Interstate Natural Gas Pipeline Industry

2004 Cost of Capital Study

●Prepared by Tegarden & Associates • 105 Point East Drive • Nashville, TN 37216 • 615-226-2300 • Fax: 615-226-4488 • e-mail: tegarden@comcast.net

Table of Contents

Common Terms

CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
DCF	Discounted Cash Flow
EIA	Energy Information Administration
FERC	Federal Energy Regulatory Commission
GDP	Gross Domestic Product
GP	General Partner
GRI	Gas Research Institute
GSR	Gas Supply Realignment
GTI	Gas Technology Institute
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
MLP	Master Limited Partnership
NUOI	Net Utility Operating Income
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

2004 Cost of Capital Study of the Interstate Natural Gas Pipeline Industry for the Interstate Natural Gas Pipeline Property Tax Forum January 1, 2004

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, 2004. 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, 2004, 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 0.91% and 1.70% 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. (*This year the typical interstate natural gas pipeline company's long-term debt is rated only one level above junk bond status. This is down one rating level from last year as the long-term debt for the typical interstate natural gas pipeline has become relatively riskier over the last twelve months*.)

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 author, who reserves all rights to any reproduction. In this study 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, 2004.

[1] *Risk Premia over Time Report: 2004*, (Chicago: Ibbotson Associates, 2004), p. 6

Executive Summary - Cost of Capital

Based on our analysis and investigation, we have calculated the rounded weighted average cost of capital (WACC) for the INGPI to be **10.80%** as of January 1, 2004. 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, 2004 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:

Algonquin Gas Transmission Company
Centerpoint Energy
CMS Energy
Columbia Gas/Gulf Transmission Corporation
CrossCountry Energy Co.
Dominion Transmission Corp.
Duke Energy - Canada
Duke Energy Corporation
El Paso Corp - Colorado Springs
El Paso Corporation
Great Lakes Gas Transmission, L.P.
Gulf South Pipeline Company, L.P.
Kern River Gas Transmission
Kinder Morgan, Inc.
National Fuel Gas Supply Corporation
Northern Border Pipeline
Northern Natural Gas Co.
PG&E Gas Transmission, Northwest Corporation
Portland Natural Gas Transmission
Questar Regulated Services
Southern Star Central Corp.
Texas Gas Transmission, LLC
Trans Canada Pipelines, Ltd.
Williams - Northwest Pipeline Corporation
Williams - Transcontinental Gas Pipeline Co.
Williston Basin Interstate Pipeline Co.

General Economic Data - 2004

During 2003, the U.S. economy went through a significant transition as it continued its recovery from the recession of 2001. During the third quarter of 2003, gross domestic product growth surged, but employment continued to lag. The 2004 outlook appears stronger for the nation as business investment builds and consumer spending holds steady according to the Federal Reserve Bank of Atlanta in its Fourth Quarter 2003 *EconSouth*.

The national economic outlook for 2004 is bright, promising a more upbeat scenario than in the past two years. U.S. economic activity will post healthy gains in 2004, according to *USA Today's* survey of 60 top economists conducted December 11- 17, 2003, and reported on by Barbara Hagenbaugh and Barbara Hansen, December 22, 2003. According to the article, the

U.S. economy in 2004 will grow at its fastest pace since the '90s boom and unemployment will fall. The 60 economists predict the stock market to continue rising and business spending, a key economic element, to rebound strongly after being largely absent. According to FleetBoston Financial chief economist Wayne Ayers, "After a number of false starts over the last couple of years, I think it's pretty clear that now most, if not all, of the sectors of the economy are firing on all cylinders." Says Larry Chimerine, President of Radnor International Consulting: "Almost everything is pointing in the right direction."[2]

The sixty economists surveyed predict that business spending will lead the economy in 2004 as firms replace aging, obsolete machinery and add new technology to boost productivity. The median forecast for the 2004 year end unemployment rate is 5.5%. That would be the lowest rate since fall 2001. Other economic forecasts for year end unemployment rates ranged from 5.5% to 5.7% and were reported by Richard Hoey of Mellon Financial Corporation, October, 15, 2003, at the Union League in Philadelphia and by Martin Crutsinger in Washington, December 29, 2003.

Even with the glorious prediction that the economy will grow in 2004 at the fastest pace in five years and add jobs and stock prices are expected to continue to rise, it doesn't mean the euphoria - and the excesses - of the '90s will be back. Companies that once spent money and hired with little thought, and investors who once pumped cash into companies with few profit prospects, have learned to be wary following the eight-month recession of 2001 and the sluggish recovery that has followed.[3]

Since the beginning of 2002, the economy, as measured by real gross domestic product (GDP), has grown at an average annual rate of around 3 percent, substantially below the nearly 5 percent growth rate of the late 1990s. But GDP was especially strong in the third quarter of 2003, and this strength signaled that the economy was gaining a firmer footing according to the Federal Reserve Bank of Atlanta in its Fourth Quarter 2003 *EconSouth.*

The robust economic growth in the second half of 2003 was predicted, but the long delay in achieving it shook confidence in economic forecasting. The modest growth during the first half of 2003 was the result of unsettling and hard-to-measure conditions — including the Iraq war and the subsequent occupation — that hindered decision making for businesses and consumers. On average, firms postponed large spending decisions such as purchasing capital

---

[2] Hagenbaugh, Barbara and Hansen, Barbara. "Experts See '04 'Firing On All Cylinders', *USA Today*, December 22, 2003, B1.

[3] Hagenbaugh, Barbara. "Optimism Seems To Be Byword for '04 Economy; Experts Think It Will Do Well, But Not As It Did In 1990s, *USA Today*, January 5, 2004, B1.

equipment and hiring.[4]

Stronger and broader-based growth in the second half of 2003 set up continued improvement in economic activity in 2004. This resurgence reflected a number of positive adjustments by businesses and consumers to a variety of negative shocks. The revival of business expenditures was a key element of virtually all forecasts of a turnaround in the second half of 2003. With profits replenished, businesses were increasingly able to shift attention away from the concerns of their near-term budgets and toward longer-term growth and expansion opportunities. Capital investment expenditures rose sharply in the second half of 2003 as businesses put resources toward raising output as well as productivity. This shift indicates that businesses believe economic activity is hitting a higher gear, so further robust growth in business investment spending is likely during 2004.

David Wyss, chief economist at Standard and Poor's in New York, predicted GDP growth in 2004 would hit 4.7 percent, in line with many private analyses. Wyss and other forecasters believe the Federal Reserve will keep interest rates low most of the year despite stronger growth because inflation will continue to be a no-show. Many don't expect the first Federal Reserve rate increase until after November's election.[5]

"Right now, the U.S. economy is humming like a V-8 engine in high gear. The level of activity nearly matches the growth rates of the late 1990s. However, all the imbalances that led to the recession have not been worked out, and some sectors continue to suffer. These issues require more time and resources to settle out completely. Still, the near-term momentum for output growth looks promising, and the growth in activity should bring renewed economic opportunities and spur employment gain."[6]

2004 Economic Outlook - Natural Gas Pipeline Industry

BusinessWeek, in its Annual Industry Outlook reported with the prospect of war in Iraq on the horizon, the energy industry faced a host of uncertainties going into 2003. Yet by year end, the sector had racked up blockbuster returns, as the war and a variety of supply shortages kept oil and natural gas prices at near-record levels. Now, with many of those uncertainties gone, prices were expected to decline, though not enough to send the industry into a tailspin. Expect "a good year for energy, just not as good as last year," said Roger Diwan of Washington-based industry

---

[4] "More Balanced Economic Growth Ahead for Nation and Southeast." *EconSouth*, Federal Reserve Bank of Atlanta, Fourth Quarter 2003, 3.

[5] Crutsinger, Martin. "2004 May Be Banner Year For U.S. Economy, December 29, 2003 4:54 AM. http://www.comcast.net/news/print.jsp?fn=/apnews//XML/1310_General_financial_busin...

[6] *Op. Cit.*, 4.

consultant PFC Energy.[7]

The anticipated small dip in prices this year will rein in industry revenues and profits. On the natural gas front, the U.S. Energy Information Administration (EIA) is forecasting an average price of $4.39 per thousand cubic feet (Mcf) in 2004, vs. $4.92 last year. The upshot: The 23 energy firms in the Standard & Poor's (MHP) 500-stock index will post a 10% decline in revenues and a 17% drop in earnings in 2004, according to Thomson First Call. That compares to an earnings jump of 54% on a 9% sales gain in 2003.[8]

Key Energy Issues to 2025

For almost 4 years, natural gas prices have remained at levels substantially higher than those of the 90s. This has led to a reevaluation of expectations about future trends natural gas markets, the economics of exploration and production, and the size of the natural gas resources. The Annual Energy Outlook 2004 forecast reflects such revised expectations, projecting greater dependence on more costly alternative supplies of natural gas, such as imports of liquefied natural gas (LNG), with expansion of existing terminals and development of new facilities, and remote resources from Alaska and from the Mackenzie Delta in Canada, with completion of the Alaska Natural Gas Transportation System and the Mackenzie Delta pipeline.[9]

The change in expectations for future natural gas prices, in combination with the substantial amount of new natural gas-fired generating capacity recently completed or in the construction pipeline, has also led to a different view of future capacity additions. Although only a few years ago, natural gas was viewed as the fuel of choice for new generating plants, coal is now projected to play a more important role, particularly in the later years of the Annual Energy Outlook 2004 forecast. As a result, cumulative additions of natural gas-fired generating capacity between 2003 and 2025 are lower in the 2004 forecast than they were in last year's forecast and more additions of coal and renewable generating capacity are projected.[10]

Natural Gas Crunch

Still, with the flow of gas from Canada shrinking, other meaningful imports of LNG still

---

[7] Forest, Stephanie Anderson. "Energy: Prices Hold Their Own in the Oil Patch," *BusinessWeek*, January 12, 2004. http://www.businessweek.com:print/premium/content/04_02/b386561.htm

[8] *Ibid.*

[9] Annual Energy Outlook 2004 with Projections to 2025, "Overview," DOE/EIA-0383(2004), January 2004, 2.

[10] *Ibid.*

years away, and several potential gas fields off-limits in the U.S., the natural gas crunch will be with us for a while. "Until we will get more LNG, we'll continue to see a pretty tightly constrained [natural gas] environment," says Mark G. Papa, CEO of Houston-based EOG Resources Inc.[11]

Regulatory Environment

For the past 15 years, federal and state regulators have enacted policies to enhance competition in the natural gas industry. Initially, the Federal Energy Regulatory Commission (FERC) altered the ground rules by which the interstate natural gas pipelines did business with FERC Order 636. [*On April 8, 1992, the FERC issued Order 636 which brought about additional fundamental changes in the way natural gas pipelines conduct their businesses. The FERC's stated purpose of FERC Order 636 was to improve the competitive structure of the natural gas pipeline industry by, among other things, unbundling a pipeline's merchant role from its transportation services; ensuring "equality" of transportation services; ensuring that shippers and customers have equal access to all sources of gas; providing "no-notice" firm transportation services that are equal in quality to bundled sales service; and changing rate design methodology from modified fixed variable to straight fixed variable.*] As a result of FERC Order 636 and the snails pace at which deregulation in the interstate natural gas pipeline industry has progressed, the long-haul gas systems were provided powerful economic inducements to find merger partners to aid in the scurry for market share. This resulted in the fusion of the pipelines in the late 1980s and early 1990s. FERC Order 636 guidelines called for the pipelines to abandon their traditional calling as resellers, flowing dedicated gas volumes to utility systems, to venture into their new discipline as gas transporters for all comers (common carriers).

In FERC Order No. 637, the Commission amends its regulations in response to the growing development of more competitive markets for natural gas and the transportation of natural gas. In the rule, the Commission is revising its current regulatory framework to improve the efficiency of the market and provide captive customers with the opportunity to reduce their cost of holding long-term pipeline capacity while continuing to protect against the exercise of market power. The rule revises Commission pricing policy to enhance the efficiency of the market by waiving price ceilings for short-term released capacity for a two-year period and permitting pipelines to file for peak/off-peak and term differentiated rate structures.

Factors Applicable to the Appraisal of Interstate Pipelines

Interstate pipelines have both utility and merchant characteristics. They are similar to

---

[11] Forest, Stephanie Anderson. "Energy: Prices Hold Their Own in the Oil Patch," *BusinessWeek*, January 12, 2004. http://www.businessweek.com:print/premium/content/04_02/b386561.htm

monopoly utilities in that they require significant capital expenditures, involve a permitting 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 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, analysts investigate demand and supply growth along a pipeline's footprint, pipeline expansion opportunities, 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 will also affect 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 analyst 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.[12] 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.

---

[12] Shere, Craig. Industry Surveys: Natural Gas. *Standard & Poors*, November 20, 2003, 33.

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***.[13] 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.[14]] This rate of return is often referred to as the discount rate or the opportunity cost of capital.[15] 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.[16]

The estimated cost of capital in this report for the Interstate Natural Gas Pipeline Industry as of January 1, 2004 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:

---

[13] 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.

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

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

[16] *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.

$$K = (D \times D_r) + (E \times E_r)$$

where

K = *Weighted Average Cost of Capital*
D = *Proportion of Debt in Capital Structure*
D_r = *Cost of Debt*
E = *Proportion of Equity in Capital Structure*
E_r = *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.[17]

Cost of Capital Study Results

The cost of capital for the Interstate Natural Gas Pipeline Industry as of January 1, 2004 is estimated to be 10.81% (rounded to **10.80%**) as the following chart indicates. Following the chart are explanations of the derivation of each of the component parts.

[17] *SBBI (Stocks, Bonds, Bills and Inflation)*, 2000 Yearbook: Valuation Edition, (Chicago: Ibbotson Associates, 2000), 9.

Capital	Portion	Cost	Product
Debt	30.00%	6.79%	2.04%
Equity	70.00%	12.53%	8.77%
Totals	100.00%		10.81%

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 statement from Brigham and Gapenski.

> 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.[18]

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 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.

---

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

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.[19]

> **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.[20]

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 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...[21]

---

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

[20] *Ibid*., 132.

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

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 2004. The capital structure study involved the following companies we believe to be representative of the interstate natural gas transmission pipeline industry: 37 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; 23 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 five (5) 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 30% debt, essentially no preferred stock, and 70% 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 only. Additionally, some of the companies (such as Dynegy, El Paso, and Williams) are much more leveraged currently due to financial problems primarily related to non-pipeline activities.

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. This is not true of equity.[22] 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

[22] *SBBI (Stocks, Bonds, Bills and Inflation)*, *2003 Yearbook: Valuation Edition*, (Chicago: Ibbotson Associates, 2003), 14.

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 four 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 30% debt (***D***) and 70% 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 23 companies from that group excluding the limited partnerships, and the Value Line Natural Gas Diversified Industry (Large[23]). We gave less consideration to the average figures in this particular calculation because the parent company information (notably Dynegy, El Paso Corp and Williams Companies) have changed dramatically due to heavy losses from energy trading. This same reasoning applies to the small group known as the Interstate Natural Gas Pipeline Forum Group, which is heavily influenced by a few companies with heavy energy trading losses.

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

[23] 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, 2004

Company Name	Ticker	LTD %	PS %	CS %
ATP Oil & Gas Corp	ATPG	38.66%	0.00%	61.34%
Cabot Oil & Gas 'A'	COG	21.36%	0.00%	78.64%
Callon Pete Co	CPE	44.55%	5.37%	50.08%
Crosstex Energy LP	XTEX	9.88%	0.00%	90.12%
Delta Natural Gas	DGAS	39.20%	0.00%	60.80%
Devon Energy	DVN	38.23%	0.66%	61.10%
Dynegy Inc. 'A'	DYN	71.94%	4.94%	23.12%
Eastern Amern Nat Gas Tr	NGT	0.00%	0.00%	100.00%
El Paso Corp.	EP	80.13%	0.00%	19.87%
Enterprise Products	EPD	26.87%	0.00%	73.13%
EOG Resources	EOG	15.40%	2.28%	82.32%
Equitable Resources	EQT	18.77%	0.00%	81.23%
GulfTerra Energy Partners	GTM	40.40%	3.59%	56.01%
KCS Energy	KCS	30.64%	0.75%	68.60%
Kinder Morgan	KMI	29.67%	0.00%	70.33%
Kinder Morgan Energy	KMP	29.63%	0.00%	70.37%
Markwest Energy Partners LP	MWE	21.32%	0.00%	78.68%
National Fuel Gas	NFG	37.73%	0.00%	62.27%
Newfield Exploration	NFX	20.05%	0.00%	79.95%
Northern Border Partners LP	NBP	42.81%	0.00%	57.19%
ONEOK Inc.	OKE	48.29%	6.47%	45.23%
Patina Oil & Gas	POG	12.19%	0.00%	87.81%
Penn Virginia Corp.	PVA	21.56%	0.00%	78.44%
Petroleum Development Corp.	PETD	11.70%	0.00%	88.30%
Plains Resources	PLX	8.17%	0.00%	91.83%
Questar Corp.	STR	24.86%	0.00%	75.14%
Rentech Inc.	RTK	3.20%	0.00%	96.80%
San Juan Basin Rlty.	SJT	0.00%	0.00%	100.00%
Southwestern Energy	SWN	21.08%	0.00%	78.92%
TEPPCO Partners L.P.	TPP	35.73%	0.00%	64.27%
Tipperary Corp	TPY	28.04%	0.00%	71.96%
Universal Compression Holdings	UCO	48.47%	0.00%	51.53%
Vintage Petroleum	VPI	48.32%	0.00%	51.68%
Western Gas Res.	WGR	16.50%	6.67%	76.83%
Williams Coal Sm Gs	WTU	0.00%	0.00%	100.00%
Williams Cos.	WMB	66.04%	0.00%	33.96%
XTO Energy	XTO	18.93%	0.00%	81.07%
	Average	28.93%	0.83%	70.24%
	Median	26.87%	0.00%	73.13%

Source: *Value Line* CD Rom, January 2004.

Value Line Natural Gas Diversified Industry (w/o LPs)
Capital Structure (VL Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
ATP Oil & Gas Corp	ATPG	38.66%	0.00%	61.34%
Cabot Oil & Gas 'A'	COG	21.36%	0.00%	78.64%
Delta Natural Gas	DGAS	39.20%	0.00%	60.80%
Devon Energy	DVN	38.23%	0.66%	61.10%
Dynegy Inc. 'A'	DYN	71.94%	4.94%	23.12%
El Paso Corp.	EP	80.13%	0.00%	19.87%
EOG Resources	EOG	15.40%	2.28%	82.32%
Equitable Resources	EQT	18.77%	0.00%	81.23%
KCS Energy	KCS	30.64%	0.75%	68.60%
Kinder Morgan	KMI	29.67%	0.00%	70.33%
National Fuel Gas	NFG	37.73%	0.00%	62.27%
ONEOK Inc.	OKE	48.29%	6.47%	45.23%
Patina Oil & Gas	POG	12.19%	0.00%	87.81%
Penn Virginia Corp.	PVA	21.56%	0.00%	78.44%
Petroleum Development Corp.	PETD	11.70%	0.00%	88.30%
Plains Resources	PLX	8.17%	0.00%	91.83%
Questar Corp.	STR	24.86%	0.00%	75.14%
Southwestern Energy	SWN	21.08%	0.00%	78.92%
Universal Compression Holdings	UCO	48.47%	0.00%	51.53%
Vintage Petroleum	VPI	48.32%	0.00%	51.68%
Western Gas Res.	WGR	16.50%	6.67%	76.83%
Williams Cos.	WMB	66.04%	0.00%	33.96%
XTO Energy	XTO	18.93%	0.00%	81.07%
	Average	33.38%	0.95%	65.67%
	Median	29.67%	0.00%	70.33%

Source: *Value Line* CD Rom, January 2004.

Value Line Natural Gas Diversified Industry (Large)
Capital Structure (VL Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
Devon Energy	DVN	38.23%	0.66%	61.10%
Dynegy Inc. 'A'	DYN	71.94%	4.94%	23.12%
El Paso Corp.	EP	80.13%	0.00%	19.87%
EOG Resources	EOG	15.40%	2.28%	82.32%
Equitable Resources	EQT	18.77%	0.00%	81.23%
Kinder Morgan	KMI	29.67%	0.00%	70.33%
National Fuel Gas	NFG	37.73%	0.00%	62.27%
ONEOK Inc.	OKE	48.29%	6.47%	45.23%
Questar Corp.	STR	24.86%	0.00%	75.14%
Western Gas Res.	WGR	16.50%	6.67%	76.83%
Williams Cos.	WMB	66.04%	0.00%	33.96%
XTO Energy	XTO	18.93%	0.00%	81.07%
	Average	38.87%	1.75%	59.37%
	Median	33.70%	0.00%	66.30%

Source: *Value Line* CD Rom, January 2004.

Interstate Natural Gas Pipeline Forum (Pipelines)
Capital Structure (VL Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
El Paso Corp.	EP	80.13%	0.00%	19.87%
Kinder Morgan	KMI	29.67%	0.00%	70.33%
National Fuel Gas	NFG	37.73%	0.00%	62.27%
Questar Corp.	STR	24.86%	0.00%	75.14%
Williams Cos.	WMB	66.04%	0.00%	33.96%
	Average	47.69%	0.00%	52.31%
	Median	37.73%	0.00%	62.27%

Source: *Value Line* CD Rom, January 2004.

Value Line Natural Gas Diversified Industry (All)
Capital Structure (S&P Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
ATP OIL & GAS CORP	ATPG	39.36%	0.00%	60.64%
CABOT OIL & GAS CORP	COG	23.18%	0.00%	76.82%
CALLON PETROLEUM CO/DE	CPE	46.20%	0.00%	53.79%
CROSSTEX ENERGY LP	XTEX	10.20%	0.00%	89.80%
DELTA NATURAL GAS CO INC	DGAS	41.19%	0.00%	58.81%
DEVON ENERGY CORP	DVN	39.09%	0.26%	60.65%
DYNEGY INC	DYN	74.81%	5.14%	20.06%
EASTERN AMERN NATURAL GAS TR	NGT	0.00%	0.00%	100.00%
EL PASO CORP	EP	82.11%	0.00%	17.89%
ENTERPRISE PRODS PRTNER -LP	EPD	26.58%	0.00%	73.42%
EOG RESOURCES INC	EOG	15.62%	2.29%	82.09%
EQUITABLE RESOURCES INC	EQT	19.11%	0.00%	80.89%
GULFTERRA ENERGY PARTNERS-LP	GTM	44.90%	3.99%	51.11%
KCS ENERGY INC	KCS	31.49%	0.76%	67.74%
KINDER MORGAN ENERGY -LP	KMP	30.12%	0.00%	69.88%
KINDER MORGAN INC	KMI	30.67%	0.00%	69.33%
MARKWEST ENERGY PARTNERS LP	MWE	20.64%	0.00%	79.36%
NATIONAL FUEL GAS CO	NFG	36.58%	0.00%	63.42%
NEWFIELD EXPLORATION CO	NFX	21.73%	0.00%	78.27%
NORTHERN BORDER PARTNRS -LP	NBP	44.25%	0.00%	55.75%
ONEOK INC	OKE	52.71%	0.00%	47.29%
PATINA OIL & GAS CORP	POG	11.67%	0.00%	88.33%
PENN VIRGINIA CORP	PVA	22.88%	0.00%	77.12%
PETROLEUM DEVELOPMENT CORP	PETD	11.05%	0.00%	88.95%
PLAINS RESOURCES INC	PLX	8.47%	0.00%	91.53%
QUESTAR CORP	STR	25.62%	0.00%	74.38%
RENTECH INC	RTK	3.42%	0.00%	96.58%
SAN JUAN BASIN ROYALTY TR	SJT	0.00%	0.00%	100.00%
SOUTHWESTERN ENERGY CO	SWN	20.91%	0.00%	79.09%
TEPPCO PARTNERS -LP	TPP	34.89%	0.00%	65.11%
TIPPERARY CORP	TPY	30.60%	0.00%	69.40%
UNIVERSAL COMPRESSION HLDGS	UCO	51.93%	0.00%	48.07%
VINTAGE PETROLEUM INC	VPI	50.85%	0.00%	49.15%
WESTERN GAS RESOURCES INC	WGR	17.87%	0.01%	82.12%
WILLIAMS COAL SEAM RYL TRUST	WTU	0.00%	0.00%	100.00%
WILLIAMS COS INC	WMB	68.36%	0.00%	31.64%
XTO ENERGY INC	XTO	18.55%	0.00%	81.45%
	Average	29.94%	0.34%	69.73%
	Median	26.58%	0.00%	73.42%

Source: *S&P Compustat*, January 2004.

Value Line Natural Gas Diversified Industry (w/o LPs)
Capital Structure (S&P Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
ATP OIL & GAS CORP	ATPG	39.36%	0.00%	60.64%
CABOT OIL & GAS CORP	COG	23.18%	0.00%	76.82%
DELTA NATURAL GAS CO INC	DGAS	41.19%	0.00%	58.81%
DEVON ENERGY CORP	DVN	39.09%	0.26%	60.65%
DYNEGY INC	DYN	74.81%	5.14%	20.06%
EL PASO CORP	EP	82.11%	0.00%	17.89%
EOG RESOURCES INC	EOG	15.62%	2.29%	82.09%
EQUITABLE RESOURCES INC	EQT	19.11%	0.00%	80.89%
KCS ENERGY INC	KCS	31.49%	0.76%	67.74%
KINDER MORGAN INC	KMI	30.67%	0.00%	69.33%
NATIONAL FUEL GAS CO	NFG	36.58%	0.00%	63.42%
ONEOK INC	OKE	52.71%	0.00%	47.29%
PATINA OIL & GAS CORP	POG	11.67%	0.00%	88.33%
PENN VIRGINIA CORP	PVA	22.88%	0.00%	77.12%
PETROLEUM DEVELOPMENT CORP	PETD	11.05%	0.00%	88.95%
PLAINS RESOURCES INC	PLX	8.47%	0.00%	91.53%
QUESTAR CORP	STR	25.62%	0.00%	74.38%
SOUTHWESTERN ENERGY CO	SWN	20.91%	0.00%	79.09%
UNIVERSAL COMPRESSION HLDGS	UCO	51.93%	0.00%	48.07%
VINTAGE PETROLEUM INC	VPI	50.85%	0.00%	49.15%
WESTERN GAS RESOURCES INC	WGR	17.87%	0.01%	82.12%
WILLIAMS COS INC	WMB	68.36%	0.00%	31.64%
XTO ENERGY INC	XTO	18.55%	0.00%	81.45%
	Average	34.53%	0.37%	65.11%
	Median	30.67%	0.00%	69.33%

Source: *S&P Compustat*, January 2004.

Value Line Natural Gas Diversified Industry (Large)
Capital Structure (S&P Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
DEVON ENERGY CORP	DVN	39.09%	0.26%	60.65%
DYNEGY INC	DYN	74.81%	5.14%	20.06%
EL PASO CORP	EP	82.11%	0.00%	17.89%
EOG RESOURCES INC	EOG	15.62%	2.29%	82.09%
EQUITABLE RESOURCES INC	EQT	19.11%	0.00%	80.89%
KINDER MORGAN INC	KMI	30.67%	0.00%	69.33%
NATIONAL FUEL GAS CO	NFG	36.58%	0.00%	63.42%
ONEOK INC	OKE	52.71%	0.00%	47.29%
QUESTAR CORP	STR	25.62%	0.00%	74.38%
WESTERN GAS RESOURCES INC	WGR	17.87%	0.01%	82.12%
WILLIAMS COS INC	WMB	68.36%	0.00%	31.64%
XTO ENERGY INC	XTO	18.55%	0.00%	81.45%
	Average	40.09%	0.64%	59.27%
	Median	33.63%	0.00%	66.38%

Source: *S&P Compustat*, January 2004.

Interstate Natural Gas Pipeline Forum (Pipelines)
Capital Structure (S&P Data) - January 1, 2004

Company Name	Ticker	LTD %	PS %	CS %
EL PASO CORP	EP	82.11%	0.00%	17.89%
KINDER MORGAN INC	KMI	30.67%	0.00%	69.33%
NATIONAL FUEL GAS CO	NFG	36.58%	0.00%	63.42%
QUESTAR CORP	STR	25.62%	0.00%	74.38%
WILLIAMS COS INC	WMB	68.36%	0.00%	31.64%
	Average	48.67%	0.00%	51.33%
	Median	36.58%	0.00%	63.42%

Source: *S&P Compustat*, January 2004.

Cost of Debt

The expected return on debt, or the cost of debt capital (D_r), 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. 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.[24]

From information in *Mergent Bond Record* (January 2004), we found the Mergent 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. (Recently, several of the companies' debt have been downgraded.) The yield for utility bonds rated Baa was **6.61%** as of December 31, 2003 and the yield for corporate bonds rated Baa was **6.60%** as of December 31, 2003. 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 yield to maturity to be **6.87%** for the bonds rated **Baa**. Additionally, we found the median yield to maturity for all bonds issued by this group, regardless of rating, to be **7.63%**. From this information we determined the appropriate cost of debt capital to be **6.75%**. 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*.

[24] *Ibid*, 150.

Value Line Natural Gas Diversified Industry (All)

S&P and Mergent Long-Term Debt Ratings - January 1, 2004

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating
ATP Oil & Gas Corp	ATPG				
Cabot Oil & Gas 'A'	COG				
Callon Pete Co	CPE	B	17		
Crosstex Energy LP	XTEX				
Delta Natural Gas	DGAS				
Devon Energy	DVN	BBB	11	Baa2	11
Dynegy Inc. 'A'	DYN	B	17	Caa2	20
Eastern Amern Nat Gas Tr	NGT				
El Paso Corp.	EP	B	17	Caa1	19
El Pas Natural Gas Co.				B1	16
Enterprise Products	EPD	BBB-	12	Baa2	11
EOG Resources	EOG	BBB+	10		
Equitable Resources	EQT	A	8	A2	8
GulfTerra Energy Partners	GTM	BB+	13	B1	16
KCS Energy	KCS				
Kinder Morgan	KMP	BBB+	10	Baa1	10
Kinder Morgan Energy	KMI	BBB	11	Baa2	11
Markwest Energy Partners LP	MWE				
National Fuel Gas	NFG	BBB+	10	A3	9
Newfield Exploration	NFX	BB+	13		
Northern Border Partners LP	NBP	A-	9	Baa2	11
Northern Natural Gas Co.				Baa2	11
ONEOK Inc.	OKE	A-	9	Baa1	10
Patina Oil & Gas	POG				
Penn Virginia Corp.	PVA				
Petroleum Development Corp.	PETD				
Plains Resources	PLX			B2	17
Questar Corp.	STR			A2	8
Rentech Inc.	RTK				
San Juan Basin Rlty.	SJT				
Southern Natural Gas				B1	16
Southwestern Energy	SWN	BBB	11	Ba2	14
TEPPCO Partners L.P.	TPP	BBB	11	Baa3	12
Texas Eastern Transmission				Baa2	11
Texas Gas Transmission				Baa1	10
Tipperary Corp	TPY				
Transcontinental Gas Pipe Line				B1	16
Universal Compression Holdings	UCO	BB-	15	B1	16
Vintage Petroleum	VPI	BB-	15	B1	16
Western Gas Res.	WGR	BB+	13	Ba3	15
Williams Coal Sm Gs	WTU				
Williams Cos.	WMB	B+	16	B3	18
Williams Gas Pipelines				Ba1	13
XTO Energy	XTO	BBB-	12	Ba2	14
	Average	BBB-	12	Ba1	13
	Median	BBB-	12	Ba1	13

Source: *S&P Compustat* & *Mergent Bond Record*, January 2004.

Value Line Natural Gas Diversified Industry (Large)

S&P and Mergent Long-Term Debt Ratings - January 1, 2004

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating
Devon Energy	DVN	BBB	11	Baa2	11
Dynegy Inc. 'A'	DYN	B	17	Caa2	20
El Paso Corp.	EP	B	17	Caa1	19
EOG Resources	EOG	BBB+	10		
Equitable Resources	EQT	A	8	A2	8
Kinder Morgan Energy	KMI	BBB	11	Baa2	11
National Fuel Gas	NFG	BBB+	10	A3	9
ONEOK Inc.	OKE	A-	9	Baa1	10
Questar Corp.	STR			A2	8
Western Gas Res.	WGR	BB+	13	Ba3	15
Williams Cos.	WMB	B+	16	B3	18
XTO Energy	XTO	BBB-	12	Ba2	14
	Average	BBB-	12	Ba1	13
	Median	BBB	11	Baa2	11

Source: *S&P Compustat* & *Mergent Bond Record*, January 2004.

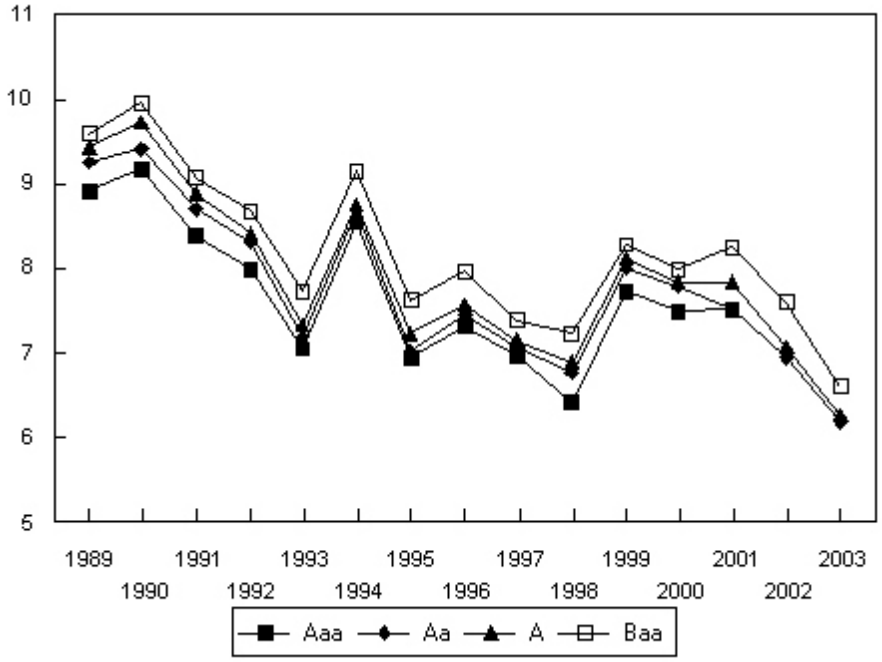
Interstate Natural Gas Pipeline Forum (Pipes)

S&P and Mergent Long-Term Debt Ratings - January 1, 2004

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating
El Paso Corp.	EP	B	17	Caa1	19
El Pas Natural Gas Co.				B1	16
Kinder Morgan Energy	KMI	BBB	11	Baa2	11
National Fuel Gas	NFG	BBB+	10	A3	9
Northern Natural Gas Co.				Baa2	11
Questar Corp.	STR			A2	8
Southern Natural Gas				B1	16
Texas Eastern Transmission				Baa2	11
Texas Gas Transmission				Baa1	10
Williams Cos.	WMB	B+	16	B3	18
Williams Gas Pipelines				Ba1	13
	Average	BB	12	Ba1	12
	Median	BB	11	Baa2	11

Source: *S&P Compustat* & *Mergent Bond Record*, January 2004.

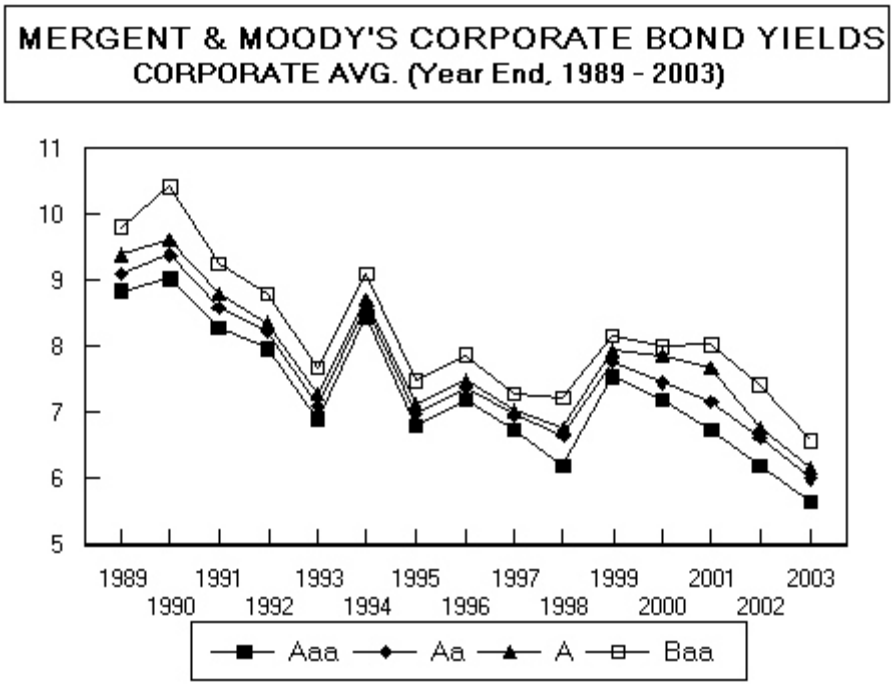
Mergent Utility Bond Yields
Public Utility Yields (1989 - 2003)
Year End Data



1989-2003 PUBLIC UTILITY BOND YIELDS - Year End Data				
Year End Date	Aaa	Aa	A	Baa
1989	8.92	9.26	9.44	9.60
1990	9.18	9.42	9.73	9.96
1991	8.38	8.71	8.88	9.07
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

Source: *Mergent* & *Moody's Bond Record*, January - 1989 - 2003.

Mergent Corporate Bond Yields



1989 -2003 MERGENT & MOODY'S CORP. BOND YIELDS CORPORATE AVERAGES - Year End Data				
Year End Date	Aaa	Aa	A	Baa
1989	8.86	9.11	9.39	9.82
1990	9.05	9.39	9.64	10.43
1991	8.31	8.61	8.82	9.26
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

Source: *Mergent* & *Moody's Bond Record* , January 1989 -2003.

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, 2004

Company Groups	*Value Line* Data		S&P (IBES) Data	
	Average	Median	Average	Median
Value Line Natural Gas (Diversified) - All	12.41	11.56	11.83	11.93
Value Line Natural Gas (Diversified) - All w/o LPs	11.68	9.73	10.27	10.32
Value Line Natural Gas (Diversified) - Large	11.03	9.41	10.46	10.47
Interstate Natural Gas Pipeline Forum (Pipes)	13.04	9.73	10.39	10.11
S&P Screened Comparables Group	17.01	17.33	11.72	10.12
Averages	13.03	11.55	10.93	10.59

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, 2004

General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
20-Year Treasury Bonds (ex post)	5.21	7.20	12.41
20-Year Treasury Bonds (ex ante)	5.21	7.88	13.09

Risk Premium Indicators by Groups

Indicators	Risk Premium	
	Average	Median
Natural Gas Diversified Industry (All)	14.70	13.75
Natural Gas Diversified Industry (Large)	15.43	13.58
Interstate Nat. Gas Pipeline Forum Group	14.47	14.06
Average	14.87	13.79

Risk Premium Formula: Ke = Rf + Rp

Base Rate: Yield to maturity on each company's long-term bonds, *Mergent Bond Record*, January, 2004.

Risk Premium: *SBBI*, Ibbotson Associates, 2004 Corporate Bond RP of 6.2%.

Capital Asset Pricing Model (CAPM) - January 1, 2004

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
CAPM Indicator *				
Long-Term Gov't Bonds (ex post)	5.21	7.20	0.90	11.69
Long-Term Gov't Bonds (ex ante)	5.21	7.88	0.90	12.30

CAPM Formula: Ke = Rf + B(Rp)

* CAPM Indicator is based upon a *Value Line* beta of 0.90. Ibbotson & Associates, *2004 SBBI & Risk Premia over Time Report*;, & Federal Reserve data January 2, 2004.

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 10,300 companies for companies with risk equal to the risk of the typical interstate natural gas pipeline. As a measure of financial risk Standard and Poor's has placed a rating of **BBB-** on most of the long-term debt of companies comprising the natural gas pipeline industry. Our first screening process was to find all companies having a S&P senior debt rating of BB+ to BBB (the highest rated double B debt to the mid-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 fifty 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. Again, 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 0.86

presently. Thus we excluded all companies with S&P adjusted betas less than 0.71 and greater than 1.01. 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, 2004
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	0.74	4.99	0.29
Dynegy Inc	DYN	B	17	1.56	(3.08)	0.25
El Paso Corp	EP	B	17	1.18	(0.30)	0.26
EOG Resources Inc	EOG	BBB+	10	0.84	5.43	0.30
Equitable Resources Inc	EQT	A	8	0.52	17.77	0.43
Kinder Morgan Inc	KMI	BBB	11	0.42	3.91	0.10
National Fuel Gas Co	NFG	BBB+	10	0.52	10.14	0.57
ONEOK Inc	OKE	A-	9	0.53	12.32	0.36
Questar Corp	STR			0.74	10.47	0.38
Western Gas Resources Inc	WGR	BB+	13	0.79	13.06	1.94
Williams Cos Inc	WMB	B+	16	1.40	7.39	0.15
XTO Energy Inc	XTO	BBB-	12	1.06	14.52	0.34
	Average	BBB-	12	0.86	8.05	0.45

Source: *S&P Compustat*, January 2004.

Surviving the screening process are eight (8) 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:

CSX Corp
GATX Corp
International Paper
Mandalay Resort Group
PNM Resources
Pogo Producing
PPL Corp
Rayonier Inc. (REIT)

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 all 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.[25] 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 **10.75%** as of January 1, 2004. The result of all of the DCF analysis and research can be found below.

[25] 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.

Summary of DCF Method Indicators

Company Groups	*Value Line* Data		S&P (IBES) Data	
	Average	Median	Average	Median
Value Line Natural Gas (Diversified) - All	12.41	11.56	11.83	11.93
Value Line Natural Gas (Diversified) - All w/o LPs	11.68	9.73	10.27	10.32
Value Line Natural Gas (Diversified) - Large	11.03	9.41	10.46	10.47
Interstate Natural Gas Pipeline Forum (Pipes)	13.04	9.73	10.39	10.11
S&P Screened Comparables Group	17.01	17.33	11.72	10.12
Averages	13.03	11.55	10.93	10.59

The discounted cash flow model for above industry groups were calculated using *Value Line* data and *Value Line* earnings growth estimates and using S&P's *Compustat* data with Institutional Brokers Estimate System (IBES) earnings growth.

Value Line Natural Gas Diversified Industry (All) VL Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP Oil & Gas Corp	ATPG		10.00	
Cabot Oil & Gas 'A'	COG	0.50	11.00	11.50
Callon Pete Co	CPE		32.50	
Crosstex Energy LP	XTEX		10.00	
Delta Natural Gas	DGAS		4.00	
Devon Energy	DVN	0.33	7.50	7.83
Dynegy Inc. 'A'	DYN			
Eastern Amern Nat Gas Tr	NGT			
El Paso Corp.	EP	1.64	(9.00)	
Enterprise Products	EPD	6.34	8.50	14.84
EOG Resources	EOG	0.43	7.00	7.43
Equitable Resources	EQT	2.73	12.00	14.73
GulfTerra Energy Partners	GTM		7.50	
KCS Energy	KCS			
Kinder Morgan	KMI	2.60	18.50	21.10
Kinder Morgan Energy	KMP	5.49	11.50	16.99
Markwest Energy Partners LP	MWE		9.00	
National Fuel Gas	NFG	4.28	4.00	8.28
Newfield Exploration	NFX		10.00	
Northern Border Partners LP	NBP		5.67	
ONEOK Inc.	OKE	3.11	8.50	11.61
Patina Oil & Gas	POG	0.68	17.00	17.68
Penn Virginia Corp.	PVA		13.50	
Petroleum Development Corp.	PETD			
Plains Resources	PLX			
Questar Corp.	STR	2.23	7.50	9.73
Rentech Inc.	RTK			
San Juan Basin Rlty.	SJT			
Southwestern Energy	SWN		9.00	
TEPPCO Partners L.P.	TPP	6.90	6.50	13.40
Tipperary Corp	TPY			
Universal Compression Holdings	UCO		10.00	
Vintage Petroleum	VPI	1.34	(2.50)	
Western Gas Res.	WGR	0.41	9.00	9.41
Williams Coal Sm Gs	WTU			
Williams Cos.	WMB	0.35	(1.00)	
XTO Energy	XTO	0.14	9.00	9.14
	Average	2.32	8.79	12.41
	Median	1.64	9.00	11.56

Source: *Value Line* CD Rom, January 2004.

Value Line Natural Gas Diversified Industry (All) S&P Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP OIL & GAS CORP	ATPG		10.00	
CABOT OIL & GAS CORP	COG	0.57	5.00	5.57
CALLON PETROLEUM CO/DE	CPE		32.50	
CROSSTEX ENERGY LP	XTEX	7.32	8.00	15.32
DELTA NATURAL GAS CO INC	DGAS	5.12	4.00	9.12
DEVON ENERGY CORP	DVN	0.37	5.00	5.37
DYNEGY INC	DYN			
EASTERN AMERN NATURAL GAS TR	NGT			
EL PASO CORP	EP	2.11	8.00	10.11
ENTERPRISE PRODS PRTNER -LP	EPD	6.68	10.00	16.68
EOG RESOURCES INC	EOG	0.49	12.00	12.49
EQUITABLE RESOURCES INC	EQT	3.08	10.00	13.08
GULFTERRA ENERGY PARTNERS-LP	GTM	7.20	7.75	14.95
KCS ENERGY INC	KCS			
KINDER MORGAN ENERGY -LP	KMP	5.84	9.00	14.84
KINDER MORGAN INC	KMI	3.04	12.20	15.24
MARKWEST ENERGY PARTNERS LP	MWE	7.04	12.00	19.04
NATIONAL FUEL GAS CO	NFG	4.64	5.00	9.64
NEWFIELD EXPLORATION CO	NFX		10.00	
NORTHERN BORDER PARTNRS -LP	NBP	8.43	3.50	11.93
ONEOK INC	OKE	3.52	8.00	11.52
PATINA OIL & GAS CORP	POG	0.75	15.00	15.75
PENN VIRGINIA CORP	PVA	1.82	12.50	14.32
PETROLEUM DEVELOPMENT CORP	PETD			
PLAINS RESOURCES INC	PLX			
QUESTAR CORP	STR	2.54	9.00	11.54
RENTECH INC	RTK			
SAN JUAN BASIN ROYALTY TR	SJT			
SOUTHWESTERN ENERGY CO	SWN		10.00	
TEPPCO PARTNERS -LP	TPP	6.97	8.00	14.97
TIPPERARY CORP	TPY			
UNIVERSAL COMPRESSION HLDGS	UCO		12.50	
VINTAGE PETROLEUM INC	VPI	1.54	3.00	4.54
WESTERN GAS RESOURCES INC	WGR	0.47	10.00	10.47
WILLIAMS COAL SEAM RYL TRUST	WTU			
WILLIAMS COS INC	WMB	0.43	5.00	5.43
XTO ENERGY INC	XTO	0.16	10.00	10.16
	Average	3.48	9.53	11.83
	Median	3.04	9.50	11.93

Source: *S&P Compustat*, January 2004.

VL Natural Gas Diversified Industry (w/o LPs) VL Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP Oil & Gas Corp	ATPG		10.00	
Cabot Oil & Gas 'A'	COG	0.50	11.00	11.50
Delta Natural Gas	DGAS		4.00	
Devon Energy	DVN	0.33	7.50	7.83
Dynegy Inc. 'A'	DYN			
El Paso Corp.	EP	1.64	(9.00)	
EOG Resources	EOG	0.43	7.00	7.43
Equitable Resources	EQT	2.73	12.00	14.73
KCS Energy	KCS			
Kinder Morgan	KMI	2.60	18.50	21.10
National Fuel Gas	NFG	4.28	4.00	8.28
ONEOK Inc.	OKE	3.11	8.50	11.61
Patina Oil & Gas	POG	0.68	17.00	17.68
Penn Virginia Corp.	PVA		13.50	
Petroleum Development Corp.	PETD			
Plains Resources	PLX			
Questar Corp.	STR	2.23	7.50	9.73
Southwestern Energy	SWN		9.00	
Universal Compression Holdings	UCO		10.00	
Vintage Petroleum	VPI	1.34	(2.50)	
Western Gas Res.	WGR	0.41	9.00	9.41
Williams Cos.	WMB	0.35	(1.00)	
XTO Energy	XTO	0.14	9.00	9.14
	Average	1.48	7.63	11.68
	Median	1.01	9.00	9.73

Source: *Value Line* CD Rom, January 2004.

VL Natural Gas Diversified Ind. (w/o LPs) S&P Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP OIL & GAS CORP	ATPG		10.00	
CABOT OIL & GAS CORP	COG	0.57	5.00	5.57
DELTA NATURAL GAS CO INC	DGAS	5.12	4.00	9.12
DEVON ENERGY CORP	DVN	0.37	5.00	5.37
DYNEGY INC	DYN			
EL PASO CORP	EP	2.11	8.00	10.11
EOG RESOURCES INC	EOG	0.49	12.00	12.49
EQUITABLE RESOURCES INC	EQT	3.08	10.00	13.08
KCS ENERGY INC	KCS			
KINDER MORGAN INC	KMI	3.04	12.20	15.24
NATIONAL FUEL GAS CO	NFG	4.64	5.00	9.64
ONEOK INC	OKE	3.52	8.00	11.52
PATINA OIL & GAS CORP	POG	0.75	15.00	15.75
PENN VIRGINIA CORP	PVA	1.82	12.50	14.32
PETROLEUM DEVELOPMENT CORP	PETD			
PLAINS RESOURCES INC	PLX			
QUESTAR CORP	STR	2.54	9.00	11.54
SOUTHWESTERN ENERGY CO	SWN		10.00	
UNIVERSAL COMPRESSION HLDGS	UCO		12.50	
VINTAGE PETROLEUM INC	VPI	1.54	3.00	4.54
WESTERN GAS RESOURCES INC	WGR	0.47	10.00	10.47
WILLIAMS COS INC	WMB	0.43	5.00	5.43
XTO ENERGY INC	XTO	0.16	10.00	10.16
	Average	1.92	8.75	10.27
	Median	1.68	10.00	10.32

Source: *S&P Compustat*, January 2004.

Value Line Natural Gas Diversified Ind. (Large) VL Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Devon Energy	DVN	0.33	7.50	7.83
Dynegy Inc. 'A'	DYN			
El Paso Corp.	EP	1.64	(9.00)	
EOG Resources	EOG	0.43	7.00	7.43
Equitable Resources	EQT	2.73	12.00	14.73
Kinder Morgan	KMI	2.60	18.50	21.10
National Fuel Gas	NFG	4.28	4.00	8.28
ONEOK Inc.	OKE	3.11	8.50	11.61
Questar Corp.	STR	2.23	7.50	9.73
Western Gas Res.	WGR	0.41	9.00	9.41
Williams Cos.	WMB	0.35	(1.00)	
XTO Energy	XTO	0.14	9.00	9.14
	Average	1.66	6.64	11.03
	Median	1.64	7.50	9.41

Source: *Value Line* CD Rom, January 2004.

Interstate Natural Gas Pipeline Forum (Pipelines) VL Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
El Paso Corp.	EP	1.64	(9.00)	
Kinder Morgan	KMI	2.60	18.50	21.10
National Fuel Gas	NFG	4.28	4.00	8.28
Questar Corp.	STR	2.23	7.50	9.73
Williams Cos.	WMB	0.35	(1.00)	
	Average	2.22	4.00	13.04
	Median	2.23	4.00	9.73

Source: *Value Line* CD Rom, January 2004.

Value Line Natural Gas Diversified Ind. (Large) S&P Data
DCF Indicator - January 1, 2004

Company Name	Ticker	Yield	Growth	DCF
DEVON ENERGY CORP	DVN	0.37	5.00	5.37
DYNEGY INC	DYN			
EL PASO CORP	EP	2.11	8.00	10.11
EOG RESOURCES INC	EOG	0.49	12.00	12.49
EQUITABLE RESOURCES INC	EQT	3.08	10.00	13.08
KINDER MORGAN INC	KMI	3.04	12.20	15.24
NATIONAL FUEL GAS CO	NFG	4.64	5.00	9.64
ONEOK INC	OKE	3.52	8.00	11.52
QUESTAR CORP	STR	2.54	9.00	11.54
WESTERN GAS RESOURCES INC	WGR	0.47	10.00	10.47
WILLIAMS COS INC	WMB	0.43	5.00	5.43
XTO ENERGY INC	XTO	0.16	10.00	10.16
	Average	1.90	8.56	10.46
	Median	2.11	9.00	10.47

Source: *S&P Compustat*, January 2004.

Interstate Natural Gas Pipeline Forum (Pipelines) S&P Data
DCF Indicator - January 1, 2004

Company Name	Ticker	Yield	Growth	DCF
EL PASO CORP	EP	2.11	8.00	10.11
KINDER MORGAN INC	KMI	3.04	12.20	15.24
NATIONAL FUEL GAS CO	NFG	4.64	5.00	9.64
QUESTAR CORP	STR	2.54	9.00	11.54
WILLIAMS COS INC	WMB	0.43	5.00	5.43
	Average	2.55	7.84	10.39
	Median	2.54	8.00	10.11

Source: *S&P Compustat*, January 2004.

Pipeline Screened Comparables Group - VL Data
DCF Indicator - January 1, 2004

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
CSX Corp.	CSX	1.14	16.00	17.14
GATX Corp.	GMT	4.50	20.00	24.50
Int'l Paper	IP	2.30	17.50	19.80
Mandalay Resort Group	MBG	2.33	15.00	17.33
PNM Resources	PNM	3.17	(4.50)	
Pogo Producing	PPP	0.43	13.00	13.43
PPL Corp.	PPL	3.52	3.00	6.52
Rayonier Inc. (REIT)	RYN	5.35	15.00	20.35
	Average	2.84	11.88	17.01
	Median	2.75	15.00	17.33

Source: *Value Line* CD Rom, January 2004.

Pipeline Screened Comparables Group - S&P Data
DCF Indicator - January 1, 2004

Company Name	Ticker	Yield	Growth	DCF
CSX CORP	CSX	1.25	12.00	13.25
GATX CORP	GMT	5.08	11.00	16.08
INTL PAPER CO	IP	2.48	7.00	9.48
MANDALAY RESORT GROUP	MBG	2.57	15.00	17.57
PNM RESOURCES INC	PNM	3.44	5.00	8.44
POGO PRODUCING CO	PPP	0.46	10.00	10.46
PPL CORP	PPL	3.70	5.00	8.70
RAYONIER INC	RYN	2.78	7.00	9.78
	Average	2.72	9.00	11.72
	Median	2.68	8.50	10.12

Source: *S&P Compustat*, January 2004.

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

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.

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 *2004 Valuation Edition* of *Stocks, Bonds, Bills and Inflation* (SBBI), published by Ibbotson Associates. 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.[26] 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, 2004). The average yield to maturity for each company's bonds was added to the SBBI corporate bond risk premium of 6.2% 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 *SBBI* published by Ibbotson Associates, Inc., indicates a cost of equity capital of 12.41% (ex post) and 13.09% (ex ante).

The range for all calculations of risk premiums using the indicators by specific company groups are between 13.58% and 15.43%. This measurement involved the use of the average and median long-term yields to maturity for company bonds with at least 20 years to maturity plus the corporate bond risk premium of 6.2%. A conservative view of these results would indicate a risk premium correlated indicator for the specific companies to be approximately 14.25%.

---

[26] Ibbotson & Associates, *2004 SBBI & Risk Premia over Time Report: 2004* and The Federal Reserve, January 2, 2004.

For the general indicators discussed above 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 12.75%.

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, 2004 is **13.00%** as of January 1, 2004. 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, 2004

General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
20-Year Treasury Bonds (ex post indicator)	5.21	7.20	12.41
20-Year Treasury Bonds (ex ante indicator)	5.21	7.88	13.09

Risk Premium Indicators by Groups

Indicators	Risk Premium	
	Average	Median
Natural Gas Diversified Industry (All)	14.70	13.75
Natural Gas Diversified Industry (Large)	15.43	13.58
Interstate Nat. Gas Pipeline Forum Group	14.47	14.06
Average	14.87	13.79

Risk Premium Formula: Ke = Rf + Rp
Base Rate: Yield to maturity on each company's long-term bonds, *Mergent Bond Record*, Jan. 2004. Risk Premium: SBBI, Ibbotson Associates, 2004 Corporate Bond RP of 6.2%.

Table 1 **Total Returns, Income Returns and Capital Appreciation**

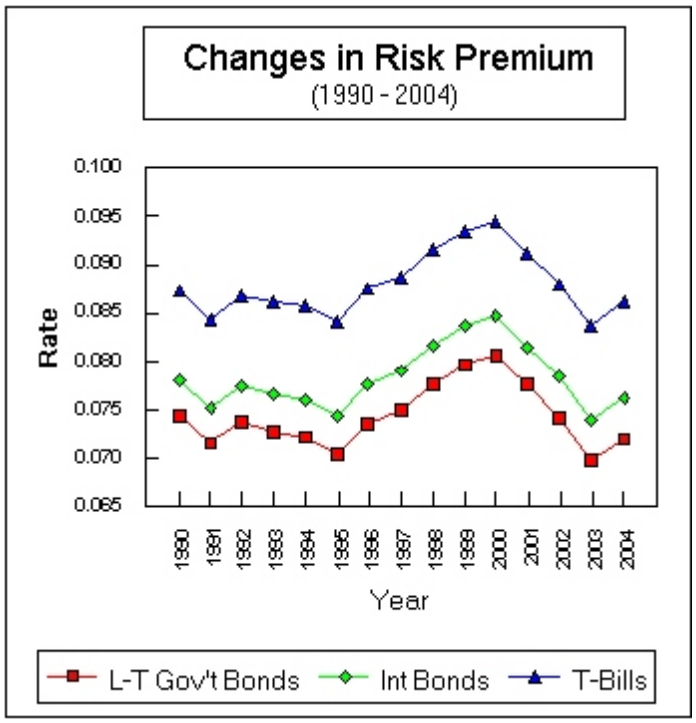
Summary Statistics of Annual Returns

From 1926 to 2003

Series	Geometric Mean	Arithmetic	Standard Deviation
Large Company Stocks			
Total Returns	10.4	12.4	20.4
Income	4.3	4.3	1.5
Capital Appreciation	5.9	7.8	19.7
Ibbotson Small Company Stocks			
Total Returns	12.7	17.5	33.3
Mid-Cap Stocks*			
Total Returns	11.3	14.2	25.1
Income	4.1	4.1	1.7
Capital Appreciation	7.0	9.8	24.4
Low-Cap Stocks*			
Total Returns	11.7	15.7	29.9
Income	3.8	3.8	1.9
Capital Appreciation	7.7	11.7	29.2
Micro-Cap Stocks*			
Total Returns	12.7	19.0	39.7
Income	2.6	2.7	1.8
Capital Appreciation	10.1	16.2	39.1
Long-Term Corporate Bonds			
Total Returns	5.9	6.2	8.6
Long-Term Government Bonds			
Total Returns	5.5	5.8	9.4
Income	5.2	5.2	2.8
Capital Appreciation	0.0	0.3	8.2
Intermediate-Term Government Bonds			
Total Returns	5.4	5.5	9.4
Income	4.7	4.8	3.0
Capital Appreciation	0.5	0.6	4.5
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.*

Changes in Risk Premium & Summary Calculations



RISK PREMIUM CALCULATION FOR COST OF EQUITY

L-T Govt Bonds	
Risk Premium*	7.2%
Applicable Rate**	5.2%
Indicated Cost of Equity	12.4%

Intermediate Gov't Bonds	
Risk Premium*	7.6%
Applicable Rate**	3.4%
Indicated Cost of Equity	11.0%

T-Bills	
Risk Premium*	8.6%
Applicable Rate**	0.9%
Indicated Cost of Equity	9.5%

Average Risk Premium	11.0%

Source: *Ibbotson & Associates, 2004 SBBI & *Risk Premia over Time Report: 2004*; ** and Federal Reserve Jan. 2, 2004

RISK PREMIUM			
Year	L-T Gov't	Intermediate	T-Bills
1990	0.0745	0.0781	0.0873
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

Value Line Natural Gas Diversified Industry (All)

Yield to Maturity for Long-Term Debt - January 1, 2004

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
ATP Oil & Gas Corp	ATPG				
Cabot Oil & Gas 'A'	COG				
Callon Pete Co	CPE				
Crosstex Energy LP	XTEX				
Delta Natural Gas	DGAS				
Devon Energy	DVN	Baa2	11	6.60	12.80
Dynegy Inc. 'A'	DYN	Caa2	20		
Eastern Amern Nat Gas Tr	NGT				
El Paso Corp.	EP	Caa1	19		
El Pas Natural Gas Co.		B1	16	11.24	17.44
Enterprise Products	EPD	Baa2	11		
EOG Resources	EOG				
Equitable Resources	EQT	A2	8	7.19	13.39
GulfTerra Energy Partners	GTM	B1	16		
KCS Energy	KCS				
Kinder Morgan	KMP	Baa1	10	7.02	13.22
Kinder Morgan Energy	KMI	Baa2	11	7.63	13.83
Markwest Energy Partners LP	MWE				
National Fuel Gas	NFG	A3	9		
Newfield Exploration	NFX				
Northern Border Partners LP	NBP	Baa2	11		
Northern Natural Gas Co.		Baa2	11		
ONEOK Inc.	OKE	Baa1	10	6.85	13.05
Patina Oil & Gas	POG				
Penn Virginia Corp.	PVA				
Petroleum Development Corp.	PETD				
Plains Resources	PLX	B2	17		
Questar Corp.	STR	A2	8		
Rentech Inc.	RTK				
San Juan Basin Rlty.	SJT				
Southern Natural Gas		B1	16	8.92	15.12
Southwestern Energy	SWN	Ba2	14		
TEPPCO Partners L.P.	TPP	Baa3	12		
Texas Eastern Transmission		Baa2	11	7.16	13.36
Texas Gas Transmission		Baa1	10	8.17	14.37
Tipperary Corp	TPY				
Transcontinental Gas Pipe Line		B1	16	8.51	14.71
Universal Compression Hldngs.	UCO	B1	16		
Vintage Petroleum	VPI	B1	16		
Western Gas Res.	WGR	Ba3	15		
Williams Coal Sm Gs	WTU				
Williams Cos.	WMB	B3	18	12.88	19.08
Williams Gas Pipelines		Ba1	13		
XTO Energy	XTO	Ba2	14		
	Average	Ba1	13	8.38	14.58
	Median	Ba1	13	7.63	13.83

* Yield to Maturity for bonds with 20 years or more to maturity. Source: *Mergent Bond Record*, Jan. 2004.

Value Line Natural Gas Diversified Industry (Large)

Yield to Maturity for Long-Term Debt - January 1, 2004

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
Devon Energy	DVN	Baa2	11	6.60	12.80
Dynegy Inc. 'A'	DYN	Caa2	20		
El Paso Corp.	EP	Caa1	19		
EOG Resources	EOG				
Equitable Resources	EQT	A2	8	7.19	13.39
Kinder Morgan Energy	KMI	Baa2	11	7.63	13.83
National Fuel Gas	NFG	A3	9		
ONEOK Inc.	OKE	Baa1	10	6.85	13.05
Questar Corp.	STR	A2	8		
Western Gas Res.	WGR	Ba3	15		
Williams Cos.	WMB	B3	18	12.88	19.08
XTO Energy	XTO	Ba2	14		
	Ba1	Ba1	13	8.23	14.43
	Baa2	Baa2	11	7.19	13.39

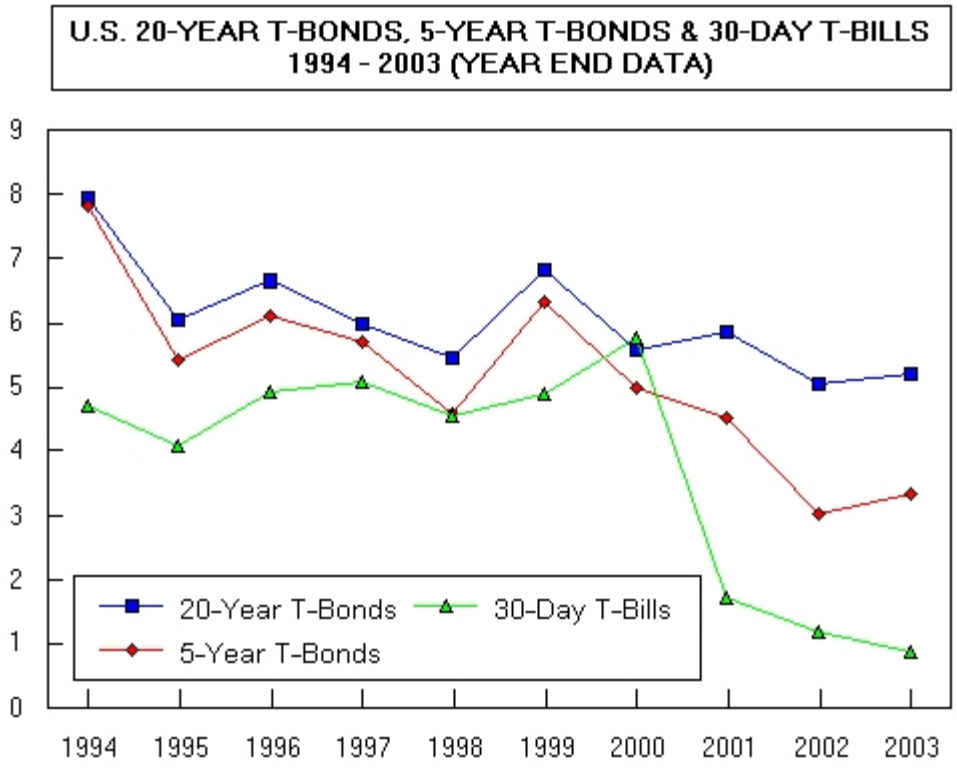
* Yield to Maturity for bonds with 20 years or more to maturity. Source: *Mergent Bond Record*, Jan. 2004.

Interstate Natural Gas Pipeline Forum (Pipes)

Yield to Maturity for Long-Term Debt - January 1, 2004

Company Name	Ticker	Mergent Rating	Numerical Rating	YTM* 20+ Bonds	Risk Prem. Indicator
El Paso Corp.	EP	Caa1	19		
El Pas Natural Gas Co.		B1	16	11.24	17.44
Kinder Morgan Energy	KMI	Baa2	11	7.63	13.83
National Fuel Gas	NFG	A3	9		
Northern Natural Gas Co.		Baa2	11		
Questar Corp.	STR	A2	8		
Southern Natural Gas		B1	16	8.92	15.12
Texas Eastern Transmission		Baa2	11	7.16	13.36
Texas Gas Transmission		Baa1	10	8.17	14.37
Williams Cos.	WMB	B3	18	12.88	19.08
Williams Gas Pipelines		Ba1	13		
	Average	Ba1	13	9.33	15.53
	Median	Baa2	11	8.55	14.75

* Yield to Maturity for bonds with 20 years or more to maturity. Source: *Mergent Bond Record*, Jan. 2004.



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
1994	7.96	7.81	4.72
1995	6.06	5.44	4.08
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

Source: WSJ, first issue of each respective year & Fed. Reserve

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 Ibbotson Associates 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 Ibbotson Associates, which includes data from 1926 through 2003. The indicated cost of equity by this method was 11.69% at January 1, 2004. Our *ex ante* CAPM calculations were based upon the expected risk premium of 7.88% 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 12.30% at January 1, 2004.

Our 'safe rates' for the CAPM calculations were derived as described in the risk premium method discussed earlier. Our beta estimate of 0.90 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)	0.86	0.75
VL Nat Gas (w/o LPs)	1.01	0.85
VL Nat Gas (large)	1.15	0.85
Nat Gas PL Forum (pipes)	1.26	0.80

Figure 5 - Value Line Betas

with the fundamental principle underlying the income approach which is the principle of anticipation. 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 13.09%. We then subtracted the current long-term Treasury bond rate of 5.21% to obtain the expected equity risk premium of 7.88%. 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 *SBBI* published by Ibbotson Associates, Inc. and the pipeline industry beta of 0.90, indicates a cost of equity capital of 11.69%. 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 12.30%.

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, 2004. This conclusion gives weight and consideration to both indicators. A summary of the CAPM indicators and the supporting data begins on the following page.

Summary of CAPM Indicators - January 1, 2004

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
CAPM Indicator *				
Long-Term Gov't Bonds (ex post)	5.21	7.20	0.90	11.69
Long-Term Gov't Bonds (ex ante)	5.21	7.88	0.90	12.30

CAPM Formula: Ke = Rf + B(Rp)

* CAPM Indicator is based upon a *Value Line* beta of 0.90. Ibbotson & Associates, *2004 SBBI* & *Risk Premia over Time Report*;, & Federal Reserve data January 2, 2004.

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 Pipeline as of January 1, 2004.

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 (Pipes) 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, 2004

Company Name	Ticker	Beta
ATP Oil & Gas Corp	ATPG	0.70
Cabot Oil & Gas 'A'	COG	0.95
Callon Pete Co	CPE	0.60
Crosstex Energy LP	XTEX	
Delta Natural Gas	DGAS	0.45
Devon Energy	DVN	0.85
Dynegy Inc. 'A'	DYN	2.55
Eastern Amern Nat Gas Tr	NGT	0.50
El Paso Corp.	EP	1.70
Enterprise Products	EPD	0.65
EOG Resources	EOG	0.85
Equitable Resources	EQT	0.70
GulfTerra Energy Partners	GTM	0.75
KCS Energy	KCS	1.30
Kinder Morgan	KMI	0.80
Kinder Morgan Energy	KMP	0.65
Markwest Energy Partners LP	MWE	
National Fuel Gas	NFG	0.75
Newfield Exploration	NFX	0.90
Northern Border Partners LP	NBP	0.50
ONEOK Inc.	OKE	0.85
Patina Oil & Gas	POG	0.90
Penn Virginia Corp.	PVA	0.70
Petroleum Development Corp.	PETD	0.70
Plains Resources	PLX	
Questar Corp.	STR	0.80
Rentech Inc.	RTK	0.45
San Juan Basin Rlty.	SJT	0.55
Southwestern Energy	SWN	0.70
TEPPCO Partners L.P.	TPP	0.60
Tipperary Corp	TPY	0.30
Universal Compression Holdings	UCO	1.05
Vintage Petroleum	VPI	0.95
Western Gas Res.	WGR	0.85
Williams Coal Sm Gs	WTU	0.60
Williams Cos.	WMB	2.25
XTO Energy	XTO	0.90
	Average	0.86
	Median	0.75

Source: *Value Line* CD Rom, January 2004.

VL Nat Gas Diversified Ind. (w/o LPs) Beta
Value Line - January 1, 2004

Company Name	Ticker	Beta
ATP Oil & Gas Corp	ATPG	0.70
Cabot Oil & Gas 'A'	COG	0.95
Delta Natural Gas	DGAS	0.45
Devon Energy	DVN	0.85
Dynegy Inc. 'A'	DYN	2.55
El Paso Corp.	EP	1.70
EOG Resources	EOG	0.85
Equitable Resources	EQT	0.70
KCS Energy	KCS	1.30
Kinder Morgan	KMI	0.80
National Fuel Gas	NFG	0.75
ONEOK Inc.	OKE	0.85
Patina Oil & Gas	POG	0.90
Penn Virginia Corp.	PVA	0.70
Petroleum Development Corp.	PETD	0.70
Plains Resources	PLX	
Questar Corp.	STR	0.80
Southwestern Energy	SWN	0.70
Universal Compression Holdings	UCO	1.05
Vintage Petroleum	VPI	0.95
Western Gas Res.	WGR	0.85
Williams Cos.	WMB	2.25
XTO Energy	XTO	0.90
	Average	1.01
	Median	0.85

Source: Value Line CD Rom, January 2004.

VL Natural Gas Diversified Ind. (Large) Beta
Value Line - January 1, 2004

Company Name	Ticker	Beta
Devon Energy	DVN	0.85
Dynegy Inc. 'A'	DYN	2.55
El Paso Corp.	EP	1.70
EOG Resources	EOG	0.85
Equitable Resources	EQT	0.70
Kinder Morgan	KMI	0.80
National Fuel Gas	NFG	0.75
ONEOK Inc.	OKE	0.85
Questar Corp.	STR	0.80
Western Gas Res.	WGR	0.85
Williams Cos.	WMB	2.25
XTO Energy	XTO	0.90
	Average	1.15
	Median	0.85

Source: *Value Line* CD Rom, January 2004.

Interstate Nat. Gas PL Forum (Pipelines) Beta
Value Line - January 1, 2004

Company Name	Ticker	Beta
El Paso Corp.	EP	1.70
Kinder Morgan	KMI	0.80
National Fuel Gas	NFG	0.75
Questar Corp.	STR	0.80
Williams Cos.	WMB	2.25
	Average	1.26
	Median	0.80

Source: *Value Line* CD Rom, January 2004.

Cost of Equity Indication Using Expected Risk Premium

Weighted Average Cost of Equity for S&P 500 = Market Required Cost of Equity

CAPM Calculations:

S&P 500 Expected Equity Cost (Wt. Avg)	13.09		**LT Gov't. Bond Yield**		**Cost of Equity by CAPM**
Current Yield on L-T Gov't. Bonds	5.21				
Expected Equity Risk Premium	7.88				
Beta	0.90				
Adjusted Risk Premium	7.09	Plus	5.21	Equals	12.30

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 2004)

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
3M CO	1.47	85.03	1.73	11.25	12.98	66,738.60
ABBOTT LABORATORIES	1.10	46.60	2.36	12.00	14.36	72,852.25
ACE LIMITED	0.84	41.42	2.03	13.60	15.63	11,559.37
ADOBE SYSTEMS INC.	0.06	39.08	0.15	15.00	15.15	9,145.19
AETNA INC	0.05	67.58	0.07	15.65	15.72	10,310.61
AFLAC INC	0.37	36.18	1.02	15.00	16.02	18,554.19
AIR PRODUCTS & CHEMICALS INC	1.01	52.83	1.92	10.00	11.92	12,006.46
ALBERTO-CULVER CO -CL B	0.47	63.08	0.75	12.00	12.75	3,782.28
ALBERTSONS INC	0.82	22.65	3.62	8.00	11.62	8,310.74
ALCOA INC	0.67	38.00	1.77	12.00	13.77	32,883.49
ALLEGHENY TECHNOLOGIES INC	0.27	13.22	2.01	10.50	12.51	1,066.85
ALLERGAN INC	0.44	76.81	0.57	22.25	22.82	10,312.13
ALLSTATE CORP	1.02	43.02	2.36	10.50	12.86	30,267.75
ALLTEL CORP	1.55	46.58	3.34	5.00	8.34	14,536.17
ALTRIA GROUP INC	2.96	54.42	5.45	9.00	14.45	110,536.38
AMBAC FINANCIAL GP	0.50	69.39	0.72	14.00	14.72	7,414.67
AMERADA HESS CORP	1.28	53.17	2.40	6.30	8.70	4,778.71
AMEREN CORP	2.62	46.00	5.69	3.00	8.69	7,470.45
AMERICAN ELECTRIC POWER	1.45	30.51	4.77	3.90	8.67	12,325.02
AMERICAN EXPRESS	0.45	48.23	0.93	12.00	12.93	62,037.48
AMERICAN INTERNATIONAL GROUP	0.30	66.28	0.45	14.00	14.45	172,854.66
AMERICAN PWR CNVRSION	0.37	24.50	1.50	15.00	16.50	4,864.52
AMERISOURCEBERGEN CORP	0.12	56.15	0.20	15.00	15.20	6,296.49
AMSOUTH BANCORPORATION	1.04	24.50	4.23	8.00	12.23	8,601.19
ANADARKO PETROLEUM CORP	0.62	51.01	1.21	10.00	11.21	12,798.31
ANALOG DEVICES	0.05	45.65	0.11	22.50	22.61	16,972.90
ANHEUSER-BUSCH COS INC	0.99	52.68	1.87	12.00	13.87	42,921.56
AON CORP	0.67	23.94	2.81	12.00	14.81	7,507.78
APACHE CORP	0.52	81.10	0.64	8.30	8.94	13,141.28
APPLERA CORP APPLIED BIOSYS	0.19	20.71	0.90	10.00	10.90	4,308.24
ARCHER-DANIELS-MIDLAND CO	0.26	15.22	1.71	8.50	10.21	9,842.23
ASHLAND INC	1.18	44.06	2.69	7.55	10.24	3,029.65
AUTODESK INC	0.13	24.58	0.55	12.00	12.55	2,772.62
AUTOMATIC DATA PROCESSING	0.62	39.61	1.56	10.00	11.56	23,545.69
AVERY DENNISON CORP	1.63	56.02	2.91	10.00	12.91	6,188.53
AVON PRODUCTS	0.94	67.49	1.39	12.00	13.39	15,961.92
BAKER-HUGHES INC	0.53	32.16	1.64	15.00	16.64	10,768.68
BALL CORP	0.66	59.57	1.11	10.00	11.11	3,357.19
BANK OF AMERICA CORP	3.52	80.43	4.38	10.00	14.38	119,503.30
BANK OF NEW YORK CO INC	0.85	33.12	2.57	12.00	14.57	25,588.05
BANK ONE CORP	1.10	45.59	2.41	10.00	12.41	50,965.29
BARD (C.R.) INC	1.03	81.25	1.27	12.00	13.27	4,213.63
BAUSCH & LOMB INC	0.58	51.90	1.11	11.00	12.11	2,721.22
BAXTER INTERNATIONAL INC	0.65	30.52	2.14	12.00	14.14	18,626.42
BB&T CORP	1.41	38.64	3.64	10.00	13.64	21,120.89
BEAR STEARNS COMPANIES INC	0.88	79.95	1.10	10.00	11.10	7,836.78
BECTON DICKINSON & CO	0.67	41.14	1.62	11.00	12.62	10,411.63
BELLSOUTH CORP	0.94	28.30	3.32	2.00	5.32	52,301.71
BEMIS CO	1.21	50.00	2.42	8.00	10.42	2,656.00
BEST BUY CO INC	0.46	52.24	0.88	15.00	15.88	16,906.28
BIOMET INC	0.17	36.22	0.48	15.00	15.48	9,260.29
BLACK & DECKER CORP	0.93	49.32	1.89	11.00	12.89	3,833.99
BLOCK H & R INC	0.92	55.37	1.66	15.00	16.66	9,983.99
BOEING CO	0.75	42.14	1.78	10.00	11.78	33,721.10
BOISE CASCADE CORP	0.64	32.86	1.95	7.00	8.95	3,581.69
BRISTOL MYERS SQUIBB	1.18	28.60	4.11	5.00	9.11	55,463.58
BROWN-FORMAN -CL B	1.84	93.45	1.97	8.50	10.47	5,769.83

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
BRUNSWICK CORP	0.57	31.83	1.78	13.50	15.28	2,913.11
BURLINGTON NORTHERN SANTA FE	0.66	32.35	2.03	9.50	11.53	12,008.97
BURLINGTON RESOURCES INC	0.68	55.38	1.23	13.70	14.93	10,941.70
CAMPBELL SOUP CO	0.67	26.80	2.52	7.00	9.52	11,016.60
CAPITAL ONE FINL CORP	0.12	61.29	0.20	15.00	15.20	14,632.55
CARDINAL HEALTH INC	0.14	61.16	0.23	16.00	16.23	26,478.73
CARNIVAL CORP	0.57	39.73	1.45	15.00	16.45	25,026.44
CATERPILLAR INC	1.63	83.02	1.96	10.00	11.96	28,661.82
CENTERPOINT ENERGY INC	0.41	9.69	4.25	3.00	7.25	2,965.90
CENTEX CORP	0.18	107.65	0.17	15.00	15.17	6,702.07
CENTURYTEL INC	0.23	32.62	0.70	3.90	4.60	4,704.00
CHARTER ONE FINANCIAL INC	1.15	34.55	3.34	11.00	14.34	7,691.83
CHEVRONTEXACO CORP	3.15	86.39	3.64	7.80	11.44	92,347.37
CHUBB CORP	1.61	68.10	2.37	12.00	14.37	13,248.80
CIGNA CORP	1.45	57.50	2.53	10.00	12.53	8,078.17
CINCINNATI FINANCIAL CORP	1.10	41.75	2.63	10.00	12.63	6,697.87
CINERGY CORP	1.91	38.81	4.93	4.00	8.93	6,910.90
CINTAS CORP	0.31	50.10	0.62	15.00	15.62	8,555.83
CIRCUIT CITY STORES INC	0.08	10.13	0.77	12.00	12.77	2,121.86
CITIGROUP INC	1.57	48.54	3.23	12.00	15.23	250,402.19
CLEAR CHANNEL COMMUNICATIONS	0.47	46.83	1.01	18.00	19.01	28,827.66
CLOROX CO/DE	1.19	48.56	2.45	10.00	12.45	10,247.52
COCA-COLA CO	0.97	50.75	1.91	10.10	12.01	124,414.23
COCA-COLA ENTERPRISES	0.18	21.87	0.81	11.00	11.81	9,948.71
COLGATE-PALMOLIVE CO	1.07	50.05	2.13	11.00	13.13	26,888.86
COMERICA INC.	2.16	56.06	3.85	8.00	11.85	9,830.57
COMPUTER ASSOCIATES INTL INC	0.09	27.34	0.34	15.00	15.34	15,832.10
CONAGRA FOODS INC	1.12	26.39	4.26	8.00	12.26	14,169.48
CONOCOPHILLIPS	1.81	65.57	2.75	5.00	7.75	44,638.42
CONSOLIDATED EDISON INC	2.31	43.01	5.36	3.00	8.36	10,051.29
CONSTELLATION ENERGY GRP INC	1.11	39.16	2.84	6.95	9.79	6,550.37
COOPER INDUSTRIES LTD	1.54	57.93	2.66	10.00	12.66	5,407.88
COOPER TIRE & RUBBER	0.46	21.38	2.16	10.00	12.16	1,578.76
COORS (ADOLPH) -CL B	0.89	56.10	1.59	9.00	10.59	1,971.47
COUNTRYWIDE FINANCIAL CORP	0.68	75.85	0.89	12.50	13.39	13,977.49
CRANE CO	0.44	30.74	1.43	10.00	11.43	1,826.66
CSX CORP	0.45	35.94	1.25	12.00	13.25	7,691.84
CUMMINS INC	1.30	48.94	2.65	8.00	10.65	2,070.16
CVS CORP	0.26	36.12	0.71	12.00	12.71	14,265.16
DANA CORP	0.26	18.35	1.44	10.00	11.44	2,727.12
DANAHER CORP	0.12	91.75	0.13	15.00	15.13	14,088.76
DARDEN RESTAURANTS INC	0.09	21.04	0.43	13.00	13.43	3,468.68
DEERE & CO	0.95	65.05	1.46	8.00	9.46	15,892.56
DELPHI CORP	0.30	10.21	2.98	8.50	11.48	5,720.62
DELUXE CORP	1.60	41.33	3.87	8.00	11.87	2,088.94
DEVON ENERGY CORP	0.21	57.26	0.37	5.00	5.37	13,316.21
DILLARDS INC -CL A	0.17	16.46	1.02	4.95	5.97	1,305.43
DISNEY (WALT) CO	0.24	23.33	1.03	14.80	15.83	47,718.34
DOLLAR GENERAL CORP	0.16	20.99	0.77	15.00	15.77	7,073.86
DOMINION RESOURCES INC	2.72	63.83	4.26	5.50	9.76	20,707.35
DONNELLEY ® R) & SONS CO	1.14	30.15	3.78	9.50	13.28	3,425.70
DOVER CORP	0.68	39.75	1.71	13.00	14.71	8,050.09
DOW CHEMICAL	1.43	41.57	3.45	7.00	10.45	38,266.64
DOW JONES & CO INC	1.13	49.85	2.28	13.50	15.78	4,039.91
DTE ENERGY CO	2.15	39.40	5.46	4.50	9.96	10,896.79
DU PONT (E I) DE NEMOURS	1.53	45.89	3.34	9.50	12.84	45,742.10
DUKE ENERGY CORP	1.15	20.45	5.60	4.10	9.70	18,977.19

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
EASTMAN CHEMICAL CO	1.88	39.53	4.76	7.00	11.76	3,058.32
EASTMAN KODAK CO	0.53	25.67	2.05	5.00	7.05	7,356.35
EATON CORP	2.11	107.98	1.96	10.00	11.96	8,206.48
ECOLAB INC	0.36	27.37	1.31	12.00	13.31	7,051.94
EL PASO CORP	0.17	8.19	2.11	8.00	10.11	5,053.39
ELECTRONIC DATA SYSTEMS CORP	0.67	24.54	2.71	11.00	13.71	12,430.20
EMERSON ELECTRIC CO	1.76	64.75	2.72	10.00	12.72	27,287.20
ENGELHARD CORP	0.48	29.95	1.62	10.00	11.62	3,757.44
ENTERGY CORP	1.91	57.13	3.34	6.00	9.34	13,071.86
EOG RESOURCES INC	0.22	46.17	0.49	12.00	12.49	5,313.52
EQUIFAX INC	0.09	24.50	0.36	9.30	9.66	3,407.39
EQUITY OFFICE PROPERTIES TR	2.09	28.65	7.29	4.50	11.79	11,453.21
EQUITY RESIDENTIAL	1.81	29.51	6.14	4.75	10.89	8,128.85
EXELON CORP	2.10	66.36	3.16	5.00	8.16	21,701.11
EXXON MOBIL CORP	1.07	41.00	2.62	7.50	10.12	271,001.81
FAMILY DOLLAR STORES	0.35	35.88	0.98	17.00	17.98	6,187.18
FANNIE MAE	2.03	75.06	2.71	13.00	15.71	72,933.33
FEDERAL HOME LOAN MORTG CORP	1.16	58.32	2.00	12.00	14.00	40,469.47
FEDERATED DEPT STORES	0.54	47.13	1.16	8.95	10.11	8,520.63
FEDERATED INVESTORS INC	0.38	29.36	1.31	13.00	14.31	3,190.14
FEDEX CORP	0.27	67.50	0.40	13.00	13.40	20,140.92
FIFTH THIRD BANCORP	1.30	59.10	2.20	12.00	14.20	33,628.91
FIRST DATA CORP	0.09	41.09	0.22	15.00	15.22	29,946.88
FIRST TENNESSEE NATL CORP	1.76	44.10	3.99	10.00	13.99	5,534.86
FIRSTENERGY CORP	1.56	35.20	4.43	4.00	8.43	11,462.39
FLEETBOSTON FINANCIAL CORP	1.53	43.65	3.50	9.00	12.50	46,031.54
FLUOR CORP	0.72	39.64	1.82	12.75	14.57	3,252.15
FORD MOTOR CO	0.42	16.00	2.63	5.00	7.63	28,163.06
FORTUNE BRANDS INC	1.34	71.49	1.88	12.00	13.88	10,383.28
FPL GROUP INC	2.52	65.42	3.85	5.00	8.85	12,033.81
FRANKLIN RESOURCES INC	0.38	52.06	0.73	12.00	12.73	12,935.50
FREEPRT MCMOR COP&GLD -CL B	0.46	42.13	1.09	27.50	28.59	7,226.60
GANNETT CO	1.10	89.16	1.23	10.00	11.23	24,167.89
GAP INC	0.10	23.21	0.44	15.00	15.44	20,792.31
GENERAL DYNAMICS CORP	1.41	90.39	1.56	10.00	11.56	17,873.45
GENERAL ELECTRIC CO	0.88	30.98	2.84	10.00	12.84	310,383.97
GENERAL MILLS INC	1.21	45.30	2.67	10.00	12.67	16,913.62
GENERAL MOTORS CORP	2.12	53.40	3.97	6.00	9.97	29,944.10
GENUINE PARTS CO	1.25	33.20	3.77	6.00	9.77	5,775.74
GEORGIA-PACIFIC CORP	0.53	30.67	1.71	5.00	6.71	7,794.20
GILLETTE CO	0.72	36.73	1.96	11.00	12.96	37,160.51
GOLDEN WEST FINANCIAL CORP	0.45	103.19	0.43	12.00	12.43	15,677.35
GOLDMAN SACHS GROUP INC	1.13	98.73	1.14	13.00	14.14	46,745.40
GOODRICH CORP	0.89	29.69	2.99	11.00	13.99	3,491.69
GRAINGER (W W) INC	0.81	47.39	1.72	10.00	11.72	4,324.53
GREAT LAKES CHEMICAL CORP	0.41	27.19	1.51	8.00	9.51	1,375.73
GUIDANT CORP	0.37	60.20	0.61	15.00	15.61	18,722.14
HALLIBURTON CO	0.57	26.00	2.21	15.00	17.21	11,389.66
HANCOCK JOHN FINL SVCS INC	0.38	37.50	1.03	10.00	11.03	10,849.16
HARLEY-DAVIDSON INC	0.38	47.53	0.79	17.75	18.54	14,400.21
HARRAHS ENTERTAINMENT INC	1.36	49.77	2.72	13.00	15.72	5,477.84
HARTFORD FINL SVCS GRP INC	1.25	59.03	2.13	12.00	14.13	16,699.82
HASBRO INC	0.13	21.28	0.63	11.00	11.63	3,713.00
HCA INC	0.09	42.96	0.21	12.50	12.71	20,384.69
HEALTH MANAGEMENT ASSOC	0.09	24.00	0.38	15.00	15.38	5,826.89
HEINZ (H J) CO	1.17	36.43	3.20	8.00	11.20	12,818.55
HERSHEY FOODS CORP	1.74	76.99	2.26	10.00	12.26	7,675.52
HEWLETT-PACKARD CO	0.35	22.97	1.53	10.00	11.53	70,038.74

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
HILTON HOTELS CORP	0.09	17.13	0.54	15.00	15.54	6,498.95
HOME DEPOT INC	0.32	35.49	0.89	13.00	13.89	80,747.41
HONEYWELL INTERNATIONAL INC	0.83	33.43	2.47	10.00	12.47	28,818.37
HUNTINGTON BANCSHARES	0.08	22.50	0.34	8.00	8.34	5,149.91
ILLINOIS TOOL WORKS	1.08	83.91	1.29	13.00	14.29	25,854.52
IMS HEALTH INC	0.09	24.86	0.36	12.00	12.36	5,952.98
INGERSOLL-RAND CO LTD	0.81	67.88	1.19	12.00	13.19	11,775.82
INTEL CORP	0.09	32.05	0.29	15.00	15.29	209,350.59
INTL BUSINESS MACHINES CORP	0.70	92.68	0.76	10.00	10.76	159,448.80
INTL GAME TECHNOLOGY	0.46	35.70	1.29	15.00	16.29	12,359.95
INTL PAPER CO	1.07	43.11	2.48	7.00	9.48	20,712.93
ITT INDUSTRIES INC	0.72	74.21	0.97	12.50	13.47	6,847.43
J P MORGAN CHASE & CO	1.50	36.73	4.07	10.00	14.07	74,939.16
JANUS CAPITAL GROUP INC	0.04	16.41	0.27	9.00	9.27	3,949.41
JEFFERSON-PILOT CORP	1.45	50.65	2.87	10.00	12.87	7,144.44
JOHNSON & JOHNSON	1.08	51.66	2.10	13.00	15.10	153,334.27
JOHNSON CONTROLS INC	2.02	116.12	1.74	12.00	13.74	10,494.58
JONES APPAREL GROUP INC	0.36	35.23	1.02	12.50	13.52	4,450.82
KB HOME	0.34	72.52	0.46	12.00	12.46	3,361.45
KELLOGG CO	1.09	38.08	2.86	8.00	10.86	15,541.93
KERR-MCGEE CORP	1.89	46.49	4.07	5.00	9.07	4,688.42
KEYCORP	1.31	29.32	4.45	7.00	11.45	12,289.27
KEYSPAN CORP	1.89	36.80	5.13	6.00	11.13	5,853.41
KIMBERLY-CLARK CORP	1.48	59.09	2.51	9.00	11.51	29,808.48
KINDER MORGAN INC	1.80	59.10	3.04	12.20	15.24	7,283.01
KNIGHT-RIDDER INC	1.40	77.37	1.80	9.00	10.80	6,181.55
LEGGETT & PLATT INC	0.64	21.63	2.96	14.50	17.46	4,151.62
LEHMAN BROTHERS HOLDINGS INC	0.54	77.22	0.70	12.00	12.70	20,967.93
LILLY (ELI) & CO	1.52	70.33	2.16	13.50	15.66	78,973.84
LIMITED BRANDS INC	0.45	18.03	2.51	13.25	15.76	9,315.90
LINCOLN NATIONAL CORP	1.50	40.37	3.72	12.00	15.72	7,185.86
LINEAR TECHNOLOGY CORP	0.29	42.07	0.70	22.00	22.70	13,142.88
LIZ CLAIBORNE INC	0.25	35.46	0.70	11.00	11.70	3,869.61
LOCKHEED MARTIN CORP	0.97	51.40	1.88	10.00	11.88	23,174.97
LOEWS CORP	0.67	49.45	1.36	12.00	13.36	9,170.35
LOWES COS	0.14	55.39	0.26	18.00	18.26	43,556.15
MANOR CARE INC	0.57	34.57	1.66	15.00	16.66	3,081.50
MARATHON OIL CORP	1.07	33.09	3.23	7.00	10.23	10,266.11
MARRIOTT INTL INC	0.35	46.20	0.75	15.00	15.75	10,683.06
MARSH & MCLENNAN COS	1.41	47.89	2.95	14.00	16.95	25,393.24
MARSHALL & ILSLEY CORP	0.79	38.25	2.07	10.00	12.07	8,661.25
MASCO CORP	0.74	27.41	2.69	15.00	17.69	12,695.00
MATTEL INC	0.44	19.27	2.30	11.00	13.30	8,283.90
MAXIM INTEGRATED PRODUCTS	0.40	49.58	0.81	25.00	25.81	16,291.94
MAY DEPARTMENT STORES CO	1.03	29.07	3.53	7.00	10.53	8,389.08
MAYTAG CORP	0.79	27.85	2.84	10.00	12.84	2,187.62
MBIA INC	0.90	59.23	1.51	12.00	13.51	8,536.76
MBNA CORP	0.45	24.85	1.83	13.50	15.33	31,750.15
MCCORMICK & CO	0.62	30.10	2.06	10.50	12.56	4,174.74
MCDONALDS CORP	0.43	24.83	1.74	8.00	9.74	31,513.34
MCGRAW-HILL COMPANIES	1.20	69.92	1.72	11.50	13.22	13,396.67
MCKESSON CORP	0.28	32.16	0.86	15.00	15.86	9,371.91
MEADWESTVACO CORP	0.98	29.75	3.29	6.25	9.54	5,966.87
MEDTRONIC INC	0.34	48.61	0.69	16.00	16.69	58,918.53
MELLON FINANCIAL CORP	0.72	32.11	2.23	12.00	14.23	13,814.75
MERCK & CO	1.56	46.20	3.37	5.30	8.67	102,794.86
MEREDITH CORP	0.42	48.81	0.87	11.50	12.37	2,467.11

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
MERRILL LYNCH & CO	0.72	58.65	1.22	12.00	13.22	55,271.70
METLIFE INC	0.26	33.67	0.76	11.00	11.76	25,594.69
MGIC INVESTMENT CORP/WI	0.17	56.94	0.30	13.00	13.30	5,605.63
MICROSOFT CORP	0.18	27.37	0.64	10.00	10.64	296,073.19
MOLEX INC	0.12	34.89	0.33	15.00	15.33	6,136.83
MONSANTO CO	0.57	28.78	1.99	10.00	11.99	7,544.33
MOODYS CORP	0.21	60.55	0.34	15.00	15.34	9,009.84
MORGAN STANLEY	1.03	57.87	1.78	12.00	13.78	62,771.59
MOTOROLA INC	0.18	14.00	1.26	10.00	11.26	33,500.77
NATIONAL CITY CORP	1.38	33.94	4.07	8.00	12.07	20,614.14
NEW YORK TIMES CO -CL A	0.65	47.79	1.36	11.75	13.11	7,118.28
NEWELL RUBBERMAID INC	0.93	22.77	4.09	11.00	15.09	6,248.09
NEWMONT MINING CORP	0.23	48.61	0.47	13.75	14.22	18,955.96
NICOR INC	1.93	34.04	5.66	3.50	9.16	1,498.92
NIKE INC -CL B	0.91	68.46	1.33	14.00	15.33	11,268.65
NISOURCE INC	0.96	21.94	4.36	4.00	8.36	6,069.21
NORDSTROM INC	0.49	34.30	1.43	11.50	12.93	4,714.02
NORFOLK SOUTHERN CORP	0.35	23.65	1.49	10.00	11.49	9,233.41
NORTH FORK BANCORPORATION	1.19	40.47	2.94	10.00	12.94	6,138.21
NORTHERN TRUST CORP	0.85	46.28	1.84	12.00	13.84	10,197.98
NORTHROP GRUMMAN CORP	1.76	95.60	1.84	10.00	11.84	18,129.33
NUCOR CORP	0.91	56.00	1.62	13.50	15.12	4,384.30
OCCIDENTAL PETROLEUM CORP	1.10	42.24	2.61	6.00	8.61	16,267.68
OMNICOM GROUP	0.90	87.33	1.03	12.50	13.53	16,592.79
PACCAR INC	0.97	85.12	1.14	10.00	11.14	9,931.97
PALL CORP	0.40	26.83	1.48	10.00	11.48	3,373.20
PARKER-HANNIFIN CORP	0.84	59.50	1.41	10.00	11.41	7,055.09
PAYCHEX INC	0.57	37.20	1.52	18.00	19.52	14,043.97
PENNEY (J C) CO	0.55	26.28	2.08	9.50	11.58	7,175.10
PEOPLES ENERGY CORP	2.23	42.04	5.29	5.00	10.29	1,547.07
PEPSI BOTTLING GROUP INC	0.04	24.18	0.18	10.00	10.18	6,477.34
PEPSICO INC	0.71	46.62	1.53	11.20	12.73	80,034.74
PERKINELMER INC	0.33	17.07	1.94	18.50	20.44	2,165.36
PFIZER INC	0.68	35.33	1.92	13.00	14.92	269,621.72
PINNACLE WEST CAPITAL	1.88	40.02	4.70	4.50	9.20	3,652.83
PITNEY BOWES INC	1.31	40.62	3.23	9.50	12.73	9,488.67
PLUM CREEK TIMBER CO INC	1.47	30.45	4.83	5.00	9.83	5,572.20
PNC FINANCIAL SVCS GROUP INC	2.19	54.73	4.00	9.50	13.50	15,174.60
PPG INDUSTRIES INC	1.90	64.02	2.97	8.00	10.97	10,878.66
PPL CORP	1.62	43.75	3.70	5.00	8.70	7,758.06
PRAXAIR INC	0.59	38.20	1.55	10.00	11.55	12,421.72
PRICE (T. ROWE) GROUP	0.85	47.41	1.80	12.00	13.80	5,903.54
PRINCIPAL FINANCIAL GRP INC	0.50	33.07	1.52	12.00	13.52	10,680.55
PROCTER & GAMBLE CO	2.02	99.88	2.02	11.00	13.02	129,517.09
PROGRESS ENERGY INC	2.33	45.26	5.15	4.00	9.15	11,091.64
PROGRESSIVE CORP-OHIO	0.11	83.59	0.14	14.00	14.14	18,055.27
PROLOGIS	1.51	32.09	4.70	4.70	9.40	5,773.70
PRUDENTIAL FINANCIAL INC	0.57	41.77	1.36	13.50	14.86	22,493.14
PUBLIC SERVICE ENTRP GRP INC	2.25	43.80	5.13	4.00	9.13	10,300.01
PULTE HOMES INC	0.45	93.62	0.48	12.00	12.48	5,809.21
QUALCOMM INC	0.32	53.93	0.60	15.00	15.60	43,147.83
RADIOSHACK CORP	0.28	30.68	0.90	11.00	11.90	5,034.96
RAYTHEON CO	0.90	30.04	2.98	12.00	14.98	12,503.43
REEBOK INTERNATIONAL LTD	0.35	39.32	0.88	15.00	15.88	2,315.59
REGIONS FINL CORP	1.38	37.20	3.72	8.00	11.72	8,264.54
RJ REYNOLDS TOBACCO HLDGS	4.07	58.15	6.99	7.00	13.99	4,921.23

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
ROCKWELL AUTOMATION	0.74	35.60	2.08	12.00	14.08	6,645.88
ROCKWELL COLLINS INC	0.40	30.03	1.34	12.00	13.34	5,347.02
ROHM & HAAS CO	0.97	42.71	2.27	10.00	12.27	9,509.89
RYDER SYSTEM INC	0.68	34.15	1.98	12.50	14.48	2,190.21
SABRE HLDGS CORP -CL A	0.31	21.59	1.41	9.00	10.41	3,097.43
SAFECO CORP	0.81	38.93	2.07	9.00	11.07	5,394.26
SARA LEE CORP	0.81	21.71	3.71	7.50	11.21	17,157.56
SBC COMMUNICATIONS INC	1.10	26.07	4.20	1.50	5.70	86,309.16
SCHERING-PLOUGH	0.24	17.39	1.38	9.00	10.38	25,553.21
SCHLUMBERGER LTD	0.86	54.72	1.58	15.00	16.58	32,035.50
SCHWAB (CHARLES) CORP	0.06	11.84	0.54	15.00	15.54	16,062.06
SCIENTIFIC-ATLANTA INC	0.04	27.30	0.16	8.00	8.16	4,145.37
SEARS ROEBUCK & CO	0.98	45.49	2.15	6.50	8.65	11,977.52
SEMPRA ENERGY	1.06	30.06	3.54	6.50	10.04	6,800.65
SHERWIN-WILLIAMS CO	0.68	34.74	1.96	10.00	11.96	5,064.29
SIGMA-ALDRICH	0.70	57.18	1.23	10.00	11.23	3,964.75
SIMON PROPERTY GROUP INC	2.58	46.34	5.57	7.50	13.07	8,716.65
SLM CORP	0.78	37.68	2.08	15.00	17.08	16,987.12
SNAP-ON INC	1.12	32.24	3.47	12.00	15.47	1,878.46
SOUTHERN CO	1.47	30.25	4.86	5.00	9.86	22,149.05
SOUTHTRUST CORP	0.93	32.74	2.85	11.00	13.85	10,863.62
SOUTHWEST AIRLINES	0.02	16.14	0.13	15.00	15.13	12,705.26
ST PAUL COS	1.28	39.65	3.22	10.00	13.22	9,051.82
STANLEY WORKS	1.15	37.87	3.05	11.00	14.05	3,069.51
STARWOOD HOTELS&RESORTS WRLD	0.97	35.97	2.69	15.00	17.69	7,256.59
STATE STREET CORP	0.67	52.08	1.29	12.00	13.29	17,405.87
STRYKER CORP	0.17	85.01	0.20	20.00	20.20	16,958.30
SUNOCO INC	1.23	51.15	2.40	11.65	14.05	3,951.03
SUNTRUST BANKS INC	1.96	71.50	2.74	9.00	11.74	20,129.39
SUPERVALU INC	0.63	28.59	2.19	8.00	10.19	3,828.20
SYMBOL TECHNOLOGIES	0.02	16.89	0.14	18.00	18.14	3,905.07
SYNOVUS FINANCIAL CP	0.74	28.92	2.56	12.25	14.81	8,726.93
SYSCO CORP	0.60	37.23	1.61	15.00	16.61	24,093.47
TARGET CORP	0.32	38.40	0.84	15.00	15.84	35,000.14
TECO ENERGY INC	0.78	14.41	5.43	3.00	8.43	2,545.80
TEKTRONIX INC	0.18	31.60	0.57	13.50	14.07	2,671.69
TEMPLE-INLAND INC	1.46	62.67	2.32	7.00	9.32	3,401.04
TEXAS INSTRUMENTS INC	0.10	29.38	0.35	20.00	20.35	50,845.76
TEXTRON INC	1.46	57.06	2.55	12.00	14.55	7,761.13
TIFFANY & CO	0.24	45.20	0.52	18.00	18.52	6,627.90
TJX COMPANIES INC	0.16	22.05	0.73	15.00	15.73	11,097.24
TORCHMARK CORP	0.48	45.54	1.06	10.00	11.06	5,154.04
TRAVELERS PPTY CAS CP -CL B	0.36	16.97	2.11	12.00	14.11	16,955.95
TRIBUNE CO	0.49	51.60	0.96	12.00	12.96	16,112.10
TUPPERWARE CORP	0.97	17.34	5.58	10.00	15.58	1,013.30
TXU CORP	0.53	23.72	2.21	5.00	7.21	7,682.67
TYCO INTERNATIONAL LTD	0.06	26.50	0.21	13.00	13.21	52,975.91
U S BANCORP	1.06	29.78	3.55	10.00	13.55	57,438.05
UNION PACIFIC CORP	1.35	69.48	1.94	12.25	14.19	17,730.04
UNION PLANTERS CORP	1.43	31.49	4.53	7.00	11.53	5,937.75
UNITED PARCEL SERVICE INC	1.14	74.55	1.53	14.00	15.53	40,753.58
UNITED STATES STEEL CORP	0.22	35.02	0.62	8.00	8.62	3,616.76
UNITED TECHNOLOGIES CORP	1.54	94.77	1.62	10.00	11.62	44,594.88
UNITEDHEALTH GROUP INC	0.02	58.18	0.03	17.00	17.03	34,130.89
UNOCAL CORP	0.84	36.83	2.27	4.50	6.77	9,537.17

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2004						
Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
UNUMPROVIDENT CORP	0.33	15.77	2.09	10.00	12.09	5,346.10
UST INC	2.14	35.69	6.00	7.00	13.00	5,919.19
VERIZON COMMUNICATIONS	1.56	35.08	4.43	1.00	5.43	96,875.17
VF CORP	1.12	43.24	2.60	8.00	10.60	4,672.60
VIACOM INC -CL B	0.28	44.38	0.62	15.00	15.62	77,616.66
VISTEON CORP	0.25	10.41	2.44	6.00	8.44	1,363.71
VULCAN MATERIALS CO	1.07	47.57	2.26	9.50	11.76	4,837.82
WACHOVIA CORP	1.54	46.59	3.31	10.00	13.31	61,871.52
WAL-MART STORES	0.41	53.05	0.77	14.00	14.77	229,588.78
WALGREEN CO	0.20	36.38	0.55	15.00	15.55	37,304.05
WASHINGTON MUTUAL INC	1.83	40.12	4.56	11.50	16.06	36,081.44
WASTE MANAGEMENT INC	0.01	29.60	0.04	12.00	12.04	17,240.90
WELLS FARGO & CO	2.02	58.89	3.42	12.00	15.42	99,643.59
WENDY'S INTERNATIONAL INC	0.27	39.24	0.69	13.00	13.69	4,470.81
WEYERHAEUSER CO	1.71	64.00	2.68	7.00	9.68	14,068.10
WHIRLPOOL CORP	1.46	72.65	2.01	7.50	9.51	5,060.58
WILLIAMS COS INC	0.04	9.82	0.43	5.00	5.43	5,090.56
WINN-DIXIE STORES INC	0.21	9.95	2.11	5.00	7.11	1,409.15
WORTHINGTON INDUSTRIES	0.72	18.03	3.99	12.50	16.49	1,553.00
WRIGLEY (WM) JR CO	0.98	56.21	1.75	11.50	13.25	12,583.82
WYETH	1.02	42.45	2.40	10.70	13.10	56,535.12
XCEL ENERGY INC	0.77	16.98	4.55	3.00	7.55	6,772.05
XL CAPITAL LTD	2.16	77.55	2.79	12.50	15.29	10,645.29
ZIONS BANCORPORATION	1.34	61.34	2.18	11.50	13.68	5,512.01
			Avg Weighted by: Market Value-Mnthly		13.09	

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.[27]

> 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*).[28]

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 earnings, in all future years, even if no future financing is contemplated.
>
> The flotation cost adjustment process is shown here in Tables 1 through 3 using illustrative market data.
>
> The assumptions used in the computation are shown in Table 1. The stock is selling in the market for $25, and investors expect the firm to pay a dividend of $2.25, which will grow at a rate of 5% thereafter. The traditional DCF cost of

---

[27] See Brigham and Gapenski, *Financial Management Theory and Practice*, 7th ed., (Dryden Press: New York), 869., Richard H. Pettway, "A Note on the Flotation Costs of New Equity Capital Issues of Electric Companies," *Public Utilities Fortnightly*, March 18, 1982, and Jay R. Ritter, "The Costs of Going Public," *Journal of Financial Economics*, December 1987.

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

equity is thus k = D/P + g = 2.25/25 +.05 = 14%, or $3.50 in the first year. Nine percent of the 14%, or $2.25, will come from dividends, so that the remaining 5%, or $1.25, must then come from capital gains. To get a capital gain of $1.25 from $1.188 of retained earnings, the earnings retained must clearly earn more than 14%. Therefore, if the firm sells me a share of stock incurring a flotation cost of 5%, the traditional DCF cost of equity adjusted for flotation cost is thus ROE = D/P(1-f) + g =.09 /.95 +.05 = 14.47%

Table 1

ASSUMPTIONS

Issue Price =	$25.00
Flotation Cost =	5.00%
Dividend Yield =	9.00%
Growth =	5.00%
Equity Return =	14.00
Allowed Return on Equity	14.47%

Table 2

Year	Com Stock Book Val (1)	Retained Earnings (2)	Total Equity (3)	Stock Price (4)	M/B Ratio (5)	EPS (6)	DPS (7)	Payout (8)
1	$23.75	$0.00	$23.75	$25.00	1.0526	$3.44	$2.25	65.45%
2	23.75	1.19	24.94	26.25	1.0526	3.61	2.36	65.45%
3	23.75	2.43	26.18	27.56	1.0526	3.79	2.48	65.45%
4	23.75	3.74	27.49	28.94	1.0526	3.98	2.60	65.45%
5	23.75	5.12	28.87	30.39	1.0526	4.18	2.73	65.45%
6	23.75	6.56	30.31	31.91	1.0526	4.39	2.87	65.45%
7	23.75	8.08	31.83	33.50	1.0526	4.61	3.02	65.45%
8	23.75	9.67	33.42	35.18	1.0526	4.84	3.17	65.45%
9	23.75	11.34	35.09	36.94	1.0526	5.08	3.32	65.45%
10	23.75	13.09	36.84	38.78	1.0526	5.33	3.49	65.45%
		Growth(%) =	**5.00**	**5.00**		**5.00**	**5.00**	

Table 2 above demonstrates that only if the company is allowed to earn 14.47% on total equity (Column 3) will investors earn their cost of equity of 14%. Column 1 shows the initial common stock account, while Column 2 shows the cumulative retained earnings balance, starting at zero, and steadily increasing from the retention of earnings. Total equity in Column 3 is the sum of common stock capital and retained earnings. The stock price in Column 4 is obtained from the seminal DCF formula: D /(k - g). Earnings per share in Column 6 is simply the allowed return of **14.47%** times the total common equity base. Dividends start at $2.25 and grow at 5% thereafter, which they must do if investors are to earn a 14% return. The dividend payout ratio remains constant, as per the assumption of the DCF

model. All quantities, stock price, book value, earnings, and dividends grow at a 5% rate.

Only if the company is allowed to earn 14.47% on equity do investors earn 14%. For example, if the company is allowed only 14%, the stock price drops from $26.25 to $26.13 in the second year, inflicting a loss on shareholders. This is shown in **Table 3**. The growth rate drops from 5% to 4.53%. Thus, investors only earn 9% + 4.53% = 13.53% on their investment. 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.[29]

Table 3

BOY Year	Com Stock Book Val	Retained Earnings	Total Equity	Stock Price	M/B Ratio	EPS	DPS	Payout
1	$23.75	$0.00	$23.75	$25.00	1.0526	$3.33	$2.25	67.67%
2	23.75	1.08	24.83	26.13	1.0526	3.48	2.35	67.67%
3	23.75	2.20	25.95	27.31	1.0526	3.63	2.46	67.67%
4	23.75	3.37	27.12	28.55	1.0526	3.80	2.57	67.67%
5	23.75	4.60	28.35	29.84	1.0526	3.97	2.69	67.67%
6	23.75	5.88	29.63	31.19	1.0526	4.15	2.81	67.67%
7	23.75	7.23	30.98	32.61	1.0526	4.34	2.93	67.67%
8	23.75	8.63	32.38	34.08	1.0526	4.53	3.07	67.67%
9	23.75	10.09	33.84	35.62	1.0526	4.74	3.21	67.67%
10	23.75	11.62	35.37	37.24	1.0526	4.95	3.35	67.67%
		Growth(%) =	**4.53**	**4.53**		**4.53**	**4.53**	

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.[30] [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

---

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

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

adjustment is for flotation costs (amounts that must be paid to underwriters by the issuer to attract and retain capital).[31]

All of these studies reach the conclusion that a flotation cost adjustment must be made when estimating the cost of capital. 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%.

The amount of flotation costs used in this cost of capital study are 1% for debt and 4.25% for equity. 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 1.11% and the average issuance cost of common equity to be 4.58%. We believe that the typical flotation cost associated with the issuance of large amounts of securities would be slightly smaller than the flotation cost associated with the issuance of smaller amounts of securities. Therefore, 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.

[31] *Stocks, Bonds, Bills and Inflation: 1999 Yearbook, Valuation Edition* (Chicago: Ibbotson & Associates, Inc., 1999), p. 34.

Debt Issuance Cost

Natural Gas/Transmission Utilities (1997 - 2002)

Company	Type of Utility	Issuance Date	Amount Offered ($000)	Price to Public ($/100)	Net Proceeds	Issuance 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 Co.	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 Communication Grp.	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	40,000.00	100.000	99.375	0.63%
Northwest Natural Gas	Gas	24-Sep-02	30,000.00	100.000	99.250	0.76%
UGI Utilities Inc.	Gas	25-Sep-02	20,000.00	100.000	99.375	0.63%
California Gas Co.	Gas	02-Oct-02	250,000.00	99.897	99.247	0.65%
Agl Capital Corporation	GAS	07-Jan-03	225,000	99.927	99.277	0.65%
Atmos Energy Corp	GAS	13-Jan-03	250,000.00	99.915	99.250	0.67%
Sepra Energy	GAS	01-Feb-03	400,000.00	99.658	99.008	0.66%
Michigan Consolidated Gas Co	GAS	12-Feb-03	200,000.00	99.637	98.762	0.89%
Northwest Natural Gas	GAS	25-Feb-03	10,000.00	100.000	99.250	0.76%
Nisource Finance Corp	GAS	01-Mar-03	345,000.00	100.000	99.354	0.65%

Debt Issuance Cost

Natural Gas/Transmission Utilities (1997 - 2002)

Company	Type of Utility	Issuance Date	Amount Offered ($000)	Price to Public ($/100)	Net Proceeds	Issuance Cost
Keyspan Corporation	GAS	01-Apr-03	150,000.00	99.763	98.888	0.88%
Agl Capital Corporation	GAS	15-Apr-03	225,000	99.927	99.277	0.65%
The Cincinnati Gas & Electric Co.	GAS	12-Jun-03	200,000.00	99.764	98.889	0.88%
The Cincinnati Gas & Electric Co.	GAS	12-Jun-03	200,000.00	99.396	98.521	0.89%
Baltimore Gas And Electric Co.	GAS	17-Jun-03	200,000.00	99.295	98.420	0.89%
Nisource Finance Corp	GAS	16-Jul-03	500,000.00	99.862	99.212	0.66%
Vectren Coproation	GAS	24-Jul-03	100,000.00	99.746	99.096	0.66%
Vectren Coproation	GAS	24-Jul-03	100,000.00	99.177	98.477	0.71%
Ugi Utilities	GAS	14-Aug-03	20,000.00	100.000	99.250	0.76%
Ugi Utilities	GAS	14-Aug-03	25,000.00	100.000	99.370	0.63%
Energy East Corporation	GAS	08-Sep-03	200,000.00	99.830	98.950	0.89%
Madison Gas & Electric Co	GAS	09-Sep-03	20,000.00	100.000	99.250	0.76%
Energen Corporation	GAS	30-Oct-03	50,000.00	99.557	98.907	0.66%
Northwest Natural Gas	GAS	21-Nov-03	40,000.00	100.000	99.250	0.76%
Piedmont Natural Gas Co Inc	GAS	16-Dec-03	100,000.00	99.859	98.984	0.88%
Piedmont Natural Gas Co Inc	GAS	16-Dec-03	100,000.00	100.000	99.350	0.65%
					Average	0.99%
					Selected	1.00%

Source: *Public Utility Finance Tracker*, February 1999 - 2004.

Common Stock Issuance Cost
Natural Gas/Transmission Utilities (1990 - 2002)

Company	Type of Company	Issuance Date	Number of Shares (000)	Price to Public	Net Proceeds	Issuance 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 Co.	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 Enterprises	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	4000	25.31	24.25	4.38%
Sempra Energy	GAS	23-Oct-03	15000	28.00	27.15	3.12%
Southern Union Co.	GAS	10-Jun-03	3,000	16.15	16.15	0.00%
Southern Union Co.	GAS	05-Jun-03	9500	16.00	15.38	4.06%
Southern Union Co.	GAS	15-Jun-03	2500	50.00	48.17	3.80%

Common Stock Issuance Cost
Natural Gas/Transmission Utilities (1990 - 2002)

Company	Type of Company	Issuance Date	Number of Shares (000)	Price to Public	Net Proceeds	Issuance Cost
Vectren Corporation	GAS	07-Aug-03	6,500	22.81	22.00	3.70%
					Average	4.40%
					Selected	4.25%

Source: *Public Utility Finance Tracker*, February 1999 - 2004.

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	30.00%	6.75%	2.03%	1.00%	99.38%	6.79%	2.04%
Equity	70.00%	12.00%	8.40%	4.25%	95.75%	12.53%	8.77%
Totals	100.00%		10.43%				10.81%

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 6.75% 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 2.04%. 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 8.77%. The sum of the two products is 10.81% (rounded to **10.80%**) 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.[32]

[32] *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. 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.[33]

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, 2004, and no adjustment is necessary.

[33] 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* ($\mathbf{R_o}$). 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* ($\mathbf{Y_o}$). 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.[34]

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

[34] *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.[35]

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 period; 2) forecasts all future cash flows or cash flow patterns; 3) chooses an appropriate yield, or discount rate; and 4) converts future benefits 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. The application of capitalization rates that reflect an appropriate yield rate, the use of present value factors, and discounted cash flow analysis are all yield capitalization

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

procedures.[36]

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.[37]

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.[38] 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.

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

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

---

[36] *The Appraisal of Real Estate*, 11th ed., (Chicago: Appraisal Institute, 1996), 529.

[37] *Ibid*., 537.

[38] *Ibid*., 540.

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.[39]

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...[40]

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 71. 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 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

---

[39] *Ibid*., 554.

[40] *Ibid*., 555.

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*, 11th edition, page 564.

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.