15.83	46,018.54
WASHINGTON MUTUAL INC	2.33	45.49	5.13	10.00	15.13	42,725.16
WASTE MANAGEMENT INC	0.97	36.77	2.63	10.00	12.63	19,672.43
WELLS FARGO & CO	1.24	35.56	3.47	10.30	13.77	120,049.31
WENDY'S INTERNATIONAL INC	0.38	33.09	1.15	12.00	13.15	3,905.08
WESTERN UNION CO	0.01	22.42	0.05	13.00	13.05	17,183.94
WEYERHAEUSER CO	2.57	70.65	3.63	7.00	10.63	16,710.99
WHIRLPOOL CORP	1.98	83.02	2.38	15.00	17.38	6,507.19
WHOLE FOODS MARKET INC	0.72	46.93	1.53	19.50	21.03	6,707.80
WILLIAMS COS INC	0.41	26.12	1.58	15.00	16.58	15,576.35
WINDSTREAM CORP	1.02	14.22	7.16	1.88	9.04	6,779.78
WRIGLEY (WM) JR CO	1.13	51.72	2.19	10.50	12.69	14,381.81
WYETH	1.12	50.92	2.21	8.00	10.21	68,573.91
XCEL ENERGY INC	0.94	23.06	4.09	6.00	10.09	9,382.70
XILINX INC	0.41	23.81	1.74	15.00	16.74	8,005.76
XL CAPITAL LTD	1.70	72.02	2.36	11.73	14.09	13,004.87
XTO ENERGY INC	0.41	47.05	0.88	15.23	16.11	17,216.82
YUM BRANDS INC	0.67	58.80	1.14	12.00	13.14	15,586.47
ZIONS BANCORPORATION	1.72	82.44	2.08	10.00	12.08	8,817.29

Market Weighted Average = **13.28**

Flotation Cost Adjustment

Flotation costs are the costs associated with issuing debt and equity. They are made up of several types of costs including underwriter's fees, legal expenses, cost of preparing the prospectus, etc. Flotation costs can be accounted for either by amortizing the cost (reducing the cash flow to discount), or by including them in the cost of capital. Many studies have been made regarding the amount of flotation costs for debt and equity capital.

> In general, the adjustment for flotation costs is a refinement of the basic unadjusted cost. In other words, usually the adjusted and unadjusted costs will not be very different. However, this doesn't imply that you shouldn't make the adjustment. The information needed to make the adjustment is readily available, and the adjustment itself doesn't require much effort or computer processing time. To paraphrase the film maker, Spike Lee, you should do the right thing *(especially if the right thing is relatively easy to do)*.[33]

> Flotation costs occur when new issues of stock or debt are sold to the public. The firm usually incurs several kinds of flotation or transaction costs, which reduces the actual proceeds received by the firm. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the firm's required returns on these proceeds equate to a higher return to compensated for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the cash flow to discount, or by incorporating the cost into the cost of capital. Because flotation costs are not typically applied to operating cash flow, one must incorporate them into the cost of capital.[34]

An adjustment for flotation cost must be made even if the issuing company has no plans to ever issue any additional securities. The following illustration is quoted by Roger A. Morin, PhD, *Regulatory Finance: Utilities' Cost of Capital*, (Arlington, VA: Public Utilities Reports, Inc., 1994), p. 170.] and fully addresses this issue.

> Brigham, Aberwald, and Gapenski (1985) performed an excellent analysis regarding the need for a flotation cost adjustment. The following illustration adapted from Brigham, Aberwald, and Gapenski (1985) shows that: (1) even if no further stock issues are contemplated, the flotation adjustment is still permanently required to keep shareholders whole, and (2) flotation costs are only recovered if the rate of return is applied to total equity, including retained

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[33] Ehrhardt, Michael C., *The Search for Value: Measuring the Company's Cost of Capital*, (Harvard Business School Press: Boston, MA, 1994), p. 134.

[34] Pratt, Shannon P., *Cost of Capital, Estimation and Applications*, (NY: John Wiley & Sons, Inc. 1998) p. 176.

earnings, in all future years, even if no future financing is contemplated....It is noteworthy that the adjustment is always required each and every year, whether or not new stock issues are sold in the future, and that the allowed return on equity must be earned on total equity, including retained earnings, for investors to earn the cost of equity.[35]

Companies generally hire an investment banker to assist them when they issue common stock, preferred stock, or bonds. In return for a fee, the investment banker helps the company with the terms, price, and sale of the issue. The banker's fees are often referred to as **flotation costs**. The total cost of capital should include not only the required return paid to investors but also the flotation fees paid to the investment banker for marketing the issue.[36] [This identical quote is also found in *Fundamentals of Financial Management*, 9th ed. (Dryden Press) by Eugene F. Brigham and Joel F. Houston, Chapter 10.]

Additionally, Dr. Roger Ibbotson refers to flotation cost in his book, Stocks, Bonds, Bills and Inflation, when he discusses the cost of capital. He states the following:

Although the cost of capital estimation techniques set forth later in this book are applicable to rate setting, certain adjustments may be necessary. One such adjustment is for flotation costs (amounts that must be paid to underwriters by the issuer to attract and retain capital).[37]

All of these studies reach the conclusion that a flotation cost adjustment must be made when estimating the cost of capital. Alternatively, some finance textbooks suggest that it is better to adjust the net present value of the assets downward.

Issue costs. If accepting the project forces the firm to issue securities, then the present value of issue costs should be subtracted from base-case NPV.[38]

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[35] Roger A. Morin, PhD, *Regulatory Finance: Utilities' Cost of Capital*, (Arlington, VA: Public Utilities Reports, Inc., 1994), p. 170-171. (emphasis added)

[36] Brigham, Eugene F. and Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 10th ed. (Thomson Learning, Inc.: Stamford, CT, 2002), p. 452.

[37] *Stocks, Bonds, Bills and Inflation: 2005 Yearbook, Valuation Edition* (Chicago: Ibbotson & Associates, Inc., 2005), p. 35

[38] Brealey, Richard & Stewart C. Myers, *Principles of Corporate Finance*, 7th ed. (New York: McGraw-Hill, 2002), p. 552.

In either case (whether the cost of capital is adjusted upward or the net present value of the assets is adjusted downward) the end result is exactly the same – the market value of the assets subject to appraisal is lower as a result of flotation costs.

Even if one accounted for flotation costs as a negative cash flow [as Brealey, Myers and Marcus suggest – see *Fundamentals of Corporate Finance* (2004) 4th ed. Pg. 335-336] rather than an adjustment to the WACC, we should get exactly the same correct valuation. The following will illustrate that it makes no difference mathematically whether we (1) account for flotation costs in the WACC or (2) account for flotation costs as a negative cash flow. Please note the example that follows where we compare the appraisal by either adjusting the WACC for flotation costs or simply deducting the flotation costs from the expected cash flow to get the net cash flow. In both cases $950 is available to purchase assets because $50 was the flotation cost from issuing $1,000 worth of securities. Note that market value in both cases is exactly the same — $950. Clearly it makes no difference whether one adjusts the WACC or does all the necessary math to find the net present value after treating flotation costs as a negative cash flow at the beginning of the first year.

Flotation Cost Measurement

WACC Adjustment Method	
Securities Issued	$1,000
Cost of Capital	10%
Required Return	$100
Flotation Cost =	5.00%
Flotation Cost =	50
Assets Purchased	**950**
Cost of Capital	10.00%
1 - FC =	0.95
Adj'd. Cost of Cap.	10.5263%

Market Value:

Required Return	100
--------- =	$950
Adj'd Cost of Cap.	10.5263%

Cash Flow Adjustment Method

Securities Issued		$1,000	
Flotation Cost =		$50	
Assets Purchased		$950	

Disc. Rate = Unadjusted WACC = 10.00%

First Year's Cash Flow:

		Pres. Value Factor	NCF
Beg. of Year	($50)	1.10	($55)
	First Year's Income =		100
	First Year's Net Cash Flow =		45

End of Year	NCF	Pres. Value Factor (divisor)	Pres. Value
1	45	1.10	40.91
2	100	1.21	82.64
3	100	1.33	75.13
4	100	1.46	68.30
5	100	1.61	62.09
6	100	1.77	56.45
7	100	1.95	51.32
8	100	2.14	46.65
9	100	2.36	42.41
10	100	2.59	38.55
skip to			
339	100	107,676,335,910,201.00	0.00
340	100	118,443,969,501,221.00	0.00
341	100	130,288,366,451,343.00	0.00
342	100	143,317,203,096,477.00	0.00
343	100	157,648,923,406,125.00	0.00
344	100	173,413,815,746,737.00	0.00
345	100	190,755,197,321,411.00	0.00
346	100	209,830,717,053,552.00	0.00
347	100	230,813,788,758,908.00	0.00
348	100	253,895,167,634,798.00	0.00
349	100	279,284,684,398,278.00	0.00
350	100	307,213,152,838,106.00	0.00
			$950.00

As one can see from the above mathematical example the same $950 value results in either case. Actually, it is wrong to presuppose that one knows how much flotation cost to deduct in a valuation problem because in order to know exactly how much flotation cost will be, one has

to already know what the value is so he will know how much debt and equity securities will have to be issued. Thus, the appraiser must be biased or clairvoyant or both. **In solving a valuation problem, the WACC adjustment method is best**. If one already knew how much debt and equity securities would have to be issued, one would have to already know the purchase price and thus the valuation. It's a 'Catch 22.' If one already knew the value, why do an appraisal at all?

The flotation costs associated with debt for large issues conservatively are approximately 1%. For relatively large issues of equity, the flotation costs range from a low of 2% to as much as 6%.

From information derived from *Public Utility Finance Tracker* we determined the average flotation cost associated with the issuance of long-term debt and common stock of natural gas and natural gas transmission companies. We found the average issuance cost of long-term debt to be 1.01% and the average issuance cost of common equity to be 4.28%.   We selected 1.00% and 4.25% to be representative of the typical flotation cost associated with the issuance of long-term debt and common stock securities respectively.

On the following pages are the schedules detailing the long-term debt and common stock flotation costs.

Debt Issuance Cost
Natural Gas/Transmission Utilities (1997 - 2006)

Company	Type of Utility	Issue Date	Amount Offered ($000)	Price to Public ($/100)	Net Proceeds	Issue Cost
Michigan Con Gas Company	Gas	14-May-97	15,000	100.000	96.8683	3.23%
Michigan Con Gas Company	Gas	15-May-97	30,000	100.000	99.2467	0.76%
Michigan Con Gas Company	Gas	15-May-97	40,000	100.000	99.3605	0.64%
Seagull Energy Corp.	Gas	25-Sep-97	150,000	99.544	98.5437	1.02%
SONAT Inc.	Gas	25-Sep-97	100,000	99.748	99.0970	0.66%
Southern Natural Gas Co.	Gas	25-Sep-97	100,000	99.891	99.2393	0.66%
Laclede Gas	Gas	16-Oct-97	25,000	98.682	98.3519	0.34%
Kn Energy Inc.	Gas	22-Oct-97	150,000	100.000	99.3740	0.63%
Northern Illinois Gas Co.	Gas	23-Oct-97	50,000	99.500	98.9960	0.51%
Enron Oil & Gas Co.	Gas	25-Nov-97	100,000	99.709	99.0580	0.66%
Consolidated Natural Gas	Gas	09-Dec-97	300,000	99.190	98.3143	0.89%
SONAT	Gas	27-Jan-98	100,000	99.531	98.8790	0.66%
SONAT	Gas	29-Jan-98	100,000	99.787	98.9115	0.89%
KN Energy, Inc.	Gas	04-Mar-98	500,000	99.784	98.9081	0.89%
KN Energy, Inc.	Gas	04-Mar-98	150,000	99.496	98.3701	1.14%
Coastal Corp.	Gas	02-Jun-98	200,000	99.882	99.2314	0.66%
Coastal Corp.	Gas	02-Jun-98	200,000	99.661	98.7854	0.89%
Wisconsin Gas Co.	Gas	19-Jan-99	50,000	99.252	98.6020	0.66%
No. Illinois Gas Co.	Gas	02-Feb-99	50,000	100.000	99.3500	0.65%
Providence Gas Co.	Gas	04-Feb-99	15,000	100.000	96.8500	3.25%
Cascade Natural Gas Corp.	Gas	15-Mar-99	15,000	100.000	99.2500	0.76%
Laclede Gas Co.	Gas	28-May-99	25,000	100.000	99.5020	0.50%
Mich. Consolidated Gas Co.	Gas	04-Jun-99	55,000	100.000	96.8500	3.25%
Williams Co.	Gas	21-Jul-99	700,000	99.075	98.2000	0.89%
Williams Co.	Gas	30-Sep-99	1,500,000	99.249	96.7490	2.58%
Indiana Gas Co.	Gas	04-Oct-99	30,000	100.000	99.3750	0.63%
Northwest Natural Gas	Gas	09-Dec-99	20,000	100.000	99.2500	0.76%
SEMCO Energy	Gas	12-Apr-00	30,000	100.000	97.2500	2.83%
New Jersey Gas Co.	Gas	29-Jun-00	10,000	100.000	99.2500	0.76%
New Jersey Gas Co.	Gas	05-Jul-00	10,000	100.000	96.8500	3.25%
New Jersey Gas Co.	Gas	01-Jul-00	15,000	100.000	97.6000	2.46%
Northwest Natural Gas	Gas	29-Aug-00	20,000	100.000	99.2500	0.76%
Northwest Natural Gas	Gas	06-Sep-00	20,000	100.000	99.2500	0.76%
Northwest Natural Gas	Gas	06-Sep-00	10,000	100.000	99.2500	0.76%
Northwest Natural Gas	Gas	27-Nov-00	25,000	100.000	99.3750	0.63%
AGL Capital Corp	Gas	23-Feb-01	300,000	99.578	98.9280	0.66%
Oneok, Inc	Gas	03-Apr-01	400,000	99.912	99.2620	0.65%
Atmos Energy Corp	Gas	15-May-01	350,000	99.940	99.2900	0.65%
Semco Energy	Gas	18-Jun-01	60,000	100.000	97.5000	2.56%
Questar Gas Co.	Gas	03-Oct-01	60,000	100.000	99.3750	0.63%
Northwest Natural Gas	Gas	26-Mar-02	40,000	100.000	99.375	0.63%
Northwest Natural Gas	Gas	24-Sep-02	30,000	100.000	99.250	0.76%
UGI Utilities Inc.	Gas	25-Sep-02	20,000	100.000	99.375	0.63%
California Gas Co.	Gas	02-Oct-02	250,000	99.897	99.247	0.65%
AGL Capital Corp.	Gas	07-Jan-03	225,000	99.927	99.277	0.65%
Atmos Energy Corp	Gas	13-Jan-03	250,000	99.915	99.250	0.67%
Sepra Energy	Gas	01-Feb-03	400,000	99.658	99.008	0.66%

Debt Issuance Cost (cont.)
Natural Gas/Transmission Utilities (1997 - 2006)

Company	Type of Utility	Issue Date	Amount Offered ($000)	Price to Public ($/100)	Net Proceeds	Issue Cost
Michigan Consolidated Gas	Gas	12-Feb-03	200,000	99.637	98.762	0.89%
Northwest Natural Gas	Gas	25-Feb-03	10,000	100.000	99.250	0.76%
Nisource Finance Corp	Gas	01-Mar-03	345,000	100.000	99.354	0.65%
Keyspan Corporation	Gas	01-Apr-03	150,000	99.763	98.888	0.88%
AGL Capital Corp.	Gas	15-Apr-03	225,000	99.927	99.277	0.65%
The Cincinnati G&E Co.	Gas	12-Jun-03	200,000	99.764	98.889	0.88%
The Cincinnati G&E Co.	Gas	12-Jun-03	200,000	99.396	98.521	0.89%
Baltimore G&E Co.	Gas	17-Jun-03	200,000	99.295	98.420	0.89%
Nisource Finance Corp	Gas	16-Jul-03	500,000	99.862	99.212	0.66%
Vectren Coproation	Gas	24-Jul-03	100,000	99.746	99.096	0.66%
Vectren Coproation	Gas	24-Jul-03	100,000	99.177	98.477	0.71%
UGI Utilities	Gas	14-Aug-03	20,000	100.000	99.250	0.76%
UGI Utilities	Gas	14-Aug-03	25,000	100.000	99.370	0.63%
Energy East Corporation	Gas	08-Sep-03	200,000	99.830	98.950	0.89%
Madison Gas & Electric Co	Gas	09-Sep-03	20,000	100.000	99.250	0.76%
Energen Corporation	Gas	30-Oct-03	50,000	99.557	98.907	0.66%
Northwest Natural Gas	Gas	21-Nov-03	40,000	100.000	99.250	0.76%
Piedmont Natural Gas Co Inc	Gas	16-Dec-03	100,000	99.859	98.984	0.88%
Piedmont Natural Gas Co Inc	Gas	16-Dec-03	100,000	100.000	99.350	0.65%
AGL Resources	Gas	14-Dec-04	200,000	99.870	99.220	0.66%
Aquila	Gas	18-Aug-04	300,000	25.000	25.000	0.00%
Atmos Energy	Gas	18-Oct-04	500,000	99.993	99.343	0.65%
Atmos Energy	Gas	18-Oct-04	200,000	99.392	98.517	0.89%
Laclede Gas Co.	Gas	21-Apr-04	50,000	99.585	98.835	0.76%
Laclede Gas Co.	Gas	21-Apr-04	100,000	99.434	98.559	0.89%
Michigan Consolidated Gas	Gas	27-Sep-04	120,000	99.594	98.844	0.76%
Consolidated Natural Gas Co	Gas	15-Nov-04	400,000	99.686	99.036	0.66%
Alabama Gas Corp	Gas	11-Jan-05	40,000	100.000	96.860	3.24%
Alabama Gas Corp	Gas	11-Jan-05	40,000	100.000	99.350	0.65%
Alabama Gas Corp	Gas	14-Nov-05	80,000	100.000	99.400	0.60%
Cascade Natural Gas	Gas	20-Jan-05	30,000	100.000	96.850	3.25%
Cascade Natural Gas	Gas	29-Aug-05	15,000	100.000	99.300	0.70%
Northwest Natural Gas Co.	Gas	02-Jun-05	40,000	100.000	99.375	0.63%
Northwest Natural Gas Co.	Gas	21-Jun-05	10,000	100.000	99.250	0.76%
Vectren Utility Holdings, Inc	Gas	16-Nov-05	75,000	99.799	99.149	0.66%
Vectren Utility Holdings, Inc	Gas	16-Nov-05	75,000	99.779	98.904	0.88%
Laclede Gas Co.	Gas	06-Jun-06	55,000	99.852	98.977	0.88%
Piedmont Natural Gas Co.	Gas	15-Jun-06	200,000	100.000	96.850	3.15%
AGI Capital Resources	Gas	27-Jun-06	175,000	99.856	99.206	0.65%
Southern Union Co.	Gas	18-Oct-06	600,000	99.644	98.344	1.30%
Northwest Natural Gas Co.	Gas	15-Dec-06	25,000	100.000	99.375	0.63%
					Average	1.01%
					Selected	1.00%

Source: *Public Utility Finance Tracker*, February 1999 - 2007.

Common Stock Issuance Cost
Natural Gas/Transmission Utilities (1990 - 2006)

Company	Type of Company	Issue Date	Number of Shares (000)	Price to Public	Net Proceeds	Issue Cost
Consolidated Natural Gas	Gas	08-Jan-90	3,500	45.50	44.24	2.85%
Washington Energy	Gas	17-Jan-90	1,750	20.13	19.26	4.52%
Colonial Gas	Gas	15-May-90	600	21.50	20.27	6.07%
Atlanta Gas Light	Gas	05-Dec-90	1,000	31.38	30.00	4.60%
Washington Energy	Gas	04-Feb-91	2,650	19.00	18.21	4.34%
Piedmont Natural Gas	Gas	03-Apr-91	1,250	28.50	27.36	4.17%
Panhandle Eastern	Gas	18-Jul-91	13,800	10.75	10.27	4.67%
Bay State Gas Co.	Gas	13-Mar-92	1,550	23.25	22.28	4.35%
El Paso Natural Gas Co.	Gas	12-May-92	5,000	19.00	17.77	6.92%
New Jersey Resources	Gas	15-Sep-92	1,500	22.25	21.27	4.61%
Washington Energy Co.	Gas	29-Sep-92	2,750	21.00	20.19	4.01%
Equitable Resources	Gas	22-Sep-93	2,400	38.50	37.25	3.36%
Brooklyn Union Gas	Gas	29-Sep-93	1,700	25.75	24.77	3.96%
S.E. Michigan Gas Entp.	Gas	19-Jan-94	650	20.50	19.62	4.49%
Connecticut Energy Corp.	Gas	03-Mar-94	900	20.13	19.22	4.71%
Mobile Gas Service Corp.	Gas	14-Sep-94	400	22.00	20.30	8.37%
Northwest Natural Gas	Gas	15-Feb-95	1,000	29.75	28.59	4.06%
MCN Corp.	Gas	14-Mar-95	5,000	17.88	17.21	3.86%
Piedmont Natural Gas	Gas	20-Mar-95	1,500	20.00	19.14	4.49%
Laclede Gas	Gas	15-May-95	1,550	19.00	18.12	4.86%
United Cities	Gas	08-Jun-95	1,200	14.50	13.88	4.47%
Atlanta Gas Light	Gas	12-Jun-95	1,300	33.63	32.51	3.43%
WICOR, INC.	Gas	05-Dec-95	1,100	31.88	30.63	4.06%
Connecticut Natural Gas	Gas	05-Jun-96	640	23.25	22.19	4.78%
Delta Natural Gas	Gas	15-Jul-96	350	16.00	15.07	6.17%
Tejas Gas	Gas	22-Jul-96	3,075	35.00	33.42	4.73%
KN Energy	Gas	31-Jul-96	3,100	32.25	31.01	4.00%
Cascade Natural Gas	Gas	13-Aug-96	1,350	15.25	14.45	5.54%
Energen	Gas	17-Jan-97	1,500	29.50	28.39	3.91%
KCS Energy	Gas	29-Jan-97	3,000	39.00	36.91	5.66%
Energen	Gas	18-Sep-97	1,200	35.50	34.16	3.92%
COHO Energy, Inc.	Gas	29-Sep-97	8,585	10.50	9.87	6.38%
Fall River Gas Co.	Gas	30-Oct-97	340	13.25	12.06	9.87%
Connecticut Energy Corp.	Gas	12-Nov-97	900	24.25	23.17	4.66%
Roanoke Gas Co.	Gas	22-Feb-98	166	20.00	18.67	7.12%
KN Energy	Gas	04-Mar-98	11,000	52.00	49.90	4.21%
Enron Corp.	Gas	05-May-98	15,000	50.00	48.47	3.16%
Laclede Gas Co.	Gas	05-May-99	1,100	50.00	49.34	1.35%
SEMCO	Gas	12-Jun-00	9,000	10.00	9.60	4.17%
WGL Holdings Co.	Gas	26-Jun-01	1,790	26.73	25.80	3.47%
Utilicorp	Gas	25-Jan-02	11,000	23.00	22.28	3.25%
Calpine Corporation	Gas	24-Apr-02	66,000	11.50	11.13	3.30%
MDU Resources Group	Gas	19-Nov-02	2,100	24.00	23.30	3.00%
MDU Resources Group	Gas	29-Nov-02	2,100	24.00	23.16	3.63%
Agl Resources, Inc	Gas	11-Feb-03	5,600	22.00	21.21	3.70%
Atmos Energy Corp.	Gas	18-Jun-03	4,000	25.31	24.25	4.38%
Sempra Energy	Gas	23-Oct-03	15,000	28.00	27.15	3.12%
Southern Union Co.	Gas	10-Jun-03	3,000	16.15	16.15	0.00%

Common Stock Issuance Cost (cont.)
Natural Gas/Transmission Utilities (1990 - 2006)

Company	Type of Company	Issue Date	Number of Shares (000)	Price to Proceed	Net Proceeds	Issue Cost
Southern Union Co.	Gas	05-Jun-03	9,500	16.00	15.38	4.06%
Southern Union Co.	Gas	15-Jun-03	2,500	50.00	48.17	3.80%
Vectren Corporation	Gas	07-Aug-03	6,500	22.81	22.00	3.70%
AGL Resources	Gas	19-Nov-04	9,600	31.010	30.038	3.23%
Ameren	Gas	30-Jun-04	10,000	42.000	40.700	3.19%
Aquila(M)	Gas	18-Aug-04	40,000	2.550	2.451	4.04%
Atmos Energy Co.	Gas	21-Oct-04	14,000	24.750	23.760	4.17%
Northwest Natural Gas	Gas	30-Mar-04	1,200	31.000	29.844	3.87%
Piedmont Natural Gas Co	Gas	20-Jan-04	4,250	42.500	41.010	3.63%
Southern Union Co.	Gas	26-Jul-04	11,000	18.750	18.003	4.15%
The Laclede Group Inc	Gas	06-May-04	1,500	26.800	25.862	3.63%
UGI Corp.	Gas	18-Mar-04	7,500	32.100	30.696	4.58%
Semco Energy	Gas	09-Aug-05	27,176	6.320	6.067	4.17%
Southern Union Co.	Gas	07-Feb-05	342,999	23.000	22.300	3.14%
Chesapeake Utility Corp	Gas	15-Nov-06	600	30.100	1.125	3.88%
					Average	4.28%
					Selected	4.25%

Source: *Public Utility Finance Tracker,* February 1999 - 2007.

Incorporating the flotation costs found on the previous pages into our cost of capital study is accomplished as shown in the table below.

Corp. Tax Rate =			38.00%	Flotation Cost Adjustment			
Capital	Portion	Cost	Product	Flot. Cost	Divisor	Adj Cost	Product
Debt	25.00%	6.25%	1.56%	1.00%	99.38%	6.29%	1.57%
Equity	75.00%	12.00%	9.00%	4.25%	95.75%	12.53%	9.40%
Totals	100.00%		10.56%				10.97%

The flotation cost adjustment for debt considers the tax deductibility of interest cost and the divisor for debt is obtained by subtracting the debt flotation cost times 1 minus the approximate corporate tax rate from 100% shown as follows: 1 - (0.01 x (1 - 0.38)) = 99.38%. Next we divide cost of debt of 6.25% by the divisor to obtain the flotation cost adjusted cost of debt, which is then multiplied times the debt portion of the capital structure to obtain the product of 1.57%. The divisor for the equity cost is 1 minus the equity flotation costs (100% - 4.25% = 95.75%). Next we divide cost of equity of 12.00% by the divisor to obtain the flotation cost adjusted cost of equity, which is then multiplied times the equity portion of the capital structure to obtain the product of 9.40%. The sum of the two products is 10.97% (rounded to **10.95%**) and is the cost of capital for the typical interstate natural gas pipeline after accounting for flotation costs.

Other Issues Regarding the Cost of Capital

Some have suggested that a negative adjustment should be made to the cost of equity for survivorship bias. They argue that the United States has been the most successful stock market of the twentieth century and therefore equity costs do not consider the low returns that failing companies might indicate. If that is the case, is it possible that the equity risk premium statistics based only on U.S. data may overstate the returns of equities as a whole because they only focus on one successful market? According to Dr. Roger Ibbotson this is not the case.

> While the survivorship bias evidence may be compelling on a worldwide basis, one can question its relevance to a purely U.S. analysis. If the entity being valued is a U.S. company, then the relevant data set should be the performance of equities in the U.S. market.[39]

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[39] *Stocks, Bonds, Bills and Inflation: 2003 Yearbook, Valuation Edition* (Chicago: Ibbotson & Associates, Inc., 2003), p. 82.

Other studies have reached similar conclusions – that survivorship bias is of no significance in measuring the cost of equity in U. S. equity markets.

> The U.S. equity premium plays an important role in many areas of finance research and practice. Therefore, the concerns raised by Brown, Goetzmann, and Ross (BGR) that the equity premium might contain serious survival bias should be studied with great care: If proven true, this hypothesis would have widespread impact.
> Based on a general survival model developed in this paper, we show that the fundamental difficulty facing the survival argument is that to have high survival bias, the probability of market survival over the long run has to be extremely small, which seems to be inconsistent with existing historical evidence. <u>Therefore, we argue that contrary to what BGR suggest, the survival bias in the U.S. equity premium is unlikely to be significant and the resultant concerns about the survival problem in the current literature are probably overstated.</u>[40]

Thus, we believe that there is no significant survivorship bias affecting our estimate of the cost of capital for the Interstate Natural Gas Pipeline industry at January 1, 2007, and no adjustment is necessary.

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[40] Li, Haitao, and Yuewu Xu, "Survival Bias and the Equity Premium Puzzle," *The Journal of Finance*, Vol. LVII, Issue 5, October 2002, p. 1991. (emphasis added)

Supplement to the Cost of Capital Study

The income approach is based on the principle of anticipation primarily and involves converting dollars of expected future income into present value. The execution of the income approach involves the selection of the appropriate capitalization method, estimation of the expected income, and estimation of a proper capitalization rate which matches the income to be capitalized. The basic income formula is shown in the box to the right.

$$Value = \frac{Income}{Rate}$$

Income-producing property is typically purchased for investment purposes, and the projected net income stream is the critical factor affecting its market value. An investor purchasing income-producing property is in effect trading a sum of present dollars for the right to a stream of future dollars. There is a relationship between the two, and the connecting link is the process of capitalization. Because future dollars are worth less than present dollars, the anticipated future dollars are discounted to a present worth on some basis that reflects the risk and the waiting time involved.

The historical development of the income approach reflects a movement away from an initial emphasis on physical components of value toward a greater emphasis on investment components. The initial division of capitalization was between the concept of value as income divided by a rate (straight capitalization) and as income multiplied by a factor (annuity capitalization). Contemporary income appraisal theory revolves around two categories of capitalization methods — *direct* capitalization and *yield* capitalization.

Rates of Return

The typical investor's objective in any investment is to ultimately receive more than the amount invested. The investor thus wants a complete return *of* all capital invested and, in addition, a fair return *on* the capital invested. Thus, the investor expects to completely recoup his investment and be fairly compensated for the use of his capital. The return of capital is usually referred to as the recapture of the initial capital investment. The return on capital is usually referred to as the compensation an investor receives for the use of his capital until the capital is recaptured.

All rates of return can be classified as either 1) *income rates* or 2) *yield rates*. An example of an income rate is the *overall capitalization rate (R_o)*. An example of a yield rate is the property's *overall yield rate*, which is synonymous with the *discount rate* and the *cost of capital*. Under certain conditions, the income and yield rates for a property are equal even though they are not conceptually equal.

Categories of Capitalization

There are two categories (sometimes called methods) of capitalization which can be used in the income approach — *direct* and *yield* capitalization. Each category is based on sound appraisal theory and each is theoretically different in application. Direct capitalization is accomplished by the use of an *overall capitalization rate* (R_o). The overall capitalization rate is actually the percent that a single year's income (usually the first year's income) represents as compared to market value. Yield capitalization is accomplished through the use of an *overall yield rate* (Y_o). The overall yield rate is conceptually the weighted average of the interest rate for long-term debt and the equity yield rate and is also known as the *weighted average cost of capital (WACC)* or *discount rate ®)*. Unlike the overall capitalization rate, the overall yield rate is not necessarily the percent of market value that the first year's income represents. However, under certain circumstances the overall capitalization rate and the overall yield rate are identical.

Direct Capitalization

Direct capitalization is a method of converting one year's income into value in one direct step, usually by dividing the income estimate by the appropriate income rate. It is the present worth of the future earnings that gives a proper indication of value by the income approach. Typically the income capitalized is the estimated net utility operating income expected in the following year. Net utility operating income for public utilities is defined as the income representing the amount available to pay the debt costs and equity costs for the property. Public utility regulatory commissions (both state and federal) recognize that net utility operating income is the level of income necessary to pay the cost of capital annually.

Regulatory commissions develop the cost of debt capital and cost of equity capital for the INGPI company in each rate case. The cost of debt capital and the cost of equity capital is weighted by the respective percentages of the amount of debt and equity in the overall capital structure for the utility. The resulting **weighted average cost of capital** is multiplied by the authorized rate base to obtain the authorized net utility operating income for regulatory purposes, which is the targeted amount that the regulatory commissions intend for the utility to earn each year to pay its cost of capital. Net utility operating income is reported on the utility's income statement and it is the amount available to pay to debt and equity holders. Thus, net utility operating income is the level of income set by regulatory commissions to fully cover the cost of capital of a public utility.

A note of caution about the use of direct capitalization is given here. There are six accepted techniques which can be used correctly to derive the overall capitalization rate used in direct capitalization. They are as stated below.

Accepted techniques include 1) derivation from comparable sales, 2) derivation from effective gross income multipliers and net income ratios, 3) band of investment—mortgage and equity components, 4) band of investment—land and building components, 5) the debt coverage formula, and 6) yield capitalization techniques such as the general yield change formula, R_O = yield – change in income and value, and the Ellwood method.[41]

No generally accepted appraisal literature indicates that it is proper under any circumstances to use sales of stock as comparable sales for deriving an overall capitalization rate or even an equity capitalization rate. In fact, there is an abundance of caution in appraisal literature about the use of sales that are not comparable to the property being appraised (such as deriving earnings-price ratios from stock transactions). For example, the following quotation addresses this issue:

Fundamental Investment Difference between Investment Securities and Real Estate/Tangible Personal Property. Table 29-2 summarizes some of the intrinsic differences between capital market securities (whether debt or equity instruments) and real estate and tangible personal property (either individual assets or going concern assemblages of assets) as investment alternatives.

Table 29-2
Investment Differences between Securities and Real Estate/Personal Property

Securities (Debt or Equity Instruments)	Real Estate/Personal Property (Individually or as a Mass Assemblage)
1. Liquid, marketable investments	1. Illiquid investments
2. Noncontrolling interest in income production and distribution	2. Controlling interest in income production and distribution
3. Small, absolute dollar investment required	3. Large, absolute dollar investment required
4. Small percentage of overall wealth committed to this investment	4. Large percentage of overall wealth committed to this investment
5. Diversified portfolio of investments	5. Nondiversified portfolio of investments
6. Short-term investment time horizon	6. Long-term investment time horizon
7. Does not require re-investment to maintain investment base	7. Requires "replenishment" investment to maintain investment base
8. Investments expected to appreciate over time	8. Investments expected to depreciate over time
9. Income typically subject to only individual tax (from investor's perspective)	9. Income typically subject to both corporate and individual tax (from investor's perspective)
10. Portfolios can be created in limitless combinations of risky securities and risk-free securities	10. Portfolio limited to the particular combination of real estate and personal property that operate the subject business

As the table indicates, there are fundamental investment risk and return differences between (1) marketable, minority interests in debt and equity securities and (2) nonmarketable, controlling interests in operating real estate and tangible personal property. Due to these differences, and for other reasons, it is unlikely that an economic

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[41] *The Appraisal of Real Estate*, 11th ed., (Chicago: Appraisal Institute, 1996), p. 514.

model that correlates nondiversified risk and expected return for one type of investment will effectively serve the same function for such a different type of investment.[42]

Thus, it is clear from appraisal literature that it is absolutely wrong to use earnings-price ratios derived from stock sales as the equity capitalization rate or the equity yield rate in the appraisal of tangible assets or mass assemblages of assets as a going concern. Further, it is improper to use earnings-price ratios to match with the net utility operating income authorized by the FERC. The FERC does not utilize earnings-price ratios in the determination of the cost of equity for any company or in setting the authorized net operating amount. Finally, for the FERC to set the cost of equity capital based on earnings-price ratios would violate the mandates of the US Supreme court in their *Hope Natural Gas* and *Bluefield Water Works* decisions, which require the regulatory commissions to allow the regulated utilities to earn their cost of capital (commensurate with the return earned by companies of comparable risk).

Appraisal texts do not tell us that an appraiser may derive equity capitalization rates from the stock market, however the same appraisal texts emphatically state that appraisers can derive equity yield rates from stocks and bonds of commensurate risk in the market. The use of earnings-price ratios as a substitute for the equity capitalization rate in deriving equity value, is simply not permissible. Additionally, the majority of public utility companies are subsidiaries of publicly traded holding companies. The use of a parent company traded stock earnings-price ratio as comparison to an untraded subsidiary company would further exacerbate an incorrect equity value.

Yield Capitalization

Yield capitalization is a method of converting a series of income flows (called cash flows) or a singular representative level cash flow into present value by discounting the expected future benefits at an appropriate discount rate (synonymous with the property's **overall yield rate** or **cost of capital**).

> To perform yield capitalization, an appraiser 1) selects an appropriate holding or study period; 2) forecasts all future cash flows or cash flow patterns; 3) chooses an appropriate yield rate; and 4) converts future benefits (including the reversion) into present value by discounting each annual future benefit or by developing an overall rate that reflects the income pattern, value change, and yield rate using one of the various yield formulas. The application of capitalization rates that reflect an appropriate yield rate, the use of present value

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[42] Pratt, Reilly, & Schweihs, *Valuing A Business*, 3rd edition, (Chicago: Irwin Professional Publishing, 1996), 708.

factors, and discounted cash flow analysis are all yield capitalization procedures.[43]

Thus, the appraiser performs yield capitalization by either 1) discounting each individual cash flow to its present value for the duration of the income, or 2) capitalizing the appropriate income at an overall capitalization rate, which represents the income pattern, value change, and yield rate.

Upon projecting the amount, timing, and duration of the cash flows to the property being appraised, the appraiser must identify the pattern that the cash flow is expected to follow during the holding period. Those patterns are either variable, level, increasing, or decreasing annuities. For a level annuity where a property is expected to generate a level net utility operating income for a finite period of time and then be resold at the original purchase price, the property can be valued with capitalization in perpetuity by dividing the periodic income by the appropriate discount rate. In this model the discount rate and the overall capitalization rate are the same.[44]

When the net income consists of a fixed amount that represents the return of capital (depreciation expense) plus a declining amount representing the return on the capital remaining in the investment, classic straight-line capitalization can be used to value the property.[45] In this model, as with the level perpetuity, the discount rate and the overall capitalization rate are equal when properly applied to a utility's net cash flow.

If the cash flow pattern is expected to be in the form of a variable annuity each individual income flow will be discounted into an indication of present worth at the appropriate discount rate for the holding period. Further, the appraiser discounts any remaining value in the investment at the end of the holding period and adds the total present worth of the variable cash flows to the present worth of the future value at the end of the holding period. The total represents the present worth of the total property.

The application of the DCF model for a variable annuity can be accomplished using the following formula.

$$Value = \frac{I_1}{(1+r)^1} + \frac{I_2}{(1+r)^2} + \frac{I_3}{(1+r)^3} + ... + \frac{I_n}{(1+r)^n}$$

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[43] *The Appraisal of Real Estate*, 12th ed., (Chicago: Appraisal Institute, 2001), 549.

[44] *Ibid*., 560.

[45] *Ibid*., 560.

In this formula, *I* equals income or cash flow in periods 1 through n, and *r* equals the discount rate. Where income has the characteristics of a perpetuity or of a classic straight line capitalization model, the universal capitalization formula, *Value = Income ÷ Rate*, can be used. In this case the overall capitalization rate will equal the discount rate.

To derive *equity yield rates* from market information, yield capitalization permits some things that would not be proper when using direct capitalization. For example, generally accepted appraisal texts record how it is permissible to use stocks and bonds for determination of equity yield rates in alternative investments when appraising real estate.

> An investor may compare the expected equity yield on a real property investment with the yields on alternative investments with commensurate risk (e.g., stocks and bonds) and with a lender's yield on mortgages secured by similar real property.[46]

> The Appraisal Institute goes on to state:

> To estimate equity yield rates, appraisers must do market research. This research can take many forms and may include one or more of the following analyses...Comparison with the equity yield rates achieved in alternative investments of comparable risk such as stocks and bonds...[47]

An important difference between yield capitalization and direct capitalization is that in yield capitalization when deriving the equity yield rate, i.e., the cost of capital, it is entirely appropriate to use sales of stock (the capital asset pricing model, DCF or Gordon growth model, or risk premium models) to derive the equity yield rate. However, when using direct capitalization, it is absolutely inappropriate to use sales of stock (earnings-price ratios) to derive equity capitalization rates. The reason is simple; equity cap rates are intended to be ratios between income and value while equity yield rates are not. Thus, it is critical that the sales used in deriving those ratios be virtually identical to the property being appraised. Stocks, quite simply, are not comparable to tangible assets as discussed in the quotation on page 73. Because stock sales used to derive equity yield rates are used to indicate relative risk between investments, it is entirely appropriate to use stock sales to derive equity yield rates.

Estimation of Income to Capitalize

The income level capitalized in the income approach is usually called **cash flow**. In fact, as mentioned previously on page 8, Dr. William Kinnard, MAI explains that all of the

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[46] *Ibid.*, 118-119.

[47] *Ibid.*, 119.

annual "income" figures used in appraising income-producing properties are *cash flows* rather than accrual accounting incomes. Cash flow can be defined in a number of ways, however for appraisal purposes it generally consists of income necessary to satisfy the cost of capital plus depreciation expense. Commercial and general appraisers recognize this level of income as simply **net operating income**. Utility appraisers know that the definition of "net utility operating income" for public utilities and commercial properties is different in one important aspect. For public utilities the level of income reported as "net utility operating income" is only that income available to pay the utility's cost of capital, while for commercial properties "net operating income" includes not only the level of income available for debt and equity, but also the income to recapture a portion of the wasting asset (*otherwise known as depreciation expense*).

In general commercial appraisals cash flow is typically defined as simply net operating income (as defined for general commercial appraisal purposes), which is the income available for debt and equity and the depreciation expense. For an illustration of this type of analysis, refer to *The Appraisal of Real Estate*, 12th edition, page 572.

For public utility appraisal, cash flow is often defined as net utility operating income (defined as the income available to pay the cost of capital) plus depreciation expense and the current portion of deferred income taxes. This definition of cash flow is sometimes referred to as **gross cash flow** because there is no deduction for capital expenditures to keep the utility operating, Thus this cash flow model will have a limited life duration. In other words, gross cash flows cannot continue indefinitely without significant new investment to keep the utility operations ongoing.

Another variation of this same general definition of cash flow for a public utility is called **net cash flow**, which is the gross cash flow less capital expenditures. Some refer to this as gross revenue less all cash disbursements except interest expense. For the appraisal of public utilities where it is assumed that the amount of capital reinvestment is equal to the depreciation expense, *net cash flow* can be defined simply as utility net utility operating income. For the appraisal of a public utility as a going concern, net cash flow is usually the best level of income to work with. The purpose of this cost of capital study is to provide the cost of capital, which can be used to capitalize the net cash flow for the typical interstate natural gas pipeline company for the purpose of estimating market value.