

Interstate Natural Gas Pipeline Industry

2012 Cost of Capital Study

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Common Terms

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

2012 Cost of Capital Study of the Interstate Natural Gas Pipeline Industry for the Interstate Natural Gas Pipeline Property Tax Forum January 1, 2012

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, 2012. 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, 2012, 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 1.14% and 1.88% respectively would need to be made to the capital asset pricing model.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.

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 expressly prohibited by the authors, who reserve all rights to any reproduction. We have reviewed financial and economic information, analytical reports, and statistics in order to estimate the cost of capital of the Interstate Natural Gas Pipeline Industry as of January 1, 2012.

Executive Summary - Cost of Capital

Based on our analysis and investigation, we have calculated the weighted average cost of

¹ *2012 Ibbotson SBBI Risk Premia Over Time Report*, p. 7.

capital (WACC) for the INGPI to be **10.80%** as of January 1, 2012. 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, 2012, 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 12.

Interstate Natural Gas Pipeline Property Tax Forum

The current members of the INGPPTF are listed below:

Boardwalk Pipeline - Houston	Louisiana Pipeline
Gulf South Pipeline Company, LP	MDU Resources Group, Inc.
Gulf Crossing Pipeline Company, LLC	National Fuel Gas Supply Corporation
Boardwalk Pipeline - Owensboro	Northern Natural Gas Company
Texas Gas Transmission, LLC	Oneok Partners, LP
Centerpoint Energy	Guardian Pipeline Company
Centerpoint Energy Gas Transmission	Midwestern Gas Transmission Company
Centerpoint Energy Mississippi River Transmission	Viking Gas Transmission Company
Columbia Gas/Gulf Transmission Corporation	Questar Pipeline Company
Dominion Transmission Corporation	Southern Star Central Gas Pipeline, Inc.
El Paso Corporation	Southern Union Company
El Paso Natural Gas	Florida Gas Transmission Co., LLC
Mojave Pipeline	Panhandle Eastern Pipeline, LLC
Colorado Interstate Gas	Trunkline Gas Company, LLC
Cheyenne Plains Pipeline	Sea Robin Pipeline, LLC
Southern Natural Gas	Spectra Energy - Canada
Tennessee Gas Pipeline	West Coast Pipelines & Field Services
Wyoming Interstate Company	West Coast Gas Services, Inc.
Kern River Gas Transmission	Maritimes and Northeast Pipeline (Canada)
Kinder Morgan, Inc.	Spectra Energy Empress L.P.
Natural Gas Pipeline Company of America	Union Gas Limited
Kinder Morgan Interstate Gas Transmission	St. Clair Pipelines (1996)
Rockies Express	Market Hub Partners
Midcontinent Express Pipeline	Spectra Energy Income Fund
Trailblazer Pipeline	Spectra Energy Corp
TransColorado Gas Pipeline	Texas Eastern Transmission

Algonquin Gas Transmission
Gulf Stream Natural Gas Transmission
Maritimes and Northeast Pipeline
East Tennessee Natural Gas
TransCanada Pipelines Limited
TransCanada US Pipelines
ANR Pipeline
North Baja Pipeline
Portland Natural Gas Transmission

GTN Pipeline System
Tuscarora Gas Transmission
Great Lakes Gas Transmission
Iroquois Gas Transmission
Bisan Pipeline LLC
Northern Border Pipeline Company
Williams - Northwest Pipeline Corporation
Williams - Transcontinental Gas Pipeline Corp.

General Economic Trends - 2012

According to the National Bureau of Economic Research, the Great Recession officially began during the fourth quarter of 2007 (December 2007) and ended during the second quarter of 2009 (June 2009). Subsequently, the United States (U.S.) economy has recovered slowly, despite many policy actions aimed at stimulating economic activity. Given the financial crisis, as well as the apparent real estate bubble and its subsequent collapse during the 2000s, the pace of recovery is not as surprising, especially when one looks at investment data. This raises questions about how we should be evaluating the current economy's performance. If one defines recovery as real gross domestic product (GDP) having surpassed its previous peak level, which happened in the third quarter of 2011, then the economy has recovered from the recession. The glaring exception in the recovery, however, involves the path of investment spending.²

2011 was a year of surprises. An Arab revolution no one predicted. A downgrade of the United States's formerly pristine debt rating. European debt troubles that threatened the future of the continent's common currency. But perhaps the biggest surprise of all was the ability of the U.S. to all but shrug off that turbulence, even as foreign markets fell. Yes, U.S. stocks sank at various points of the year, including the period after the debt downgrade. But the end of the year 2011 rally left major averages about where they began in 2011, as if the year was placid, not full of panic.³

At the beginning of 2011, most economic forecasters predicted U.S. gross domestic product growth for the year would be 3 to 4 percent. After all, the economy had grown at an average 3 percent quarterly annualized rate in the second halves of 2009 and 2010, partially

² Bullard, James, "The Economic Recovery: America's Investment Problem," *The Regional Economist*, Federal Reserve Bank of St. Louis, Vol. 20, No. 1, January 2012, 3.

³ Zuckerman, Gregory, "Fasten Your Seatbelts, It's Going to Be a Bumpy Year," *The Wall Street Journal*, January 1, 2012, <http://online.wsj.com/article/SB10001424052970204720204577128990068112940.html?K...>

supported by government stimulus and pent-up household demand, and the recovery seemed to be taking hold. But more than two years after the end of the deepest recession since the Great Depression, the U.S. economy has continued to undergo significant adjustments and faced shocks that have battered the rebound in economic growth.⁴

Having said the above, in writing and performing research each January on the economic forecasts for the United States economy during the past few years, the prediction and economic forecasts being made by people in all sectors of the economy have failed miserably, for the most part. The economists' forecasting abilities have appeared to worsen each year, as today's markets are driven less by fundamentals and increasingly more by the whims of elite bureaucrats deciding how to spend billions of tax dollars.

In 2011 the U.S. faced a number of challenges that prevented ideal financial market functioning and threatened broader financial stability. These issues could continue to shadow the country in the coming year. Though modest improvement is likely according to the Federal Reserve Bank of Atlanta, it appears that growth will continue to be restrained through 2012. Inflation is likely to return to the 2 percent, consistent with the Federal Open Market Committee's (FOMC's - the monetary policymaking body of the Federal Reserve System) objective. However, as with any forecast, the economic outlook comes with a number of risks. Most economists' assessments of the risk to the growth and employment outlook are weighted to the downside. Volatility in financial markets, slow jobs growth, and weak consumer confidence make the economy vulnerable to any number of adverse shocks coming from Europe or elsewhere.

Regarding inflation, several factors contribute to a sanguine outlook. The potential for resource slack in the economy placing further downward pressure on inflation expectations is roughly balanced by the risk of upward pressures from commodity prices or other influences supporting inflation expectations.

According to Tim Mullaney of *USA Today*, consumers and businesses can brace for another two years of exceptionally low interest rates after the Federal Reserve said on January 25, 2011, that it is likely to keep its rates below 1% until late 2014 because of the economy's continued weakness. The decision means the era of historically low rates on loans — and savings — that the Federal Reserve kicked off at the peak of the financial crisis in late 2008 will run longer unless the economy improves faster than the Federal Reserve policymakers predict. Ben Bernanke (Federal Reserve chairman) acknowledged that savers are hurt by the low rates because they are dependent on a good economy to get a good return. Most of the Federal Reserve governors predict the economy will grow by 2.2% to 2.7% this year, with unemployment

⁴ “2011's Reluctant Recovery: Breaking Through in 2012,” *EconSouth*, Federal Reserve Bank of Atlanta, Fourth Quarter 2011, 3.

at 8.2% to 8.5% and core inflation at 1.5% to 1.8%.⁵

Atlanta Fed economists anticipate that the process of financial deleveraging within most sectors of the domestic economy will continue to play out, and this paying down of debt is likely to restrain the pace of expansion in 2012 and beyond. Additionally, a weaker European economy and shifts in the growth and composition of emerging economies is likely to restrain demand for U.S. exports during 2012. Relatively high unemployment and a slow pace of employment growth along with little improvement in housing markets are likely to weigh on the confidence of households, and these factors will hold back consumer spending and the expansion plans of business. Confidence will return only as the expansion proceeds and the various economic headwinds dissipate.⁶

Predicting what 2012's surprises will be is no easy task. The U.S. is poised for another year of muddling through. Most private economists forecast a modest less than 2% growth rate for the U.S. in 2012, with a pace subdued by housing woes, a lackluster job market, and cuts by government. Economists also warn of potential spillover from weakness abroad.⁷

Magnifying the uncertainty for the coming year will be the presidential elections in the U.S. and overseas in France. This uncertainty has driven many investors into cash and government bonds from the U.S., Germany, Britain and Japan. Stock investors have been gravitating toward higher-quality, dividend-paying names. Hedge funds are trading even more rapidly than usual, leaning toward trades that profit in volatile markets and offsetting long positions as much as possible with hedges, according to analysts and investors.

Average investors are being very defensive, according to Jason Pride, director of investment strategy at Philadelphia-based Glenmede. In general, he says, "equities may be cheap but the risks are high." This defensive posturing does create a question for investors: How much bad news is already factored into the markets?

If there is a common theme among analysts' forecasts for stocks, commodities and currencies, it is to brace for more of the kind of wild swings that were the hallmark for 2011. "We have to work our way through a lot of volatility, a lot of uncertainty," says Derek Young, head of the global asset-allocation division at Fidelity Investments. Young went on to say that

⁵ Mullaney, Tim. "Interest Rates Will Stay Low, Low, Low," *USA Today*, January 26, 2012, A1.

⁶ Graefe, Laurel, "2011's Reluctant Recovery: Breaking through in 2012," *EconSouth*, Federal Reserve Bank of Atlanta, Fourth Quarter 2011, 6.

⁷ Dougherty, Conor, "Risks Cloud Outlook for Economy in 2012," *The Wall Street Journal*, December 23, 2011, <http://online.wsj.com/article/SB1000142405297020446600457710288413874756.html>.

among global markets, the U.S. looks the most attractive, particularly stocks and high-yield debt such as leveraged loans. “As economists have lowered and lowered their expectations for economic growth in 2012 it brings down the hurdle rate,” for positive surprises.⁸

Natural Gas Pipeline Industry - 2012

Interstate pipelines have both utility and merchant energy characteristics. They are similar to 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 expand its service territory through new permitting and construction, whereas this is not usually the case for LDCs. Pipelines and LDCs are also subject to competition from other pipelines that are built close enough to contend for institutional customers.

Pipelines differ from LDCs in that their business generally relies on a limited number of large institutional customers (including wholesale marketers, exploration and production companies, LDCs, and large industrial companies). Such high customer concentration increases the risks associated with bad debt expense. When evaluating a pipeline company, the analyst must investigate demand and supply growth along the pipeline’s footprint, opportunities for pipeline expansion, applications for competitive pipeline developments, and the growth prospects and credit quality of shippers along the pipeline’s system.⁹

The location of natural gas supply sources and shifts in consumption patterns affect pipeline capacity utilization. A change in a source requires new pipelines to transmit gas from growing production centers (such as the Rockies). The increasing use of LNG imported via tanker also would affect the need for and utilization of pipeline assets.

The demand side of the equation is 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/analyst must be aware of longer-term supply and demand trends that could increase or decrease the value of pipeline assets. Many pipeline companies historically have engaged in various unregulated merchant energy activities through subsidiary operations. Thus, the appraiser/analyst 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 pipeline businesses are owned by master limited partnerships

⁸ Lauricella, Tom, “World’s Woes Leave Lasting Scars,” *The Wall Street Journal*, January 3, 2012, <http://online.wsj.com/article/SB10001424052970204720204577127580697226356.html?K...>

⁹ Muir, Christopher B. “Natural Gas Distribution,” *Standard & Poor’s*, January 12, 2012, 42.

(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 use operating cash flows for growth-oriented capital expenditures, they depend on the ability to continuously raise fresh debt and equity capital to fund new investment. Unlike other pipeline companies, pension funds generally cannot hold MLPs due to current tax obligations generated from their partnership structure.

Accordingly, shares of publicly traded MLPs generally are held by smaller retail investors. The general partners (GPs) for MLPs often have performance participation awards that provide the GPs with larger and larger interests in MLP distributions as the MLP raises its dividend.¹⁰ *Value Line's (VL)* "Pipeline Master Limited Partnerships Industry" covered by Bryan J. Fong is ranked in the bottom quartile of all industries it covers. According to *VL*, pipeline MLPs are high-yield equities that give investors a way to bet on growing energy demand with minimal exposure to commodity-price fluctuations.¹¹

Is Production Set to Start Rising?

The Energy Information Administration (EIA) made a dramatic change to its long-term domestic dry gas production forecasts. In its Annual Energy Outlook 2008, it predicted that production would rise gradually from 19.0 trillion cubic feet (Tcf) in 2007, reaching a plateau of 20.0 Tcf in 2021 and 2022, before gradually declining to 19.4 Tcf (85.5% of forecast total consumption) in 2030. In the Annual Energy Outlook 2010, the EIA expected domestic production to recede to about 18.9 Tcf in 2013 and 2014, before rising to 23.3 Tcf (93.6% of forecast total consumption) in 2035. In its Annual Energy Outlook 2011, however, the EIA now expects a steady rise in gas production from 21.6 Tcf in 2010 to 26.3 Tcf in 2035. *Standard and Poor's Capital IQ* believes increased shale gas production estimates are responsible for much of the increase in total production estimates. Should this dramatic increase in domestic production occur, then it would be likely that natural gas imports would fall.¹²

Imports Are declining?

United States natural gas utilities have been relying increasingly on imported natural gas to meet growth in demand, a trend that's losing momentum. Since the early 1970s, when long-term growth in United States natural gas production ended, imports — mostly from Canada, but

¹⁰ *Ibid.*

¹¹ Fong, Bryan J. "Pipeline MLPs," *Value Line*, December 9, 2011, 620.

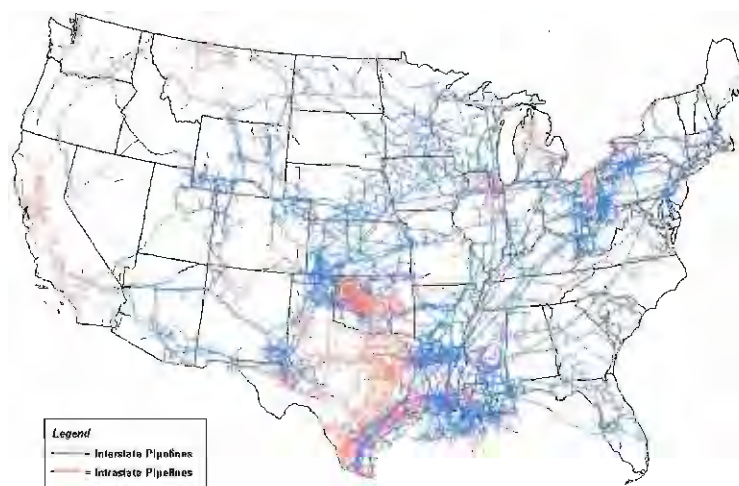
¹² *Op. Cit.*, Muir, Christopher B., 16.

also in the form of liquefied natural gas (LNG) from Africa and the Caribbean — have increased steadily, both in overall terms and as a percentage of United States supply, until 2007. Between 1973 and 2007, net imports of natural gas have more than quadrupled in volume, growing by a cumulative average annual rate of about 4.5%.

In its *Annual Energy Outlook 2008*, the EIA estimated that net imported natural gas would represent about 16.9% of US gas consumption in 2009, but shrink to 14.0% by 2030. However, in the *Annual Energy Outlook 2010* forecast, the EIA expected net imports to fall to 10.9% of total consumption by 2014 and then rising temporarily to 11.7% of consumption by 2017, before continuing its fall to 5.9% of total consumption by 2035. In its *Annual Energy Outlook 2011*, the EIA sees net imports falling from 2.7 Tcf in 2010 to 0.2 Tcf in 2035, or just 0.5% of total consumption, according to Christopher Muir, Gas Utilities Analyst of *Standard & Poor's* Natural Gas Distribution publication published January 12, 2012.¹³

While oil imports can easily be increased to accommodate rising demand, the same is not true for natural gas. Transportation is a major cost component of natural gas, whereas it is generally incidental to the cost of oil. As a result, the favored source of gas is domestic production. However, transportation of liquefied natural gas has made natural gas transportation far more economical than in the past.¹⁴

U.S. Natural Gas Pipeline Network, (latest EIA map, 2010)



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

¹³ *Ibid.*

¹⁴ *Ibid.*, 17.

Short-Term Natural Gas Outlook

The January 10, 2012, EIA Short-Term Energy Outlook (STEO) reported that the natural gas working inventories continued to set new record highs and ended December 2011 at an estimated 3.5 Tcf, about 12% above the same time last year. EIA's average 2012 Henry Hub natural gas spot price forecast is \$3.53 per million British thermal units (MMBtu), a decline of almost \$0.50 per MMBtu from the 2011 average spot price. EIA expects that Henry Hub spot prices will average \$4.14 per MMBtu in 2013.¹⁵

EIA estimated that total marketed natural gas production grew by an estimated 4.5 Bcf/d (7.4%) in 2011, the largest year-over-year volumetric increase in history. This strong growth was driven in part by increases in shale gas production. EIA expects production to grow by 1.4 Bcf/d (2.2%) in 2012 and 0.7 Bcf/d (1%) in 2013 as low prices reduce new drilling plans and consumption grows at a measured pace. In the face of continued low spot and future prices as well as record high storage levels for this time of year, drillers appear to have begun cutting back on new production plans for 2012. However, high initial production rates from new wells, associated natural gas production from oil drilling, and a backlog of uncompleted or unconnected wells contribute to EIA's forecast of further production increases in 2012, albeit at a significantly lower rate than 2011.¹⁶

Value Line reported in December 2011 that the long-term fundamentals for the natural gas (diversified) industry¹⁷ appears somewhat brighter. Gas prices ought to improve in the coming years as industrial demand increases and excess supply is absorbed according to Michael Napoli of *Value Line*. This should benefit the performance of the companies in the natural gas (diversified) industry.¹⁸

Additionally, *VL* reported that the Natural Gas (Diversified) Industry is ranked near the middle of the pack for year-ahead relative price performance. Looking further out, Napoli anticipated higher revenues and earnings for the industry by 2014-2016.¹⁹

¹⁵ "Short-Term Energy Outlook," *Energy Information Administration*, Jan. 10, 2012, 1-2.

¹⁶ *Ibid*, 6.

¹⁷ The Diversified Natural Gas Industry consists of companies that produce, market, and transport natural gas. It is labeled "diversified" because operations can vary widely among natural gas companies.

¹⁸ Napoli, Michael F. "Natural Gas (Diversified) Industry," *Value Line Investment Survey*, December 9, 2011, 519.

¹⁹ *Ibid*.

Gas Pipeline Transportation Risk Rating

IBISWorld Inc. annually produces an *IBISWorld Industry Risk Rating Report*. In December 2011, the “Gas Pipeline Transportation in the US: 48621” report was released. This industry group comprises establishments primarily engaged in the pipeline transportation of natural gas from processing plants to local distribution systems. The forecast period encompasses all of 2012. Three types of risk are recognized in their analysis. These are: risk arising from within the industry itself (structural risk), risks arising from the expected future performance of the industry (growth risk) and risk arising from economic forces (sensitivity risk). The results follow.²⁰

Structural Risk Analysis — is forecast to be MEDIUM-LOW over the outlook period. Operators are exposed to moderate revenue volatility, which requires prudent management of cash flows and planning in the face of uncertain demand. Businesses that fail to account for these challenges are at a risk for sudden losses or diminished margins. Additionally, firms face a moderate amount of competition, which exacerbates risk by placing downward pressure on prices and profit margins. However a positive for operators within the industry are the high barriers to entry, which protect against higher competition in the long run by reducing the ability of new operators to enter the marketplace.²¹

Growth Risk Analysis — is expected to be LOW over the outlook period. The Gas Pipeline Transportation industry has expanded during the five years to 2011, growing at an estimated average annual rate of 1.3% to \$17.5 billion in 2011. Revenue increases are due to rate rises granted by the Federal Energy Regulatory Commission (FERC) and volume demand growth. Rate increases are granted to industry firms when they prove their costs have increased (higher volumes transported) or when they upgrade their infrastructure. The FERC accelerated rate increases during the past five years as industry firms experienced volume increases and invested in their assets to accommodate natural gas volume growth. Despite the recession, natural gas volume grew during the past five years, as electricity generation firms increasingly used natural gas as a cheap alternative to coal.

The industry will experience higher growth over the next five years. Electricity generation firms will continue to demand natural gas at higher rates as prices stay near historical lows, with the expected increases in natural gas supply from shale basins. Natural gas extraction firms will also expand production in shale basins over the next five years, which will lead to strong growth in the amount of natural gas that needs to be transported. In response, industry

²⁰ “IBISWorld Industry Risk Rating Report 48621, Gas Pipeline Transportation in the US,” *IBISWorld*, December 2011, 2.

²¹ *Ibid.*, 2-3.

firms will build out extensions of their pipelines to accommodate the increase in production from shale deposits. Rate increases will follow capital investment to extend pipelines and added volume running through newly built pipelines. As a result of these positive trends, revenue is anticipated to grow by an average of 3.5% annually to \$20.8 billion in the five years to 2016.²²

Sensitivity Risk Analysis for the year 2011 is projected to be at a MEDIUM level, down marginally from 2011. The two factors with the most significant impact on the industry are demand from electric power generation, transmission and distribution regulations. When there is a rise in demand from electric power generation, transmission and distribution, risk will fall; whereas a rise in regulations will cause industry risk to rise.

Demand from electric power generation, transmission and distribution: The level of demand for gas from electricity generators plays a key role in determining the volume of gas transported by the industry. A rise in demand for natural gas will result in higher volumes of gas transported. This factor's contribution to risk is expected to remain the same in the coming year according to *IBISWorld*.²³

Life Cycle Analysis — The Gas Pipeline Transportation industry is in the mature stage of its life cycle. The industry's product is well established and considerable acquisition activity has occurred during the past 10 years. Additionally, there has been minor technological change in the industry. Industry value added is expected to expand 2.0% annually in the 10 years to 2016, while U.S. GDP is forecast to grow 2.0% during the same period. However, industry activity is poised to expand over the next five years, as new gas pipelines enter service.²⁴

Natural Gas Outlook Summary

The Gas Pipeline Transportation industry is projected to expand over the next five years, with revenue set to grow 3.5% annually to \$20.8 billion. This industry is highly regulated and charges customers based on rates established by the FERC. The FERC will accept more rate increase applications as industry firms expand capacity and build new pipelines through 2016. The increase in capacity and pipeline construction will be led by increased demand for natural gas from electricity generators and natural gas producers in regions where supply is accelerating rapidly. While growth for natural gas transport is expected to be uneven, since certain regions benefit more than others, volume increases will more than offset demand declines from particular regions. Also, supply pushes, a financing mechanism where customers provide capital for pipeline extensions, will increasingly become commonplace. All of the political and economic

²² *Ibid.*, 8.

²³ *Ibid.*, 3.

²⁴ *Ibid.*, 7.

factors discussed in this section will affect the typical investor's cost of capital as the elements of business and financial risk increases. The additional risk attributable to the natural gas pipeline industry should be reflected in the development of the cost of capital.

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*.²⁵ 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.²⁶] This rate of return is often referred to as the discount rate or the opportunity cost of capital.²⁷ 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.*²⁸

²⁵ 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*, 13th ed., (Chicago: Appraisal Institute, 2008), 23.

²⁶ William N. Kinnard, Jr., *Income Property Valuation*, (Lexington: Heath Lexington Books, 1982), 70.

²⁷ Richard A. Brealey and Stewart C. Meyers, *Principles of Corporate Finance*, 4th ed., (New York: McGraw-Hill, 1991), 13.

²⁸ *The Appraisal of Real Estate*, 11th ed., (Chicago: Appraisal Institute, 1996), 44.

The estimated cost of capital in this report for the Interstate Natural Gas Pipeline Industry as of January 1, 2012, 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:

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

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

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

where

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

Figure 1

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

The cost of capital is always an expectational or forward-looking concept. While the past performance of an investment and other historical information can be good guides and are often used to estimate the required rate of return on capital, the expectations of future events are the only factors that actually determine the cost of capital. An investor contributes capital to a firm with the expectation that the business' future performance will provide a fair return on the investment. If past performance were the criterion most important to investors, no one would invest in start-up ventures. It should also be noted that the cost of capital is a function of the investment, not the investor.²⁹

²⁹ *SBBI (Stocks, Bonds, Bills and Inflation)*, 2010 Yearbook: Valuation Edition, (Chicago: Morningstar, Inc., 2010), 21.

Cost of Capital Study Results

The cost of capital for the Interstate Natural Gas Pipeline Industry as of January 1, 2012 is estimated to be **10.80%** as the chart below indicates. Following the chart are explanations of the derivation of each of the component parts of the cost of capital study.

Capital	Portion	Cost	Product
Debt	30.00%	5.53%	1.66%
Equity	70.00%	13.05%	9.14%
Totals	100.00%		10.80%

Capital Structure

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

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

We are absolutely convinced that the procedures we recommend are correct — namely, firms should focus on market value capital structures and base their cost of capital calculations on market value weights. Because market values do change, it would be impossible to keep the actual capital structure on target at all times, but this fact in no way detracts from the validity of market value targets.³⁰

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

³⁰ Eugene F. Brigham and Louis C. Gapenski, *Financial Management*, 7th ed. (New York: The Dryden Press, 1994), 599.

value, not at book value.³¹

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.

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.³²

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.³³

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

³¹ Aswath Damodaran, *Investment Valuation*, (New York, NY: John Wiley & Sons, Inc., 1996), p. 64.

³² John Downes and Jordan Elliot Goodman, *Dictionary of Finance and Investment Terms*, (New York: Barron's, 1985), 54.

³³ *Ibid.*, 132.

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...³⁴

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 2012. The capital structure study involved the following companies we believe to be representative of the interstate natural gas transmission pipeline industry: 21 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; 34 companies that make up the *Value Line* Oil/Gas Distribution and the Pipeline Master Limited Partnerships (MLPs); 39 companies from the *Value Line* natural gas (diversified) group combined with the *Value Line* oil/gas distribution group and the Pipeline MLPs (large companies – with over \$1 billion in annual sales); 24 companies identified as the *Value Line* Pipeline MLPs, a relatively new category of companies separately compiled by *Value Line* for the first time last year; and 15 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*. We also considered the 36 companies from the S&P 500 which have **BBB-** rated long-term debt (the same rating as the typical interstate natural gas pipeline company). Ultimately, to retain a particular rating status by the major rating agencies, companies must maintain a certain level of equity and the ability to pay their long-term debt obligations. Thus, it is important to consider the capital structures of companies with similar ratings in estimating the appropriate capital structure.

³⁴ Eugene F. Brigham and Louis C. Gapenski, *Financial Management*, 7th ed. (New York: The Dryden Press, 1994), 368-369.

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.

For purposes of analysis we used the market capital structure for each company. The market value of the common equity portion of the capital structure was determined by multiplying the number of shares outstanding times the recent price reported by *Value Line* and/or *Standard & Poor's*. As surrogates for the market value of debt and preferred stock we substituted the book value of each. The market values of both debt and equity are always preferred, if available. Since the book value of debt is usually close to market value, book value is usually used for the debt weight. Ibbotson states, "Therefore, in most cases the market value of debt in the capital structure is assumed to be the book value of debt."³⁵ Only a few companies in this industry have issued preferred stock and, like debt, we used book value as a surrogate for the market value of preferred stock. Our recent analysis indicates that book values for long-term debt and preferred stock are fairly reasonable approximations for market value at the present time, thus book value can be substituted as a reasonable proxy for the market value of debt and preferred stock capital.

A summary of the capital structure analysis follows along with the supporting calculations for each of the company groups.

³⁵ *SBBI (Stocks, Bonds, Bills and Inflation), 2010 Yearbook: Valuation Edition*, (Chicago: Morningstar, Inc., 2010) p. 14.

Summary of Capital Structure Data

Value Line Data - Medians	Debt	Pref Stk	Com Stk
Value Line Natural Gas Diversified Industry (All)	25.00%	0.00%	74.73%
Value Line Oil/Gas Distribution Industry (All + MLPs)	29.47%	0.00%	69.53%
VL Natural Gas Divers. & Oil/Gas Dist./MLP - Large	29.22%	0.00%	70.78%
Value Line Pipeline MLPs	29.04%	0.00%	70.96%
Interstate Natural Gas Pipeline Forum (Pipelines)	33.66%	0.00%	66.31%
All Companies in S&P 500 with "BBB-" Rated Debt	29.63%	0.00%	70.10%
Averages	29.34%	0.00%	70.40%

S&P Data - Medians	Debt	Pref Stk	Com Stk
Value Line Natural Gas Diversified Industry (All)	24.88%	0.00%	74.84%
Value Line Oil/Gas Distribution Industry (All + MLPs)	30.14%	0.00%	68.82%
VL Natural Gas Divers. & Oil/Gas Dist./MLP - Large	29.63%	0.00%	70.37%
Value Line Pipeline MLPs	28.60%	0.00%	71.40%
Interstate Natural Gas Pipeline Forum (Pipelines)	33.56%	0.00%	66.33%
All Companies in S&P 500 with "BBB-" Rated Debt	30.31%	0.00%	68.89%
Averages	29.52%	0.00%	70.11%

Value Line Natural Gas Diversified Industry (All)
Capital Structure (VL Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
ATP Oil & Gas Corp	ATPG	81.90%	2.81%	15.28%
Cabot Oil & Gas 'A'	COG	12.53%	0.00%	87.47%
Callon Pete Co	CPE	36.93%	0.00%	63.07%
Chesapeake Energy	CHK	39.05%	10.14%	50.81%
Cimarex Energy	XEC	6.17%	0.00%	93.83%
Crosstex Energy	XTXI	56.89%	0.00%	43.11%
Devon Energy	DVN	18.46%	0.00%	81.54%
EOG Resources	EOG	15.39%	0.00%	84.61%
EQT Corp.	EQT	19.18%	0.00%	80.82%
Energen Corp.	EGN	17.54%	0.00%	82.46%
Linn Energy LLC	LINE	31.82%	0.00%	68.18%
MDU Resources	MDU	25.00%	0.28%	74.73%
National Fuel Gas	NFG	16.97%	0.00%	83.03%
Newfield Exploration	NFX	37.11%	0.00%	62.89%
Pengrowth Energy	PGH	25.85%	0.00%	74.15%
Penn Virginia Corp.	PVA	72.30%	0.00%	27.70%
Petroleum Development Corp.	PETD	38.58%	0.00%	61.42%
QEP Resources	QEP	22.34%	0.00%	77.66%
Questar Corp.	STR	20.29%	0.00%	79.71%
Quicksilver Res.	KWK	61.69%	0.00%	38.31%
Southwestern Energy	SWN	9.93%	0.00%	90.07%
Average		31.71%	0.63%	67.66%
Median		25.00%	0.00%	74.73%

Source: *Value Line*, January 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
Capital Structure (VL Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
Atlas Energy LP	ATLS	23.55%	0.00%	76.45%
Boardwalk Pipeline	BWP	36.27%	0.00%	63.73%
Buckeye Partners L.P.	BPL	28.86%	0.00%	71.14%
Chesapeake Midstream Ptners LP	CHKM	16.62%	0.00%	83.38%
Clean Energy Fuels	CLNE	22.17%	0.00%	77.83%
Copano Energy	CPNO	25.61%	8.07%	66.32%
Crosstex Energy LP	XTEX	44.38%	8.06%	47.56%
Eagle Rock Energy Partners Ltd	EROC	34.00%	0.00%	66.00%
El Paso Corp.	EP	38.35%	0.00%	61.65%
El Paso Pipeline	EPB	34.41%	0.00%	65.59%
Enbridge Energy Partners LLP	EEP	36.99%	0.00%	63.01%
Enbridge Inc.	ENB.TO			
Energy Transfer	ETP	43.47%	0.00%	56.53%
Enterprise Products	EPD	25.24%	0.00%	74.76%
Ferrellgas Partners L P	FGP	43.24%	0.00%	56.76%
Inergy L.P.	NRGY	38.12%	0.00%	61.88%
Kinder Morgan Energy	KMP	29.71%	0.00%	70.29%
Magellan Midstream	MMP	21.70%	0.00%	78.30%
Markwest Energy Partners LP	MWE	25.36%	0.00%	74.64%
NGL Energy Partners LP	NGL	3.04%	0.00%	96.96%
ONEOK Inc.	OKE	33.54%	0.00%	66.46%
ONEOK Partners LP	OKS	23.17%	0.00%	76.83%
PAA Natural Gas Storage L.P.	PNG	24.68%	0.00%	75.32%
Plains All Amer. Pipe.	PAA	29.22%	0.00%	70.78%
Southern Union	SUG	33.84%	0.00%	66.16%
Spectra Energy	SE	33.78%	0.85%	65.37%
Suburban Propane	SPH	17.01%	0.00%	82.99%
Sunoco Logistics Partners L.P.	SXL	31.23%	0.00%	68.77%
Targa Resources Corp	TRGP	48.11%	0.00%	51.89%
Tesoro Logistics LP	TLLP	4.76%	0.00%	95.24%
TransCanada Corp.	TRP			
Western Gas Partners LP	WES	15.27%	0.00%	84.73%
Williams Cos.	WMB	35.91%	0.00%	64.09%
Williams Partners L.P.	WPZ	27.27%	0.00%	72.73%
Average		29.03%	0.53%	70.44%
Median		29.47%	0.00%	69.53%

Source: *Value Line*, January 2012.

VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large
Capital Structure (VL Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
Boardwalk Pipeline	BWP	36.27%	0.00%	63.73%
Buckeye Partners L.P.	BPL	28.86%	0.00%	71.14%
Chesapeake Energy	CHK	39.05%	10.14%	50.81%
Cimarex Energy	XEC	6.17%	0.00%	93.83%
Crosstex Energy	XTXI	56.89%	0.00%	43.11%
Crosstex Energy LP	XTEX	44.38%	8.06%	47.56%
Devon Energy	DVN	18.46%	0.00%	81.54%
EOG Resources	EOG	15.39%	0.00%	84.61%
EQT Corp.	EQT	19.18%	0.00%	80.82%
El Paso Corp.	EP	38.35%	0.00%	61.65%
El Paso Pipeline	EPB	34.41%	0.00%	65.59%
Enbridge Energy Partners LLP	EEP	36.99%	0.00%	63.01%
Enbridge Inc.	ENB.TO			
Energen Corp.	EGN	17.54%	0.00%	82.46%
Energy Transfer	ETP	43.47%	0.00%	56.53%
Enterprise Products	EPD	25.24%	0.00%	74.76%
Ferrellgas Partners L P	FGP	43.24%	0.00%	56.76%
Inergy L.P.	NRGY	38.12%	0.00%	61.88%
Kinder Morgan Energy	KMP	29.71%	0.00%	70.29%
MDU Resources	MDU	25.00%	0.28%	74.73%
Magellan Midstream	MMP	21.70%	0.00%	78.30%
Markwest Energy Partners LP	MWE	25.36%	0.00%	74.64%
National Fuel Gas	NFG	16.97%	0.00%	83.03%
Newfield Exploration	NFX	37.11%	0.00%	62.89%
ONEOK Inc.	OKE	33.54%	0.00%	66.46%
ONEOK Partners LP	OKS	23.17%	0.00%	76.83%
Pengrowth Energy	PGH	25.85%	0.00%	74.15%
Plains All Amer. Pipe.	PAA	29.22%	0.00%	70.78%
QEP Resources	QEP	22.34%	0.00%	77.66%
Questar Corp.	STR	20.29%	0.00%	79.71%
Southern Union	SUG	33.84%	0.00%	66.16%
Southwestern Energy	SWN	9.93%	0.00%	90.07%
Spectra Energy	SE	33.78%	0.85%	65.37%
Suburban Propane	SPH	17.01%	0.00%	82.99%
Sunoco Logistics Partners L.P.	SXL	31.23%	0.00%	68.77%
Targa Resources Corp	TRGP	48.11%	0.00%	51.89%
TransCanada Corp.	TRP			
Williams Cos.	WMB	35.91%	0.00%	64.09%
Williams Partners L.P.	WPZ	27.27%	0.00%	72.73%
	Average	29.44%	0.52%	70.04%
	Median	29.22%	0.00%	70.78%

Source: *Value Line*, January 2012.

Value Line Pipeline MLPs
Capital Structure (VL Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
Atlas Energy LP	ATLS	23.55%	0.00%	76.45%
Boardwalk Pipeline	BWP	36.27%	0.00%	63.73%
Buckeye Partners L.P.	BPL	28.86%	0.00%	71.14%
Chesapeake Midstream Ptners LP	CHKM	16.62%	0.00%	83.38%
Crosstex Energy LP	XTEX	44.38%	8.06%	47.56%
Eagle Rock Energy Partners Ltd	EROC	34.00%	0.00%	66.00%
El Paso Pipeline	EPB	34.41%	0.00%	65.59%
Enbridge Energy Partners LLP	EEP	36.99%	0.00%	63.01%
Energy Transfer	ETP	43.47%	0.00%	56.53%
Enterprise Products	EPD	25.24%	0.00%	74.76%
Ferrellgas Partners L P	FGP	43.24%	0.00%	56.76%
Inergy L.P.	NRGY	38.12%	0.00%	61.88%
Kinder Morgan Energy	KMP	29.71%	0.00%	70.29%
Magellan Midstream	MMP	21.70%	0.00%	78.30%
Markwest Energy Partners LP	MWE	25.36%	0.00%	74.64%
ONEOK Partners LP	OKS	23.17%	0.00%	76.83%
PAA Natural Gas Storage L.P.	PNG	24.68%	0.00%	75.32%
Plains All Amer. Pipe.	PAA	29.22%	0.00%	70.78%
Suburban Propane	SPH	17.01%	0.00%	82.99%
Sunoco Logistics Partners L.P.	SXL	31.23%	0.00%	68.77%
Targa Resources Corp	TRGP	48.11%	0.00%	51.89%
Tesoro Logistics LP	TLLP	4.76%	0.00%	95.24%
Western Gas Partners LP	WES	15.27%	0.00%	84.73%
Williams Partners L.P.	WPZ	27.27%	0.00%	72.73%
Average		29.28%	0.34%	70.39%
Median		29.04%	0.00%	70.96%

Source: *Value Line*, January 2012.

Interstate Natural Gas Pipeline Forum (Pipelines)
Capital Structure (VL Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
Boardwalk Pipeline	BWP	36.27%	0.00%	63.73%
CenterPoint Energy	CNP	50.52%	0.00%	49.48%
El Paso Corp.	EP	38.35%	0.00%	61.65%
El Paso Pipeline	EPB	34.41%	0.00%	65.59%
Kinder Morgan Energy	KMP	29.71%	0.00%	70.29%
MDU Resources	MDU	25.00%	0.28%	74.73%
National Fuel Gas	NFG	16.97%	0.00%	83.03%
ONEOK Inc.	OKE	33.54%	0.00%	66.46%
ONEOK Partners LP	OKS	23.17%	0.00%	76.83%
Questar Corp.	STR	20.29%	0.00%	79.71%
Southern Union	SUG	33.84%	0.00%	66.16%
Spectra Energy	SE	33.78%	0.85%	65.37%
TransCanada Corp.	TRP			
Williams Cos.	WMB	35.91%	0.00%	64.09%
Williams Partners L.P.	WPZ	27.27%	0.00%	72.73%
Average		31.36%	0.08%	68.56%
Median		33.66%	0.00%	66.31%

Source: *Value Line*, January 2012.

All Companies in S&P 500 with "BBB-" Rated Debt
Capital Structure (VL Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
Alcoa Inc.	AA	46.90%	0.30%	52.81%
Allegheny Techn.	ATI	22.52%	0.00%	77.48%
Anadarko Petroleum	APC	24.27%	0.00%	75.73%
Beam Inc.	BEAM	22.78%	0.05%	77.18%
Best Buy Co.	BBY	16.08%	0.00%	83.92%
Cliffs Natural Res.	CLF	30.04%	0.00%	69.96%
CMS Energy Corp.	CMS	53.25%	0.00%	46.75%
Constellation Energy	CEG	37.93%	1.52%	60.55%
Discover Fin'l Svcs.	DFS	57.67%	0.00%	42.33%
Edison Int'l	EIX	49.74%	3.65%	46.62%
Expedia Inc.	EXPE	29.49%	0.00%	70.51%
Family Dollar Stores	FDO	7.62%	0.00%	92.38%
First Horizon National	FHN	58.24%	0.00%	41.76%
FirstEnergy Corp.	FE	47.27%	0.00%	52.73%
FLIR Systems	FLIR	5.95%	0.00%	94.05%
L-3 Communic.	LLL	37.94%	0.00%	62.06%
Lorillard Inc.	LO	14.40%	0.00%	85.60%
Macy's Inc.	M	29.77%	0.00%	70.23%
Marsh & McLennan	MMC	13.91%	0.00%	86.09%
Masco Corp.	MAS	44.85%	0.00%	55.15%
Molson Coors Brewing	TAP	19.42%	0.00%	80.58%
Newell Rubbermaid	NWL	26.90%	0.00%	73.10%
NiSource Inc.	NI	49.50%	0.00%	50.50%
Pioneer Natural Res.	PXD	19.13%	0.00%	80.87%
Reynolds American	RAI	11.99%	0.00%	88.01%
Roper Inds.	ROP	11.29%	0.00%	88.71%
Southwest Airlines	LUV	32.68%	0.00%	67.32%
Textron Inc.	TXT	47.68%	0.00%	52.32%
Tyson Foods 'A'	TSN	21.54%	0.00%	78.46%
Unum Group	UNM	29.19%	0.00%	70.81%
Weyerhaeuser Co.	WY	30.54%	0.00%	69.46%
Williams Cos.	WMB	35.91%	0.00%	64.09%
Wyndham Worldwide	WYN	38.45%	0.00%	61.55%
Xerox Corp.	XRX	38.00%	1.87%	60.14%
Yum! Brands	YUM	9.63%	0.00%	90.37%
Zions Bancorp.	ZION	25.30%	31.38%	43.32%
Average		30.49%	1.08%	68.43%
Median		29.63%	0.00%	70.10%

Source: *Value Line*, January 2012.

Value Line Natural Gas Diversified Industry (All)
Capital Structure (S&P Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
ATP OIL & GAS CORP	ATPG	74.68%	11.02%	14.30%
CABOT OIL & GAS CORP	COG	13.21%	0.00%	86.79%
CALLON PETROLEUM CO/DE	CPE	39.19%	0.00%	60.81%
CHESAPEAKE ENERGY CORP	CHK	39.89%	10.36%	49.75%
CIMAREX ENERGY CO	XEC	6.19%	0.00%	93.81%
CROSSTEX ENERGY INC	XTXI	57.67%	0.00%	42.33%
DEVON ENERGY CORP	DVN	19.12%	0.00%	80.88%
ENERGEN CORP	EGN	18.26%	0.00%	81.74%
EOG RESOURCES INC	EOG	15.90%	0.00%	84.10%
EQT CORP	EQT	19.46%	0.00%	80.54%
LINN ENERGY LLC	LINE	31.77%	0.00%	68.23%
MDU RESOURCES GROUP INC	MDU	24.88%	0.28%	74.84%
NATIONAL FUEL GAS CO	NFG	16.34%	0.00%	83.66%
NEWFIELD EXPLORATION CO	NFX	37.02%	0.00%	62.98%
PENGROWTH ENERGY CORP	PGH	25.67%	0.00%	74.33%
PENN VIRGINIA CORP	PVA	71.80%	0.00%	28.20%
PETROLEUM DEVELOPMENT CORP	PETD	36.68%	0.00%	63.32%
QEP RESOURCES INC	QEP	23.39%	0.00%	76.61%
QUESTAR CORP	STR	19.99%	0.00%	80.01%
QUICKSILVER RESOURCES INC	KWK	62.65%	0.00%	37.35%
SOUTHWESTERN ENERGY CO	SWN	10.26%	0.00%	89.74%
Average		31.62%	1.03%	67.35%
Median		24.88%	0.00%	74.84%

Source: *S&P Compustat*, January 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
Capital Structure (S&P Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
ATLAS ENERGY LP	ATLS	25.39%	0.00%	74.61%
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.79%	0.00%	63.21%
BUCKEYE PARTNERS LP	BPL	29.63%	0.00%	70.37%
CHESAPEAKE MIDSTREAM PRTNRS	CHKM	9.43%	0.00%	90.57%
CLEAN ENERGY FUELS CORP	CLNE	23.25%	0.00%	76.75%
COPANO ENERGY LLC	CPNO	26.17%	8.25%	65.58%
CROSSTEX ENERGY LP	XTEX	45.60%	8.28%	46.11%
EAGLE ROCK ENERGY PARTNRS LP	EROC	33.67%	0.00%	66.33%
EL PASO CORP	EP	37.97%	0.00%	62.03%
EL PASO PIPELINE PARTNERS LP	EPB	35.18%	0.00%	64.82%
ENBRIDGE ENERGY PRTNRS -LP	EEP	37.09%	0.00%	62.91%
ENBRIDGE INC	ENB	32.04%	1.35%	66.61%
ENERGY TRANSFER PARTNERS -LP	ETP	44.33%	0.00%	55.67%
ENTERPRISE PRODS PRTNRS -LP	EPD	25.79%	0.00%	74.21%
FERRELLGAS PARTNERS -LP	FGP	42.60%	0.00%	57.40%
INERGY LP	NRGY	36.53%	0.00%	63.47%
KINDER MORGAN ENERGY -LP	KMP	27.38%	0.00%	72.62%
MAGELLAN MIDSTREAM PRTNRS LP	MMP	21.71%	0.00%	78.29%
MARKWEST ENERGY PARTNERS LP	MWE	25.32%	0.00%	74.68%
NGL ENERGY PARTNERS LP	NGL	3.20%	0.00%	96.80%
ONEOK INC	OKE	33.67%	0.00%	66.33%
ONEOK PARTNERS -LP	OKS	23.01%	0.00%	76.99%
PAA NATURAL GAS STORAGE LP	PNG	21.50%	0.00%	78.50%
PLAINS ALL AMER PIPELINE -LP	PAA	29.09%	0.00%	70.91%
SOUTHERN UNION CO	SUG	33.99%	0.00%	66.01%
SPECTRA ENERGY CORP	SE	33.56%	0.85%	65.59%
SUBURBAN PROPANE PRTNRS -LP	SPH	17.11%	0.00%	82.89%
SUNOCO LOGISTICS PARTNERS LP	SXL	30.64%	0.00%	69.36%
TARGA RESOURCES CORP	TRGP	48.17%	0.00%	51.83%
TESORO LOGISTICS LP	TLLP	4.74%	0.00%	95.26%
TRANSCANADA CORP	TRP	36.22%	2.36%	61.42%
WESTERN GAS PARTNERS LP	WES	15.24%	0.00%	84.76%
WILLIAMS COS INC	WMB	31.73%	0.00%	68.27%
WILLIAMS PARTNERS LP	WPZ	28.11%	0.00%	71.89%
Average		29.00%	0.62%	70.38%
Median		30.14%	0.00%	68.82%

Source: S&P Compustat, January 2012.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large
Capital Structure (S&P Data) - January 1, 2012**

Company Name	Ticker	LTD %	PS %	CS %
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.79%	0.00%	63.21%
BUCKEYE PARTNERS LP	BPL	29.63%	0.00%	70.37%
CHESAPEAKE ENERGY CORP	CHK	39.89%	10.36%	49.75%
CIMAREX ENERGY CO	XEC	6.19%	0.00%	93.81%
CROSSTEX ENERGY INC	XTXI	57.67%	0.00%	42.33%
CROSSTEX ENERGY LP	XTEX	45.60%	8.28%	46.11%
DEVON ENERGY CORP	DVN	19.12%	0.00%	80.88%
EL PASO CORP	EP	37.97%	0.00%	62.03%
EL PASO PIPELINE PARTNERS LP	EPB	35.18%	0.00%	64.82%
ENBRIDGE ENERGY PRTNRS -LP	EEP	37.09%	0.00%	62.91%
ENBRIDGE INC	ENB	32.04%	1.35%	66.61%
ENERGEN CORP	EGN	18.26%	0.00%	81.74%
ENERGY TRANSFER PARTNERS -LP	ETP	44.33%	0.00%	55.67%
ENTERPRISE PRODS PRTNRS -LP	EPD	25.79%	0.00%	74.21%
EOG RESOURCES INC	EOG	15.90%	0.00%	84.10%
EQT CORP	EQT	19.46%	0.00%	80.54%
FERRELLGAS PARTNERS -LP	FGP	42.60%	0.00%	57.40%
INERGY LP	NRGY	36.53%	0.00%	63.47%
KINDER MORGAN ENERGY -LP	KMP	27.38%	0.00%	72.62%
MAGELLAN MIDSTREAM PRTNRS LP	MMP	21.71%	0.00%	78.29%
MARKWEST ENERGY PARTNERS LP	MWE	25.32%	0.00%	74.68%
MDU RESOURCES GROUP INC	MDU	24.88%	0.28%	74.84%
NATIONAL FUEL GAS CO	NFG	16.34%	0.00%	83.66%
NEWFIELD EXPLORATION CO	NFX	37.02%	0.00%	62.98%
ONEOK INC	OKE	33.67%	0.00%	66.33%
ONEOK PARTNERS -LP	OKS	23.01%	0.00%	76.99%
PENGROWTH ENERGY CORP	PGH	25.67%	0.00%	74.33%
PLAINS ALL AMER PIPELINE -LP	PAA	29.09%	0.00%	70.91%
QEP RESOURCES INC	QEP	23.39%	0.00%	76.61%
QUESTAR CORP	STR	19.99%	0.00%	80.01%
SOUTHERN UNION CO	SUG	33.99%	0.00%	66.01%
SOUTHWESTERN ENERGY CO	SWN	10.26%	0.00%	89.74%
SPECTRA ENERGY CORP	SE	33.56%	0.85%	65.59%
SUBURBAN PROPANE PRTNRS -LP	SPH	17.11%	0.00%	82.89%
SUNOCO LOGISTICS PARTNERS LP	SXL	30.64%	0.00%	69.36%
TARGA RESOURCES CORP	TRGP	48.17%	0.00%	51.83%
TRANSCANADA CORP	TRP	36.22%	2.36%	61.42%
WILLIAMS COS INC	WMB	31.73%	0.00%	68.27%
WILLIAMS PARTNERS LP	WPZ	28.11%	0.00%	71.89%
Average		29.67%	0.60%	69.72%
Median		29.63%	0.00%	70.37%

Source: S&P Compustat, January 2012.

Value Line Pipeline MLPs
Capital Structure (S&P Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
ATLAS ENERGY LP	ATLS	25.39%	0.00%	74.61%
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.79%	0.00%	63.21%
BUCKEYE PARTNERS LP	BPL	29.63%	0.00%	70.37%
CHESAPEAKE MIDSTREAM PRTNRS	CHKM	9.43%	0.00%	90.57%
CROSSTEX ENERGY LP	XTEX	45.60%	8.28%	46.11%
EAGLE ROCK ENERGY PARTNRS LP	EROC	33.67%	0.00%	66.33%
EL PASO PIPELINE PARTNERS LP	EPB	35.18%	0.00%	64.82%
ENBRIDGE ENERGY PRTNRS -LP	EEP	37.09%	0.00%	62.91%
ENERGY TRANSFER PARTNERS -LP	ETP	44.33%	0.00%	55.67%
ENTERPRISE PRODS PRTNRS -LP	EPD	25.79%	0.00%	74.21%
FERRELLGAS PARTNERS -LP	FGP	42.60%	0.00%	57.40%
INERGY LP	NRGY	36.53%	0.00%	63.47%
KINDER MORGAN ENERGY -LP	KMP	27.38%	0.00%	72.62%
MAGELLAN MIDSTREAM PRTNRS LP	MMP	21.71%	0.00%	78.29%
MARKWEST ENERGY PARTNERS LP	MWE	25.32%	0.00%	74.68%
ONEOK PARTNERS -LP	OKS	23.01%	0.00%	76.99%
PAA NATURAL GAS STORAGE LP	PNG	21.50%	0.00%	78.50%
PLAINS ALL AMER PIPELINE -LP	PAA	29.09%	0.00%	70.91%
SUBURBAN PROPANE PRTNRS -LP	SPH	17.11%	0.00%	82.89%
SUNOCO LOGISTICS PARTNERS LP	SXL	30.64%	0.00%	69.36%
TARGA RESOURCES CORP	TRGP	48.17%	0.00%	51.83%
TESORO LOGISTICS LP	TLLP	4.74%	0.00%	95.26%
WESTERN GAS PARTNERS LP	WES	15.24%	0.00%	84.76%
WILLIAMS PARTNERS LP	WPZ	28.11%	0.00%	71.89%
Average		28.92%	0.35%	70.74%
Median		28.60%	0.00%	71.40%

Source: S&P Compustat, January 2012.

Interstate Natural Gas Pipeline Forum (Pipelines)
Capital Structure (S&P Data) - January 1, 2012

Company Name	Ticker	LTD %	PS %	CS %
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.79%	0.00%	63.21%
CENTERPOINT ENERGY INC	CNP	49.82%	0.00%	50.18%
EL PASO CORP	EP	37.97%	0.00%	62.03%
EL PASO PIPELINE PARTNERS LP	EPB	35.18%	0.00%	64.82%
KINDER MORGAN ENERGY -LP	KMP	27.38%	0.00%	72.62%
MDU RESOURCES GROUP INC	MDU	24.88%	0.28%	74.84%
NATIONAL FUEL GAS CO	NFG	16.34%	0.00%	83.66%
ONEOK INC	OKE	33.67%	0.00%	66.33%
ONEOK PARTNERS -LP	OKS	23.01%	0.00%	76.99%
QUESTAR CORP	STR	19.99%	0.00%	80.01%
SOUTHERN UNION CO	SUG	33.99%	0.00%	66.01%
SPECTRA ENERGY CORP	SE	33.56%	0.85%	65.59%
TRANSCANADA CORP	TRP	36.22%	2.36%	61.42%
WILLIAMS COS INC	WMB	31.73%	0.00%	68.27%
WILLIAMS PARTNERS LP	WPZ	28.11%	0.00%	71.89%
Average		31.24%	0.23%	68.52%
Median		33.56%	0.00%	66.33%

Source: *S&P Compustat*, January 2012.

**All Companies in S&P 500 with "BBB-" Rated Debt
Capital Structure (S&P Data) - January 1, 2012**

Company Name	Ticker	LTD %	PS %	CS %
ALCOA INC	AA	48.26%	0.31%	51.43%
ALLEGHENY TECHNOLOGIES INC	ATI	22.59%	0.00%	77.41%
ANADARKO PETROLEUM CORP	APC	25.20%	0.00%	74.80%
BEAM INC	BEAM	22.59%	0.05%	77.36%
BEST BUY CO INC	BBY	16.94%	0.00%	83.06%
CLIFFS NATURAL RESOURCES INC	CLF	31.44%	0.00%	68.56%
CMS ENERGY CORP	CMS	52.54%	0.37%	47.09%
CONSTELLATION ENERGY GRP INC	CEG	35.75%	1.49%	62.76%
DISCOVER FINANCIAL SVCS INC	DFS	59.09%	0.00%	40.91%
EDISON INTERNATIONAL	EIX	47.26%	3.74%	49.00%
EXPEDIA INC	EXPE	29.65%	0.00%	70.35%
FAMILY DOLLAR STORES	FDO	7.06%	0.00%	92.94%
FIRST HORIZON NATIONAL CORP	FHN	54.34%	0.00%	45.66%
FIRSTENERGY CORP	FE	46.06%	0.00%	53.94%
FLIR SYSTEMS INC	FLIR	5.96%	0.00%	94.04%
L-3 COMMUNICATIONS HLDGS INC	LLL	38.08%	0.00%	61.92%
LORILLARD INC	LO	14.40%	0.00%	85.60%
MACY'S INC	M	31.25%	0.00%	68.75%
MARSH & MCLENNAN COS	MMC	13.58%	0.00%	86.42%
MASCO CORP	MAS	46.94%	0.00%	53.06%
MOLSON COORS BREWING CO	TAP	19.43%	0.00%	80.57%
NEWELL RUBBERMAID INC	NWL	27.92%	0.00%	72.08%
NISOURCE INC	NI	48.63%	0.00%	51.37%
PIONEER NATURAL RESOURCES CO	PXD	19.91%	0.00%	80.09%
REYNOLDS AMERICAN INC	RAI	11.74%	0.00%	88.26%
ROPER INDUSTRIES INC/DE	ROP	11.63%	0.00%	88.37%
SOUTHWEST AIRLINES	LUV	32.58%	0.00%	67.42%
TEXTRON INC	TXT	51.38%	0.00%	48.62%
TYSON FOODS INC -CL A	TSN	21.66%	0.00%	78.34%
UNUM GROUP	UNM	29.57%	0.00%	70.43%
WEYERHAEUSER CO	WY	30.97%	0.00%	69.03%
WILLIAMS COS INC	WMB	31.73%	0.00%	68.27%
WYNDHAM WORLDWIDE CORP	WYN	38.33%	0.00%	61.67%
XEROX CORP	XRX	38.40%	1.89%	59.72%
YUM BRANDS INC	YUM	9.75%	0.00%	90.25%
ZIONS BANCORPORATION	ZION	26.48%	32.33%	41.19%
Average		30.53%	1.12%	68.35%
Median		30.31%	0.00%	68.89%

Source: *S&P Compustat*, January 2012.

Cost of Debt

The expected return on debt, or the cost of debt capital (K_d), is the rate that investors would incur when financing the purchase of the operating assets of an interstate natural gas pipeline company. It is the cost of debt that is appropriate for the cost of capital study and it is relatively simple to estimate. Unlike the cost of equity, the required return on debt is directly observable in the market. It is best approximated by the current yield to maturity (YTM) on the applicable debt. The YTM is the rate of return the existing bondholders expect to receive, and it is also a good estimate of K_d (cost of debt), the rate of return that new bondholders would require.³⁶ 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.³⁷

From information in *Mergent Bond Database* (January 2012), we found the *Moody's* bond ratings to be primarily **Ba1** to **Baa3** (average & median) and the *Standard & Poor's* long-term senior debt ratings to be **BB+** to **BBB-** (average & median) for the typical interstate natural gas pipeline. The predominant ratings were **Baa3** (Moody's) and **BBB-** (S&P). This information is presented in the following table:

Summary of Pipeline Long-Term Debt Ratings - December 31, 2011

Averages

Value Line Natural Gas Diversified Industry (All)	BB+	13	Ba2	14
Value Line Oil/Gas Distribution Ind. (All + MLPs)	BB+	13	Ba1	13
VL Natural Gas Diversified & Oil/Gas Dist./MLP - Large	BBB-	12	Ba1	13
Value Line Master Limited Partnerships	BB+	13	Ba1	13
Interstate Natural Gas Pipeline Forum (Pipelines)	BBB	11	Baa2	11
Average	BB+	13	Ba1	13

Medians

Value Line Natural Gas Diversified Industry (All)	BB+	13	Ba2	14
Value Line Oil/Gas Distribution Ind. (All + MLPs)	BBB-	12	Baa3	12
VL Natural Gas Diversified & Oil/Gas Dist./MLP - Large	BBB-	12	Baa3	12
Value Line Master Limited Partnerships	BBB-	13	Baa3	12
Interstate Natural Gas Pipeline Forum (Pipelines)	BBB-	11	Baa2	11
Average	BBB-	12	Baa3	12

³⁶ Brigham, Eugene F. & Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 10th ed. (Thomson Learning, Inc.: Stamford, CT, 2002), p. 423.

³⁷ *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 24

The Bloomberg yields for long-term corporate bonds rated **BBB-** and **BB+** was **5.52%** and **6.76%**, respectively, as of December 31, 2011, as shown in the table below.

Bloomberg Bond Data at December 31, 2011

Years to Maturity	Bond Rating															
	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-
15	3.45	3.59	3.59	3.59	3.78	3.85	3.97	4.34	4.62	5.05	6.27	6.70	6.90	7.20	8.75	9.33
20	3.73	3.83	3.83	3.83	4.00	4.07	4.22	4.57	4.91	5.31	6.51	6.97	7.12	7.42	8.91	9.51
25	3.78	3.89	3.89	3.89	4.06	4.11	4.37	4.74	5.03	5.42	6.62	7.43	7.49	7.79	9.08	8.84
30	3.93	4.03	4.03	4.03	4.17	4.23	4.48	4.81	5.12	5.52	6.76	7.57	7.36	8.73	8.59	9.21

Source: Bloomberg Financial Market Credit Analysis, January 2012.

Further, we took note of the yields to maturity for Utility, Corporate, and Industrial Bonds rated **Baa** by Moody's and reported in *Mergent Bond Record* at the end of year 2011. The yields for the Baa Utility, Corporate, and Industrial bonds were 5.07%, 5.25%, and 5.43%, respectively, at the end of year 2011. From the information summarized above we estimated the appropriate cost of debt capital to be **5.50%** at January 1, 2012. The following tables indicate the long-term debt ratings for the *Value Line* Natural Gas Industry groups, along with the Bloomberg yields for the correspondent ratings. This information is followed by Reuters Corporate Bond Spread Tables for Utilities and Industrials and the yields to maturity (YTM) for public utility bonds and corporate bonds as reported in *Mergent Bond Record*.

Value Line Natural Gas Diversified Industry (All)
Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2012

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Bloomberg Yields
ATP Oil & Gas Corp	ATPG	CCC-	21	Caa2	20	N/A
Cabot Oil & Gas 'A'	COG					
Callon Pete Co	CPE					
Chesapeake Energy	CHK	BB+	13	Ba3	15	6.76
Cimarex Energy	XEC	BB+	13	Ba2	14	6.76
Crosstex Energy	XTXI	B+	16	B2	17	8.73
Devon Energy	DVN	BBB+	10	Baa1	10	4.81
EOG Resources	EOG	A-	9	A3	9	4.48
EQT Corp.	EQT	BBB	11	Baa2	11	5.12
Energen Corp.	EGN	BBB	11	Baa3	12	5.12
Linn Energy LLC	LINE	B	17	B2	17	8.59
MDU Resources	MDU	BBB+	10			4.81
National Fuel Gas	NFG	BBB	11	Baa1	10	5.12
Newfield Exploration	NFX	BB+	13	Ba2	14	6.76
Pengrowth Energy	PGH					
Penn Virginia Corp.	PVA	BB-	15	B2	17	7.36
Petroleum Development Corp.	PETD	B-	18	B3	18	9.21
QEP Resources	QEP	BB+	13	Ba1	13	6.76
Questar Corp.	STR	A	8	A3	9	4.23
Quicksilver Res.	KWK	B	17	B2	17	8.59
Southwestern Energy	SWN	BBB	11	Ba1	13	5.12
	Average	BB+	13	Ba2	14	6.76
	Median	BB+	13	Ba2	14	6.76

* Source: Mergent Database, S&P Compustat, & Bloomberg Data, Jan. 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2012

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Bloomberg Yields
Atlas Energy LP	ATLS	B	17	B3	18	8.59
Boardwalk Pipeline	BWP	BBB-	12	Baa2	11	5.52
Buckeye Partners L.P.	BPL	BBB	11	Baa3	12	5.12
Chesapeake Midstream Ptners LP	CHKM	BB+	13	Ba3	15	6.76
Clean Energy Fuels	CLNE					
Copano Energy	CPNO	B+	16	B1	16	8.73
Crosstex Energy LP	XTEX	B+	16	B2	17	8.73
Eagle Rock Energy Partners Ltd	EROC	B-	18	B3	18	9.21
El Paso Corp.	EP	BB-	15	Ba3	15	7.36
El Paso Pipeline	EPB	BB	14	Ba1	13	7.57
Enbridge Energy Partners LLP	EEP	BBB	11	Baa2	11	5.12
Enbridge Inc.	ENB.TO	A-	9	Baa1	10	4.48
Energy Transfer	ETP	BBB-	12	Baa3	12	5.52
Enterprise Products	EPD	BBB-	12	Baa3	12	5.52
Ferrellgas Partners L P	FGP	B-	18	B2	17	9.21
Inergy L.P.	NRGY	B+	16	Ba3	15	8.73
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.12
Magellan Midstream	MMP	BBB	11	Baa2	11	5.12
Markwest Energy Partners LP	MWE	BB	14	Ba3	15	7.57
NGL Energy Partners LP	NGL	BB-	15	Ba2	14	7.36
ONEOK Inc.	OKE	BBB	11	Baa2	11	5.12
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.12
PAA Natural Gas Storage L.P.	PNG					
Plains All Amer. Pipe.	PAA	BBB-	12	Baa3	12	5.52
Southern Union	SUG	BBB-	12	Baa3	12	5.52
Spectra Energy	SE	BBB	11	Ba1	13	5.12
Suburban Propane	SPH					
Sunoco Logistics Partners L.P.	SXL	BBB	11	Baa2	11	5.12
Targa Resources Corp	TRGP	BB	14	Ba3	15	7.57
Tesoro Logistics LP	TLLP	BB+	13	Ba1	13	6.76
TransCanada Corp.	TRP	A-	9	A3	9	4.48
Western Gas Partners LP	WES	BB+	13			6.76
Williams Cos.	WMB	BB+	13	Baa3	12	6.76
Williams Partners L.P.	WPZ	BBB-	12	Baa3	12	5.52
Average		BB+	13	Ba1	13	6.76
Median		BBB-	12	Baa3	12	5.52

* Source: Mergent Database, S&P Compustat, & Bloomberg Data, Jan. 2012.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large
Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2012**

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Bloomberg Yields
Boardwalk Pipeline	BWP	BBB-	12	Baa2	11	5.52
Buckeye Partners L.P.	BPL	BBB	11	Baa3	12	5.12
Chesapeake Midstream Ptners LP	CHKM	BB+	13	Ba3	15	6.76
Cimarex Energy	XEC	BB+	13	Ba2	14	6.76
Crosstex Energy	XTXI	B+	16	B2	17	8.73
Crosstex Energy LP	XTEX	B+	16	B2	17	8.73
Devon Energy	DVN	BBB+	10	Baa1	10	4.81
EOG Resources	EOG	A-	9	A3	9	4.48
EQT Corp.	EQT	BBB	11	Baa2	11	5.12
El Paso Corp.	EP	BB-	15	Ba3	15	7.36
El Paso Pipeline	EPB	BB	14	Ba1	13	7.57
Enbridge Energy Partners LLP	EEP	BBB	11	Baa2	11	5.12
Enbridge Inc.	ENB.TO	A-	9	Baa1	10	4.48
Energen Corp.	EGN	BBB	11	Baa3	12	5.12
Energy Transfer	ETP	BBB-	12	Baa3	12	5.52
Enterprise Products	EPD	BBB-	12	Baa3	12	5.52
Ferrellgas Partners L P	FGP	B-	18	B2	17	9.21
Inergy L.P.	NRGY	B+	16	Ba3	15	8.73
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.12
MDU Resources	MDU	BBB+	10			4.81
Magellan Midstream	MMP	BBB	11	Baa2	11	5.12
Markwest Energy Partners LP	MWE	BB	14	Ba3	15	7.57
National Fuel Gas	NFG	BBB	11	Baa1	10	5.12
Newfield Exploration	NFX	BB+	13	Ba2	14	6.76
ONEOK Inc.	OKE	BBB	11	Baa2	11	5.12
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.12
Penn Virginia Corp.	PVA	BB-	15	B2	17	7.36
Plains All Amer. Pipe.	PAA	BBB-	12	Baa3	12	5.52
QEP Resources	QEP	BB+	13	Ba1	13	6.76
Questar Corp.	STR	A	8	A3	9	4.23
Southern Union	SUG	BBB-	12	Baa3	12	5.52
Southwestern Energy	SWN	BBB	11	Ba1	13	5.12
Spectra Energy	SE	BBB	11	Ba1	13	5.12
Suburban Propane	SPH					
Sunoco Logistics Partners L.P.	SXL	BBB	11	Baa2	11	5.12
Targa Resources Corp	TRGP	BB	14	Ba3	15	7.57
TransCanada Corp.	TRP	A-	9	A3	9	4.48
Williams Cos.	WMB	BB+	13	Baa3	12	6.76
Williams Partners L.P.	WPZ	BBB-	12	Baa3	12	5.52
Average		BBB-	12	Ba1	13	5.52
Median		BBB-	12	Baa3	12	5.52

* Source: Mergent Database, S&P Compustat, & Bloomberg Data, Jan. 2012.

Value Line Pipeline MLPs **Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2012**

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Bloomberg Yields
Atlas Energy LP	ATLS	B	17	B3	18	8.59
Boardwalk Pipeline	BWP	BBB-	12	Baa2	11	5.52
Buckeye Partners L.P.	BPL	BBB	11	Baa3	12	5.12
Chesapeake Midstream Ptners LP	CHKM	BB+	13	Ba3	15	6.76
Crosstex Energy LP	XTEX	B+	16	B2	17	8.73
Eagle Rock Energy Partners Ltd	EROC	B-	18	B3	18	9.21
El Paso Pipeline	EPB	BB	14	Ba1	13	7.57
Enbridge Energy Partners LLP	EEP	BBB	11	Baa2	11	5.12
Energy Transfer	ETP	BBB-	12	Baa3	12	5.52
Enterprise Products	EPD	BBB-	12	Baa3	12	5.52
Ferrellgas Partners L P	FGP	B-	18	B2	17	9.21
Inergy L.P.	NRGY	B+	16	Ba3	15	8.73
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.12
Magellan Midstream	MMP	BBB	11	Baa2	11	5.12
Markwest Energy Partners LP	MWE	BB	14	Ba3	15	7.57
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.12
PAA Natural Gas Storage L.P.	PNG					
Plains All Amer. Pipe.	PAA	BBB-	12	Baa3	12	5.52
Suburban Propane	SPH					
Sunoco Logistics Partners L.P.	SXL	BBB	11	Baa2	11	5.12
Targa Resources Corp	TRGP	BB	14	Ba3	15	7.57
Tesoro Logistics LP	TLLP	BB+	13	Ba1	13	6.76
Western Gas Partners LP	WES	BB+	13			6.76
Williams Partners L.P.	WPZ	BBB-	12	Baa3	12	5.52
Average		BB+	13	Ba1	13	6.76
Median		BB+	13	Baa3	12	6.76

* Source: Mergent Database, S&P Compustat, & Bloomberg Data, Jan. 2012.

**Interstate Nat. Gas Pipeline Forum & Pipeline Subs. with Rated Debt
Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2012**

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Bloomberg Yields
Boardwalk Pipeline	BWP	BBB-	12	Baa2	11	5.52
Gulf South Pipeline Co., LP		BBB	11	Baa1	10	5.12
Texas Gas Transmission		BBB	11	Baa1	10	5.12
CenterPoint Energy	CNP	A-	9	A3	9	4.48
El Paso Corp.	EP	BB-	15	Ba3	15	7.36
El Paso Pipeline	EPB	BB	14	Ba1	13	7.57
El Paso Natural Gas		BB	14	Baa3	12	7.57
Colorado Interstate Gas Co.		BB	14	Baa3	12	7.57
Southern Natural Gas Co.		BB	14	Baa3	12	7.57
Tennessee Gas Pipeline		BB	14	Baa3	12	7.57
Kinder Morgan, Inc.	KMI	BB	14	Ba1	13	7.57
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.12
Rockies Express Pipeline		BBB-	12	Ba1	13	5.52
Midcontinent Express Pipeline, Inc.		BBB-	12	Ba1	13	5.52
MDU Resources	MDU	BBB+	10			4.81
National Fuel Gas	NFG	BBB	11	Baa1	10	5.12
Northern Natural Gas Co.		A	8	A2	8	4.23
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.12
Questar Corp.	STR	A	8	A3	9	4.23
Questar Pipeline Co.		A	8	A3	9	4.23
Southern Star Central		BB+	13	Ba1	13	6.76
Southern Union	SUG	BBB-	12	Baa3	12	5.52
Florida Gas Transmission Co.		BBB	11	Baa2	11	5.12
Panhandle Eastern Pipe Line Co.		BBB-	12	Baa3	12	5.52
Spectra Energy	SE	BBB	11	Ba1	13	5.12
Maritimes & Northeast Pipeline		BBB	11	Baa3	12	5.12
Spectra Energy Partners		BBB	11	Baa3	12	5.12
Texas Eastern Transmission		BBB+	10	Baa1	10	4.81
Gulfstream Natural Gas		BBB	11	Baa2	11	5.12
TransCanada Pipelines, Ltd.		A-	9	A3	9	4.48
ANR Pipeline Co.		A-	9	A3	9	4.48
Northern Border Pipeline Co.		BBB+	10			4.81
Williams Cos.	WMB	BB+	13	Baa3	12	6.76
Northwest Pipeline Corp.		BBB-	12	Baa2	11	5.52
Transcontinental Gas Pipe Line Co.		BBB-	12	Baa2	11	5.52
Williams Partners L.P.	WPZ	BBB-	12	Baa3	12	5.52
Average		BBB	11	Baa2	11	5.12
Median		BBB	11	Baa3	12	5.12

* Source: Mergent Database, S&P Compustat, & Bloomberg Data, Jan. 2012.

Reuters Corporate Bond Spread Tables

Corporate Spreads for Utilities

01/03/2012							
Rating	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	30 yr
Aaa/AAA	82	88	91	95	98	105	108
Aa1/AA+	83	97	101	106	138	143	148
Aa2/AA	96	101	106	116	146	147	153
Aa3/AA-	98	109	120	127	154	159	164
A1/A+	101	110	125	146	162	172	183
A2/A	106	116	131	156	173	179	185
A3/A-	116	128	151	166	183	188	198
Baa1/BBB+	146	151	166	185	188	193	228
Baa2/BBB	166	171	191	211	218	223	248
Baa3/BBB-	185	186	196	216	228	233	272
Ba1/BB+	195	205	215	235	245	265	295
Ba2/BB	200	225	240	270	280	310	355
Ba3/BB-	210	240	250	280	310	410	430
B1/B+	230	250	255	340	350	440	500
B2/B	230	260	360	430	480	570	700
B3/B-	250	405	530	630	680	735	820
Caa/CCC+	425	530	635	695	705	820	920
US Treasury Yield	0.12	0.27	0.4	0.89	1.41	1.97	2.98

Corporate Spreads for Industrials

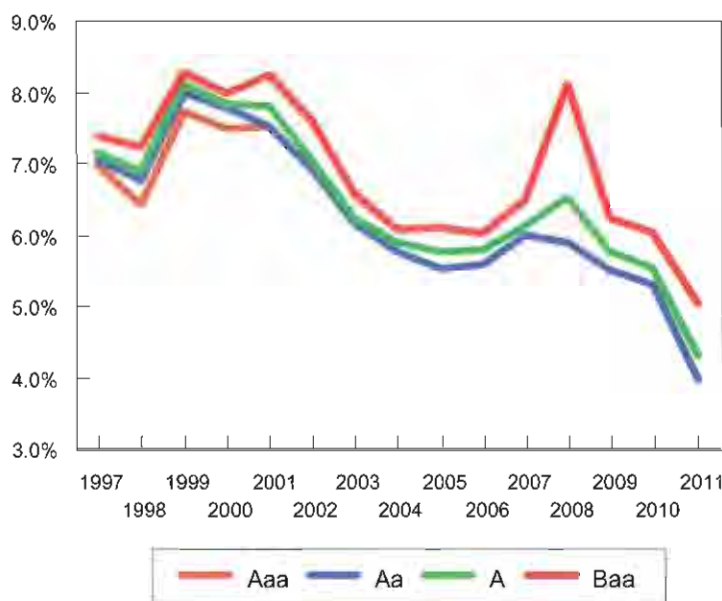
01/03/2012							
Rating	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	30 yr
Aaa/AAA	35	35	40	70	75	65	85
Aa1/AA+	45	40	50	75	85	85	105
Aa2/AA	50	45	65	80	100	95	110
Aa3/AA-	60	55	85	85	110	110	115
A1/A+	65	65	100	90	115	115	130
A2/A	80	75	110	110	125	120	140
A3/A-	100	105	120	120	155	145	165
Baa1/BBB+	120	115	155	165	220	195	215
Baa2/BBB	135	170	185	210	245	230	245
Baa3/BBB-	225	250	325	290	340	300	320
Ba1/BB+	400	400	400	400	425	375	365
Ba2/BB	450	450	550	525	525	450	475
Ba3/BB-	475	475	575	550	550	475	525
B1/B+	550	550	650	650	575	550	550
B2/B	600	675	825	725	750	625	600
B3/B-	650	750	850	850	800	650	625
Caa/CCC+	725	825	875	900	900	875	825
US Treasury Yield	0.12	0.27	0.4	0.89	1.41	1.97	2.98

BondsOnline (<http://www.bondsonline.com>); FT Interactive Data

Mergent Utility Bond Yields

Public Utility Yields (1997 - 2011)

Year End Data

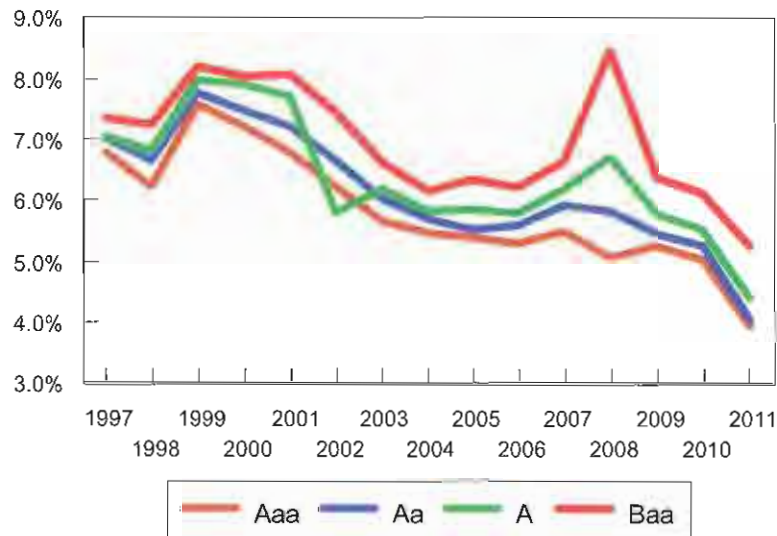


Public Utility Bond Yields - Year End Data (1997 - 2011)				
Year End Date	Aaa	Aa	A	Baa
1997	6.99%	7.07%	7.16%	7.41%
1998	6.43%	6.78%	6.91%	7.24%
1999	7.74%	8.00%	8.14%	8.28%
2000	7.51%	7.79%	7.84%	8.01%
2001	7.53%	7.53%	7.83%	8.27%
2002	---	6.94%	7.07%	7.61%
2003	---	6.18%	6.27%	6.61%
2004	---	5.78%	5.92%	6.10%
2005	---	5.55%	5.80%	6.14%
2006	---	5.62%	5.81%	6.05%
2007	---	6.03%	6.16%	6.51%
2008	---	5.93%	6.54%	8.13%
2009	---	5.52%	5.79%	6.26%
2010	---	5.32%	5.56%	6.04%
2011	---	4.00%	4.33%	5.07%

Source: *Mergent's Bond Record*, January 1998 - 2012

Mergent Corporate Bond Yields

Moody's Corporate Bond Yield Avg.
Corporate Avg. Year End, 1997 - 2011



1997 - 2011				
Moody's Corporate Bond Yield Averages				
Corporate Averages - Year End Data				
Year End Date	Aaa	Aa	A	Baa
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%	5.80%	7.45%
2003	5.65%	6.02%	6.19%	6.60%
2004	5.47%	5.69%	5.82%	6.15%
2005	5.38%	5.51%	5.84%	6.33%
2006	5.29%	5.58%	5.78%	6.22%
2007	5.49%	5.91%	6.19%	6.65%
2008	5.06%	5.81%	6.70%	8.45%
2009	5.26%	5.44%	5.77%	6.37%
2010	5.02%	5.26%	5.52%	6.10%
2011	3.93%	4.03%	4.40%	5.25%

Source: Mergent's Bond Record, January 1998 - 2012.

Cost of Equity

We have estimated the cost of equity capital by employing several methods. The market cost of equity is generally 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 **12.50%**. 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, 2012

Company Groups	Value Line Data		S&P (IBES) Data	
	Average	Median	Average	Median
Value Line Natural Gas (Diversified) - All	12.55	10.60	19.32	13.25
Value Line Oil/Gas Distribution - All + MLPs	13.86	13.17	14.99	12.32
VL Nat. Gas Divers. & Oil/Gas Dist./MLPs - Large	13.84	12.88	15.74	11.65
Value Line Pipeline MLPs	16.22	13.88	15.46	13.26
Interstate Natural Gas Pipeline Forum (Pipes)	11.63	11.24	11.23	10.56
S&P Screened Comparables Group	12.18	10.90	13.21	10.18
All Companies in S&P 500 with "BBB-" Rated Debt	17.39	14.13	15.41	12.16
Averages	13.95	12.40	15.05	11.91

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, 2012

General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
20-Year Treasury Bonds (ex post)	2.67	6.60	9.27
20-Year Treasury Bonds (ex ante)	2.67	11.33	14.00

Risk Premium Indicators by Groups

Indicators	Median Bond Rating		Bloomberg Yields	Risk Prem. Indicator
	Rating	Number		
Value Line Natural Gas (Diversified) - All	BB+	13	6.76	12.16
Value Line Oil/Gas Distribution Industry (All + MLPs)	BBB-	12	5.52	10.92
VL Nat. Gas Divers. & Oil/Gas Dist./MLP - Large	BBB-	12	5.52	10.92
Value Line Pipeline MLPs	BB+	13	6.76	12.16
Interstate Natural Gas Pipeline Forum (Pipes)	BBB	11	5.12	10.52
Average			5.94	11.34

* Base Rate: Yield to maturity for debt rating from Bloomberg database.

Jan. 2012. Risk Premium: Morningstar, Risk Premia Over Time Report: 2012.

Capital Asset Pricing Model (CAPM) - January 1, 2012

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
CAPM Indicator *				
Long-Term Gov't Bonds (ex post)	2.67	6.60	1.05	9.60
Long-Term Gov't Bonds (ex ante)	2.67	11.33	1.05	14.57

CAPM Formula: $K_e = R_f + B(R_p)$

* CAPM Indicator is based upon a *Value Line* beta of 1.05. 2012 Ibbotson S&B Risk Premia Over Time Report; & Federal Reserve data Jan. 3, 2012.

DCF Method

The discounted cash flow method of estimating the cost of equity is based on the formula shown in Figure 2. Our computations using the DCF method are based upon information from the *Standard and Poor's Compustat* database, *Institutional Brokers Estimate System* (IBES), and the *Value Line Investment Survey* database.

We began our analysis by screening the *Standard and Poor's* database of approximately 9,607 companies for companies with risk equal to the risk of the typical interstate natural gas pipeline. As a measure of financial risk the average *Standard and Poor's* rating on the long-term debt of companies comprising the

large natural gas pipeline industry was **BBB-**. Our first screening process was to find all companies having a S&P senior debt rating of BBB to BBB- (the mid-rated triple B debt to the lowest 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. (Several of these companies have double B rated debt.) This measure is indicative of financial risk for the companies.

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 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 0.95 presently. Thus we excluded all companies with S&P adjusted betas less than 0.80 and greater than 1.05. 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 follows.

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

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

Pipeline Risk Screening Data - January 1, 2012
VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large (S&P Data)

Company Name	Ticker	S&P Debt	S&P Debt	S&P Adj. Beta	Return on Net Invest.
		Rating Letter	Rating Number		
BOARDWALK PIPELINE PRTNRS-LP	BWP	BBB	11	0.49	7.12
BUCKEYE PARTNERS LP	BPL	BBB	11	0.54	13.17
CHESAPEAKE ENERGY CORP	CHK	BB+	13	1.20	8.31
CIMAREX ENERGY CO	XEC	BB+	13	1.37	27.56
CROSSTEX ENERGY INC	XTXI			1.49	5.79
CROSSTEX ENERGY LP	XTEX	B+	16	1.16	6.03
DEVON ENERGY CORP	DVN	BBB+	10	1.13	19.99
EL PASO CORP	EP	BB	14	1.27	9.42
EL PASO PIPELINE PARTNERS LP	EPB	BB	14	0.49	13.49
ENBRIDGE ENERGY PRTNRS -LP	EEP	BBB	11	0.80	1.59
ENBRIDGE INC	ENB	A-	9	0.82	7.41
ENERGEN CORP	EGN	BBB	11	1.15	68.11
ENERGY TRANSFER PARTNERS -LP	ETP	BBB-	12	0.79	10.80
ENTERPRISE PRODS PRTNRS -LP	EPD	BBB-	12	0.74	10.66
EOG RESOURCES INC	EOG	A-	9	1.08	1.48
EQT CORP	EQT	BBB	11	0.93	7.96
FERRELLGAS PARTNERS -LP	FGP	B+	16	0.73	18.92
INERGY LP	NRGY			0.81	8.49
KINDER MORGAN ENERGY -LP	KMP	BBB	11	0.60	12.12
MAGELLAN MIDSTREAM PRTNRS LP	MMP	BBB	11	0.58	12.69
MARKWEST ENERGY PARTNERS LP	MWE	BB	14	0.98	9.40
MDU RESOURCES GROUP INC	MDU	BBB+	10	1.09	10.63
NATIONAL FUEL GAS CO	NFG	BBB	11	1.06	11.03
NEWFIELD EXPLORATION CO	NFX	BBB-	12	1.32	9.58
ONEOK INC	OKE	BBB	11	1.07	12.65
ONEOK PARTNERS -LP	OKS	BBB	11	0.64	11.93
PENGROWTH ENERGY CORP	PGH			1.27	3.01
PLAINS ALL AMER PIPELNE -LP	PAA	BBB-	12	0.68	11.57
QEP RESOURCES INC	QEP	BB+	13		9.28
QUESTAR CORP	STR	A	8	0.66	12.29
SOUTHERN UNION CO	SUG	BBB-	12	0.93	8.07
SOUTHWESTERN ENERGY CO	SWN	BBB-	12	0.78	19.28
SPECTRA ENERGY CORP	SE	BBB+	10	0.99	9.68
SUBURBAN PROPANE PRTNRS -LP	SPH	BB	14	0.63	43.80
SUNOCO LOGISTICS PARTNERS LP	SXL	BBB	11	0.49	12.88
TARGA RESOURCES CORP	TRGP				7.41
TRANSCANADA CORP	TRP	A-	9	0.86	7.12
WILLIAMS COS INC	WMB	BBB-	12	1.24	8.67
WILLIAMS PARTNERS LP	WPZ	BBB-	12	1.11	12.15
Average		BBB-	12	0.92	12.86

Source: S&P Compustat, January 2012.

Surviving the screening process are thirteen (13) 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 shown in the following table.

Avista Corp.	Northwestern Corp
Black Hills Corp	Safeway Inc.
Constellation Energy	Southern Union
EQT Corp.	Telephone & Data
Great Plains Energy, Inc.	U.S. Cellular
NiSource, Inc.	UIL Holdings
Noble Energy	

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 six (6) other groups of companies – the *Value Line* natural gas (diversified) group (all companies); the *Value Line* oil/gas distribution group (all companies) plus the *Value Line* Pipeline MLPs; the *Value Line* natural gas (diversified) group combined with the *Value Line* oil/gas distribution group and the *Value Line* Pipeline MLPs (large companies – with over \$1 billion in annual sales); the *Value Line* MLPs; the interstate natural gas pipeline forum group (traded) that are heavily involved with pipelines; and all of the companies in the Standard and Poor's 500 with a BBB- rating for their long-term debt. We used financial data from two independent sources, *Standard and Poor's Compustat* database, and the *Value Line Investment Survey*. The two independent sources of data gave us two sets of growth estimates for the five groups of companies. The growth estimates considered were provided by *Value Line* and the *Institutional Brokers Estimate System* (IBES) through the *Standard and Poor's Compustat* database. From these analysts' projections we calculated DCF indicators on all groupings and calculated a simple average and median indicator. We gave the most weight to the median indicator in each grouping. The median indicator is not affected by extreme values and outliers and thus is a very good indicator of central tendency of a representative sample of companies. We placed the most confidence in the estimates provided by the IBES projections, because these estimates were provided by a large group of financial analysts who monitor these companies.³⁸ 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 **13.00%** as of January 1, 2012. The result of all of the DCF analysis and research can be found on the following pages.

³⁸ 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	12.55	10.60	19.32	13.25
Value Line Oil/Gas Distribution - All + MLPs	13.86	13.17	14.99	12.32
VL Nat. Gas Divers. & Oil/Gas Dist./MLPs - Large	13.84	12.88	15.74	11.65
Interstate Natural Gas Pipeline Forum (Pipes)	11.63	11.24	11.23	10.56
Value Line Pipeline MLPs	16.22	13.88	15.46	13.26
S&P Screened Comparables Group	12.18	10.90	13.21	10.18
All Companies in S&P 500 with "BBB-" Rated Debt	17.39	14.13	15.41	12.16
Averages	13.95	12.40	15.05	11.91

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.

Value Line Natural Gas Diversified Industry (All)
DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATP Oil & Gas Corp	ATPG			
Cabot Oil & Gas 'A'	COG	0.14	14.00	14.14
Callon Pete Co	CPE			
Chesapeake Energy	CHK	1.48	6.00	7.48
Cimarex Energy	XEC	0.64	9.00	9.64
Crosstex Energy	XTXI	2.99		
Devon Energy	DVN	1.04	8.00	9.04
EOG Resources	EOG	0.65	17.00	17.65
EQT Corp.	EQT	1.56	19.00	20.56
Energen Corp.	EGN	1.02	6.00	7.02
Linn Energy LLC	LINE	7.42	(1.00)	
MDU Resources	MDU	3.11	5.00	8.11
National Fuel Gas	NFG	2.60	8.00	10.60
Newfield Exploration	NFX		8.50	8.50
Pengrowth Energy	PGH	7.48	26.00	33.48
Penn Virginia Corp.	PVA		5.00	5.00
Petroleum Development Corp.	PETD		12.00	12.00
QEP Resources	QEP	0.37		
Questar Corp.	STR	3.36	(8.00)	
Quicksilver Res.	KWK		11.00	11.00
Southwestern Energy	SWN		14.00	14.00
Average		2.42	9.38	12.55
Median		1.52	8.50	10.60

Source: *Value Line*, January 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Atlas Energy LP	ATLS			
Boardwalk Pipeline	BWP	7.17	6.00	13.17
Buckeye Partners L.P.	BPL	6.38	7.50	13.88
Chesapeake Midstream Ptners LP	CHKM		8.00	
Clean Energy Fuels	CLNE			
Copano Energy	CPNO	6.52	6.50	13.02
Crosstex Energy LP	XTEX		7.50	
Eagle Rock Energy Partners Ltd	EROC			
El Paso Corp.	EP	0.15	6.00	6.15
El Paso Pipeline	EPB	5.43	13.50	18.93
Enbridge Energy Partners LLP	EEP		2.50	
Enbridge Inc.	ENB.TO	2.98	8.00	10.98
Energy Transfer	ETP	7.69	(0.50)	
Enterprise Products	EPD	5.09	9.50	14.59
Ferrellgas Partners L P	FGP		3.00	
Inergy L.P.	NRGY	11.56	22.50	34.06
Kinder Morgan Energy	KMP	5.86	7.50	13.36
Magellan Midstream	MMP	4.64	6.00	10.64
Markwest Energy Partners LP	MWE		24.23	
NGL Energy Partners LP	NGL			
ONEOK Inc.	OKE	2.74	8.50	11.24
ONEOK Partners LP	OKS		4.00	
PAA Natural Gas Storage L.P.	PNG		1.00	
Plains All Amer. Pipe.	PAA	5.38	7.50	12.88
Southern Union	SUG	1.41	7.50	8.91
Spectra Energy	SE	3.70	7.00	10.70
Suburban Propane	SPH	7.11		
Sunoco Logistics Partners L.P.	SXL		6.00	
Targa Resources Corp	TRGP		15.00	
Tesoro Logistics LP	TLLP		10.00	
TransCanada Corp.	TRP	3.90	10.50	14.40
Western Gas Partners LP	WES		7.50	
Williams Cos.	WMB	3.63	10.50	14.13
Williams Partners L.P.	WPZ	5.01	9.50	14.51
Average		5.07	8.35	13.86
Median		5.09	7.50	13.17

Source: *Value Line*, January 2012.

VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large
DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS	Gth	DCF
Boardwalk Pipeline	BWP	7.17		6.00	13.17
Buckeye Partners L.P.	BPL	6.38		7.50	13.88
Chesapeake Energy	CHK	1.48		6.00	7.48
Cimarex Energy	XEC	0.64		9.00	9.64
Crosstex Energy	XTXI	2.99			
Crosstex Energy LP	XTEX			7.50	
Devon Energy	DVN	1.04		8.00	9.04
EOG Resources	EOG	0.65		17.00	17.65
EQT Corp.	EQT	1.56		19.00	20.56
El Paso Corp.	EP	0.15		6.00	6.15
El Paso Pipeline	EPB	5.43		13.50	18.93
Enbridge Energy Partners LLP	EEP			2.50	
Enbridge Inc.	ENB.TO	2.98		8.00	10.98
Energen Corp.	EGN	1.02		6.00	7.02
Energy Transfer	ETP	7.69	(0.50)		
Enterprise Products	EPD	5.09		9.50	14.59
Ferrellgas Partners L P	FGP			3.00	
Inergy L.P.	NRGY	11.56		22.50	34.06
Kinder Morgan Energy	KMP	5.86		7.50	13.36
MDU Resources	MDU	3.11		5.00	8.11
Magellan Midstream	MMP	4.64		6.00	10.64
Markwest Energy Partners LP	MWE			24.23	
National Fuel Gas	NFG	2.60		8.00	10.60
Newfield Exploration	NFX			8.50	
ONEOK Inc.	OKE	2.74		8.50	11.24
ONEOK Partners LP	OKS			4.00	
Pengrowth Energy	PGH	7.48		26.00	33.48
Plains All Amer. Pipe.	PAA	5.38		7.50	12.88
QEP Resources	QEP	0.37			
Questar Corp.	STR	3.36	(8.00)		
Southern Union	SUG	1.41		7.50	8.91
Southwestern Energy	SWN			14.00	
Spectra Energy	SE	3.70		7.00	10.70
Suburban Propane	SPH	7.11			
Sunoco Logistics Partners L.P.	SXL			6.00	
Targa Resources Corp	TRGP			15.00	
TransCanada Corp.	TRP	3.90		10.50	14.40
Williams Cos.	WMB	3.63		10.50	14.13
Williams Partners L.P.	WPZ	5.01		9.50	14.51
Average		3.87		9.10	13.84
Median		3.50		7.75	12.88

Source: *Value Line*, January 2012.

Interstate Natural Gas Pipeline Forum (Pipelines)
DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS	Gth	DCF
Boardwalk Pipeline	BWP	7.17	6.00		13.17
CenterPoint Energy	CNP	4.04	3.00		7.04
El Paso Corp.	EP	0.15	6.00		6.15
El Paso Pipeline	EPB	5.43	13.50		18.93
Kinder Morgan Energy	KMP	5.86	7.50		13.36
MDU Resources	MDU	3.11	5.00		8.11
National Fuel Gas	NFG	2.60	8.00		10.60
ONEOK Inc.	OKE	2.74	8.50		11.24
ONEOK Partners LP	OKS		4.00		
Questar Corp.	STR	3.36	(8.00)		
Southern Union	SUG	1.41	7.50		8.91
Spectra Energy	SE	3.70	7.00		10.70
TransCanada Corp.	TRP	3.90	10.50		14.40
Williams Cos.	WMB	3.63	10.50		14.13
Williams Partners L.P.	WPZ	5.01	9.50		14.51
	Average	3.72	6.57		11.63
	Median	3.67	7.50		11.24

Source: *Value Line*, January 2012.

Value Line Pipeline MLPs
DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS	Gth	DCF
Atlas Energy LP	ATLS				
Boardwalk Pipeline	BWP	7.17	6.00		13.17
Buckeye Partners L.P.	BPL	6.38	7.50		13.88
Chesapeake Midstream Ptners LP	CHKM		8.00		
Crosstex Energy LP	XTEX		7.50		
Eagle Rock Energy Partners Ltd	EROC				
El Paso Pipeline	EPB	5.43	13.50		18.93
Enbridge Energy Partners LLP	EEP		2.50		
Energy Transfer	ETP	7.69	(0.50)		
Enterprise Products	EPD	5.09	9.50		14.59
Ferrellgas Partners L P	FGP		3.00		
Inergy L.P.	NRGY	11.56	22.50		34.06
Kinder Morgan Energy	KMP	5.86	7.50		13.36
Magellan Midstream	MMP	4.64	6.00		10.64
Markwest Energy Partners LP	MWE		24.23		
ONEOK Partners LP	OKS		4.00		
PAA Natural Gas Storage L.P.	PNG		1.00		
Plains All Amer. Pipe.	PAA	5.38	7.50		12.88
Suburban Propane	SPH	7.11			
Sunoco Logistics Partners L.P.	SXL		6.00		
Targa Resources Corp	TRGP		15.00		
Tesoro Logistics LP	TLLP		10.00		
Western Gas Partners LP	WES		7.50		
Williams Partners L.P.	WPZ	5.01	9.50		14.51
Average		6.48	8.46		16.22
Median		5.86	7.50		13.88

Source: *Value Line*, January 2012.

Pipeline Screened Comparables Group

DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Avista Corp.	AVA	4.55	4.50	9.05
Black Hills	BKH	4.39	8.50	12.89
Constellation Energy	CEG	2.54	16.50	19.04
EQT Corp.	EQT	1.56	19.00	20.56
G't Plains Energy	GXP	4.03	6.00	10.03
NiSource Inc.	NI	3.98	9.50	13.48
Noble Energy	NBL	0.90	10.00	10.90
NorthWestern Corp	NWE		6.00	
Safeway Inc.	SWY	2.91	6.50	9.41
Southern Union	SUG	1.41	7.50	8.91
Telephone & Data	TDS	1.78	10.00	11.78
U.S. Cellular	USM		10.50	
UIL Holdings	UIL	4.95	3.00	7.95
Average		3.00	9.04	12.18
Median		2.91	8.50	10.90

Source: *Value Line*, January 2012.

Pipeline Screened Comparables Group

DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
AVISTA CORP	AVA	4.46	4.50	8.96
BLACK HILLS CORP	BKH	4.61	6.00	10.61
CONSTELLATION ENERGY GRP INC	CEG	2.50	3.15	5.65
EQT CORP	EQT	2.03	26.60	28.63
GREAT PLAINS ENERGY INC	GXP	4.01	2.70	6.71
NISOURCE INC	NI	4.18	8.20	12.38
NOBLE ENERGY INC	NBL	1.22	30.60	31.82
NORTHWESTERN CORP	NWE	4.24	5.50	9.74
SAFEWAY INC	SWY	3.01	9.10	12.11
SOUTHERN UNION CO	SUG	1.49	4.70	6.19
TELEPHONE & DATA SYSTEMS INC	TDS	2.08	14.50	16.58
UIL HOLDINGS CORP	UIL	5.08	4.00	9.08
US CELLULAR CORP	USM		9.70	
Average		3.24	9.94	13.21
Median		3.51	6.00	10.18

Source: *S&P Compustat*, January 2012.

All Companies in S&P 500 with "BBB-" Rated Debt
DCF Indicator (VL Data) - January 1, 2012

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Alcoa Inc.	AA	1.28		
Allegheny Techn.	ATI	1.49	22.00	23.49
Anadarko Petroleum	APC	0.44	21.50	21.94
Beam Inc.	BEAM			
Best Buy Co.	BBY	2.73	5.00	7.73
Cliffs Natural Res.	CLF	1.68	24.00	25.68
CMS Energy Corp.	CMS	4.21	7.00	11.21
Constellation Energy	CEG	2.54	16.50	19.04
Discover Fin'l Svcs.	DFS	1.63	34.50	36.13
Edison Int'l	EIX	3.20	(1.00)	
Expedia Inc.	EXPE		20.00	
Family Dollar Stores	FDO	1.24	14.50	15.74
First Horizon National	FHN	0.47		
FirstEnergy Corp.	FE	5.23	0.50	5.73
FLIR Systems	FLIR	0.94	7.50	8.44
L-3 Communic.	LLL	2.81	5.50	8.31
Lorillard Inc.	LO	4.55	14.00	18.55
Macy's Inc.	M	2.35	17.50	19.85
Marsh & McLennan	MMC	2.82	28.50	31.32
Masco Corp.	MAS	2.60	35.00	37.60
Molson Coors Brewing	TAP	2.94	5.00	7.94
Newell Rubbermaid	NWL	1.92	16.00	17.92
NiSource Inc.	NI	3.98	9.50	13.48
Pioneer Natural Res.	PXD	0.08	31.00	31.08
Reynolds American	RAI	5.51	5.00	10.51
Roper Inds.	ROP	0.61	13.50	14.11
Southwest Airlines	LUV	0.23	28.00	28.23
Textron Inc.	TXT	0.41	7.50	7.91
Tyson Foods 'A'	TSN	0.78	23.00	23.78
Unum Group	UNM	1.93	5.00	6.93
Weyerhaeuser Co.	WY	3.19		
Williams Cos.	WMB	3.63	10.50	14.13
Wyndham Worldwide	WYN	1.60	10.00	11.60
Xerox Corp.	XRX	2.09	11.00	13.09
Yum! Brands	YUM	1.91	11.00	12.91
Zions Bancorp.	ZION	0.22		
Average		2.15	14.79	17.39
Median		1.93	13.50	14.13

Source: *Value Line*, January 2012.

Value Line Natural Gas Diversified Industry (All)
DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
ATP OIL & GAS CORP	ATPG			
CABOT OIL & GAS CORP	COG	0.21	34.00	34.21
CALLON PETROLEUM CO/DE	CPE			
CHESAPEAKE ENERGY CORP	CHK	1.75	11.50	13.25
CIMAREX ENERGY CO	XEC	0.70	8.65	9.36
CROSSTEX ENERGY INC	XTXI			
DEVON ENERGY CORP	DVN	1.22	11.18	12.40
ENERGEN CORP	EGN	1.13	4.90	6.03
EOG RESOURCES INC	EOG	1.07	64.00	65.07
EQT CORP	EQT	2.03	26.60	28.63
LINN ENERGY LLC	LINE	7.96	9.29	17.25
MDU RESOURCES GROUP INC	MDU	3.30	5.85	9.15
NATIONAL FUEL GAS CO	NFG	2.59	1.20	3.79
NEWFIELD EXPLORATION CO	NFX		8.00	
PENGROWTH ENERGY CORP	PGH	8.39	7.70	16.09
PENN VIRGINIA CORP	PVA			
PETROLEUM DEVELOPMENT CORP	PETD			
QEP RESOURCES INC	QEP	0.35	26.51	26.86
QUESTAR CORP	STR	3.46	5.65	9.11
QUICKSILVER RESOURCES INC	KWK			
SOUTHWESTERN ENERGY CO	SWN		10.85	
	Average	2.63	15.73	19.32
	Median	1.75	9.29	13.25

Source: *S&P Compustat*, January 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
ATLAS ENERGY LP	ATLS			
BOARDWALK PIPELINE PRTNRS-LP	BWP	7.82	2.56	10.38
BUCKEYE PARTNERS LP	BPL	6.74	5.10	11.84
CHESAPEAKE MIDSTREAM PRTNRS	CHKM	5.74	11.00	16.74
CLEAN ENERGY FUELS CORP	CLNE		30.00	
COPANO ENERGY LLC	CPNO	7.12	5.80	12.92
CROSSTEX ENERGY LP	XTEX	8.22	7.50	15.72
EAGLE ROCK ENERGY PARTNRS LP	EROC	8.24	20.00	28.24
EL PASO CORP	EP			
EL PASO PIPELINE PARTNERS LP	EPB	5.89	4.00	9.89
ENBRIDGE ENERGY PRTNRS -LP	EEP	6.61	3.00	9.61
ENBRIDGE INC	ENB	2.79	8.30	11.09
ENERGY TRANSFER PARTNERS -LP	ETP	9.23	18.32	27.55
ENTERPRISE PRODS PRTNRS -LP	EPD	5.73	8.55	14.28
FERRELLGAS PARTNERS -LP	FGP	10.96	4.00	14.96
INERGY LP	NRGY			
KINDER MORGAN ENERGY -LP	KMP	5.74	5.00	10.74
MAGELLAN MIDSTREAM PRTNRS LP	MMP	4.93	6.18	11.12
MARKWEST ENERGY PARTNERS LP	MWE	5.83	9.90	15.73
NGL ENERGY PARTNERS LP	NGL			
ONEOK INC	OKE	2.82	9.05	11.87
ONEOK PARTNERS -LP	OKS	4.50	9.10	13.60
PAA NATURAL GAS STORAGE LP	PNG	8.08	6.00	14.08
PLAINS ALL AMER PIPELINE -LP	PAA	5.72	5.60	11.32
SOUTHERN UNION CO	SUG	1.49	4.70	6.19
SPECTRA ENERGY CORP	SE	3.90	7.20	11.10
SUBURBAN PROPANE PRTNRS -LP	SPH	7.45	4.00	11.45
SUNOCO LOGISTICS PARTNERS LP	SXL	4.52	7.80	12.32
TARGA RESOURCES CORP	TRGP	4.17	38.00	42.17
TESORO LOGISTICS LP	TLLP	4.68	10.00	14.68
TRANSCANADA CORP	TRP	4.03	7.20	11.23
WESTERN GAS PARTNERS LP	WES	4.42	8.50	12.92
WILLIAMS COS INC	WMB	3.83	26.50	30.33
WILLIAMS PARTNERS LP	WPZ	5.26	5.50	10.76
Average		5.74	9.95	14.99
Median		5.73	7.35	12.32

Source: S&P Compustat, January 2012.

VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large
DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
BOARDWALK PIPELINE PRTNRS-LP	BWP	7.82	2.56	10.38
BUCKEYE PARTNERS LP	BPL	6.74	5.10	11.84
CHESAPEAKE ENERGY CORP	CHK	1.75	11.50	13.25
CIMAREX ENERGY CO	XEC	0.70	8.65	9.36
CROSSTEX ENERGY INC	XTXI			
CROSSTEX ENERGY LP	XTEX	8.22	7.50	15.72
DEVON ENERGY CORP	DVN	1.22	11.18	12.40
EL PASO CORP	EP			
EL PASO PIPELINE PARTNERS LP	EPB	5.89	4.00	9.89
ENBRIDGE ENERGY PRTNRS -LP	EEP	6.61	3.00	9.61
ENBRIDGE INC	ENB	2.79	8.30	11.09
ENERGEN CORP	EGN	1.13	4.90	6.03
ENERGY TRANSFER PARTNERS -LP	ETP	9.23	18.32	27.55
ENTERPRISE PRODS PRTNRS -LP	EPD	5.73	8.55	14.28
EOG RESOURCES INC	EOG	1.07	64.00	65.07
EQT CORP	EQT	2.03	26.60	28.63
FERRELLGAS PARTNERS -LP	FGP	10.96	4.00	14.96
INERGY LP	NRGY			
KINDER MORGAN ENERGY -LP	KMP	5.74	5.00	10.74
MAGELLAN MIDSTREAM PRTNRS LP	MMP	4.93	6.18	11.12
MARKWEST ENERGY PARTNERS LP	MWE	5.83	9.90	15.73
MDU RESOURCES GROUP INC	MDU	3.30	5.85	9.15
NATIONAL FUEL GAS CO	NFG	2.59	1.20	3.79
NEWFIELD EXPLORATION CO	NFX		8.00	
ONEOK INC	OKE	2.82	9.05	11.87
ONEOK PARTNERS -LP	OKS	4.50	9.10	13.60
PENGROWTH ENERGY CORP	PGH	8.39	7.70	16.09
PLAINS ALL AMER PIPELINE -LP	PAA	5.72	5.60	11.32
QEP RESOURCES INC	QEP	0.35	26.51	26.86
QUESTAR CORP	STR	3.46	5.65	9.11
SOUTHERN UNION CO	SUG	1.49	4.70	6.19
SOUTHWESTERN ENERGY CO	SWN		10.85	
SPECTRA ENERGY CORP	SE	3.90	7.20	11.10
SUBURBAN PROPANE PRTNRS -LP	SPH	7.45	4.00	11.45
SUNOCO LOGISTICS PARTNERS LP	SXL	4.52	7.80	12.32
TARGA RESOURCES CORP	TRGP	4.17	38.00	42.17
TRANSCANADA CORP	TRP	4.03	7.20	11.23
WILLIAMS COS INC	WMB	3.83	26.50	30.33
WILLIAMS PARTNERS LP	WPZ	5.26	5.50	10.76
Average		4.53	11.10	15.74
Median		4.34	7.60	11.65

Source: S&P Compustat, January 2012.

Interstate Natural Gas Pipeline Forum (Pipelines)

DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
BOARDWALK PIPELINE PRTNRS-LP	BWP	7.82	2.56	10.38
CENTERPOINT ENERGY INC	CNP	4.13	5.00	9.13
EL PASO CORP	EP			
EL PASO PIPELINE PARTNERS LP	EPB	5.89	4.00	9.89
KINDER MORGAN ENERGY -LP	KMP	5.74	5.00	10.74
MDU RESOURCES GROUP INC	MDU	3.30	5.85	9.15
NATIONAL FUEL GAS CO	NFG	2.59	1.20	3.79
ONEOK INC	OKE	2.82	9.05	11.87
ONEOK PARTNERS -LP	OKS	4.50	9.10	13.60
QUESTAR CORP	STR	3.46	5.65	9.11
SOUTHERN UNION CO	SUG	1.49	4.70	6.19
SPECTRA ENERGY CORP	SE	3.90	7.20	11.10
TRANSCANADA CORP	TRP	4.03	7.20	11.23
WILLIAMS COS INC	WMB	3.83	26.50	30.33
WILLIAMS PARTNERS LP	WPZ	5.26	5.50	10.76
Average		4.20	7.04	11.23
Median		3.97	5.58	10.56

Source: S&P Compustat, January 2012.

Value Line Pipeline MLPs
DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
ATLAS ENERGY LP	ATLS			
BOARDWALK PIPELINE PRTNRS-LP	BWP	7.82	2.56	10.38
BUCKEYE PARTNERS LP	BPL	6.74	5.10	11.84
CHESAPEAKE MIDSTREAM PRTNRS	CHKM	5.74	11.00	16.74
CROSSTEX ENERGY LP	XTEX	8.22	7.50	15.72
EAGLE ROCK ENERGY PARTNRS LP	EROC	8.24	20.00	28.24
EL PASO PIPELINE PARTNERS LP	EPB	5.89	4.00	9.89
ENBRIDGE ENERGY PRTNRS -LP	EEP	6.61	3.00	9.61
ENERGY TRANSFER PARTNERS -LP	ETP	9.23	18.32	27.55
ENTERPRISE PRODS PRTNRS -LP	EPD	5.73	8.55	14.28
FERRELLGAS PARTNERS -LP	FGP	10.96	4.00	14.96
INERGY LP	NRGY			
KINDER MORGAN ENERGY -LP	KMP	5.74	5.00	10.74
MAGELLAN MIDSTREAM PRTNRS LP	MMP	4.93	6.18	11.12
MARKWEST ENERGY PARTNERS LP	MWE	5.83	9.90	15.73
ONEOK PARTNERS -LP	OKS	4.50	9.10	13.60
PAA NATURAL GAS STORAGE LP	PNG	8.08	6.00	14.08
PLAINS ALL AMER PIPELINE -LP	PAA	5.72	5.60	11.32
SUBURBAN PROPANE PRTNRS -LP	SPH	7.45	4.00	11.45
SUNOCO LOGISTICS PARTNERS LP	SXL	4.52	7.80	12.32
TARGA RESOURCES CORP	TRGP	4.17	38.00	42.17
TESORO LOGISTICS LP	TLLP	4.68	10.00	14.68
WESTERN GAS PARTNERS LP	WES	4.42	8.50	12.92
WILLIAMS PARTNERS LP	WPZ	5.26	5.50	10.76
	Average	6.39	9.07	15.46
	Median	5.79	6.84	13.26

Source: S&P Compustat, January 2012.

All Companies in S&P 500 with "BBB-" Rated Debt

DCF Indicator (S&P Data) - January 1, 2012

Company Name	Ticker	Current Yield	EPS Growth	DCF
ALCOA INC	AA	1.72	23.65	25.37
ALLEGHENY TECHNOLOGIES INC	ATI	2.20	45.83	48.03
ANADARKO PETROLEUM CORP	APC	0.60	26.40	27.00
BEAM INC	BEAM	1.63	10.00	11.63
BEST BUY CO INC	BBY	2.96	8.00	10.96
CLIFFS NATURAL RESOURCES INC	CLF	2.01	12.00	14.01
CMS ENERGY CORP	CMS	4.03	6.00	10.03
CONSTELLATION ENERGY GRP INC	CEG	2.50	3.15	5.65
DISCOVER FINANCIAL SVCS INC	DFS	1.83	10.00	11.83
EDISON INTERNATIONAL	EIX	3.26	3.85	7.11
EXPEDIA INC	EXPE	2.12	10.00	12.12
FAMILY DOLLAR STORES	FDO	1.44	15.00	16.44
FIRST HORIZON NATIONAL CORP	FHN	0.54	7.50	8.04
FIRSTENERGY CORP	FE	5.09	2.50	7.59
FLIR SYSTEMS INC	FLIR	1.10	15.00	16.10
L-3 COMMUNICATIONS HLDGS INC	LLL	2.87	6.50	9.37
LORILLARD INC	LO	5.08	11.30	16.38
MACY'S INC	M	1.39	11.80	13.19
MARSH & MCLENNAN COS	MMC	3.09	11.00	14.09
MASCO CORP	MAS	3.29	15.00	18.29
MOLSON COORS BREWING CO	TAP	3.10	5.60	8.70
NEWELL RUBBERMAID INC	NWL	2.17	9.50	11.67
NISOURCE INC	NI	4.18	8.20	12.38
PIONEER NATURAL RESOURCES CO	PXD	0.10	10.00	10.10
REYNOLDS AMERICAN INC	RAI	5.73	6.00	11.73
ROPER INDUSTRIES INC/DE	ROP	0.58	15.00	15.58
SOUTHWEST AIRLINES	LUV	0.21	1.42	1.64
TEXTRON INC	TXT	0.69	59.30	59.99
TYSON FOODS INC -CL A	TSN	0.83	7.00	7.83
UNUM GROUP	UNM	2.19	10.00	12.19
WEYERHAEUSER CO	WY	3.29	2.50	5.79
WILLIAMS COS INC	WMB	3.83	26.50	30.33
WYNDHAM WORLDWIDE CORP	WYN	1.82	14.81	16.63
XEROX CORP	XRX	2.59	21.05	23.64
YUM BRANDS INC	YUM	2.18	13.00	15.18
ZIONS BANCORPORATION	ZION	0.27	8.00	8.27
Average		2.29	13.12	15.41
Median		2.18	10.00	12.16

Source: S&P Compustat, January 2012.

Risk Premium Method

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

Our risk premium calculations included computations for two categories of risk premium indicators — general indicators and indicators for specific groups. The *Value Line* natural gas (diversified) group; the *Value Line* oil/gas distribution group plus the *Value Line* Pipeline MLPs; the *Value Line* natural gas (diversified) group combined with the *Value Line* oil/gas distribution group and the *Value Line* Pipeline MLPs (large companies - companies with \$1 billion in annual sales); the *Value Line* MLPs; and the interstate natural gas pipeline forum group (with subsidiaries) that are heavily involved with pipelines. Our ex post risk premiums were derived from the 2012 *Valuation Edition of Stocks, Bonds, Bills and Inflation* (SBBI). The SBBI risk premium was cross-checked for reasonableness by information from *Value Line*.³⁹ Our *ex ante* risk premium indicator was derived from 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

$$K_e = R_f + R_p$$

where

K_e = Cost of equity

R_f = Risk free rate

R_p = Risk premium

Figure 3

³⁹ In an effort to check the long-term risk premium of 6.6% from SBBI published by Morningstar, Inc., we performed our own calculations to confirm the reasonableness of this figure.

The SBBI risk premium figure is supported by our own calculations of risk premium by using the CAPM formula in Figure A. From *Value Line* we know the 3-5 year annual total return on their S&P 500 database is 14.89% and that the 5-year beta is 1.16 for this database (see statistics for database, *Value Line* CD ROM, January 2012). Further, we know the long-term treasury bond rate was 2.67% at January 1, 2012. Therefore, we can substitute all the known elements into the CAPM formula and solve for RP as shown in Figure B. The result of this calculation is a risk premium indicator of 10.53%, which well supports the SBBI long-term government bond risk premium of 6.6%.

$$K_e = R_f + \beta(R_p)$$

Figure A

Solve for R_p

$$R_p = \frac{K_e - R_f}{\beta}$$

$$R_p = \frac{0.1489 - 0.0267}{1.16}$$

$$R_p = 0.1053$$

Figure B

of capital (weighted by market value) for the *S&P 500*, which was 14.01%. This figure was further checked for reasonableness using Value Line information for the *S&P 500*, which indicated the weighted average cost of capital to be 13.95%. (We gave the most weight to the *S&P* data arriving at an estimate for the market cost of capital of 14.00%.) We then subtracted the current long-term Treasury bond rate of 2.67% to obtain the expected equity risk premium of 11.33%. (*This ex ante risk premium, while high by historical standards, is partially the result of very low yields – the lowest in over 50 years – on long term Treasury bonds*). 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 *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. Our relevant current 'safe rates' for the general indicators were derived from the sources footnoted below.⁴⁰ The 'safe rates' (or base rates) used for each company within the company groupings were the yields to maturity (from the *Bloomberg Financial Market Credit Analysis*, Jan. 2012) for each company's bond rating for each company in *Mergent Bond Record* database (January, 2012). The yield to maturity for each company's bond rating was added to the *SBBI* corporate bond risk premium of 5.4% 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 Morningstar, indicates a cost of equity capital of 9.27% (ex post) and 14.00% (ex ante).

The range for all calculations of risk premium indicators using the indicators by specific company groups are between 10.52% and 12.16%. A reasonable view of these results would indicate a correlated risk premium indicator for the specific company groups to be approximately 11.75%.

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 long-term bonds. We believe the appropriate cost of equity for the typical interstate natural gas pipeline by the risk premium method as of January 1, 2012, is **11.75%**. 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.

⁴⁰ Morningstar, *2012 SBBI & 2012 Ibbotson SBBI Risk Premia Over Time Report* and The Federal Reserve, Jan. 3, 2012.

Risk Premium Indicators - January 1, 2012

General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
20-Year Treasury Bonds (ex post)	2.67	6.60	9.27
20-Year Treasury Bonds (ex ante)	2.67	11.33	14.00

Risk Premium Indicators by Groups

Indicators	Median Bond Rating		Bloomberg Yields	Risk Prem Indicator
	Rating	Number		
Value Line Natural Gas (Diversified) - All	BB+	13	6.76	12.16
Value Line Oil/Gas Distribution Industry (All + MLPs)	BBB-	12	5.52	10.92
VL Natural Gas Diversified & Oil/Gas Dist./MLP - Large	BBB-	12	5.52	10.92
Value Line Pipeline MLPs	BB+	13	6.76	12.16
Interstate Natural Gas Pipeline Forum (Pipes)	BBB	11	5.12	10.52
Average			5.94	11.34

* Base Rate: Yield to maturity for debt rating from Bloomberg database.

Jan. 2012. Risk Premium: 2012 Ibbotson SBBI Risk Premia Over Time Report.

Summary Statistics of Annual Returns: Basic Series and CRSP Size Deciles

2012 Ibbotson SBBi Valuation Yearbook: Table 2-1

From 1926 to 2011

Series	Geometric Mean (%)	Arithmetic Mean (%)	Standard Deviation (%)
Large Company Stocks			
Total Returns ¹	9.8	11.8	20.3
Income	4.1	4.1	1.6
Capital Appreciation	5.5	7.4	19.6
Ibbotson Small Company Stocks			
Total Returns	11.9	16.5	32.5
Mid-Cap Stocks ^{2,5}			
Total Returns	10.9	13.7	24.8
Income	3.9	3.9	1.8
Capital Appreciation	6.8	9.6	24.1
Low-Cap Stocks ^{3,5}			
Total Returns	11.3	15.2	29.2
Income	3.5	3.6	2.0
Capital Appreciation	7.6	11.4	28.5
Micro-Cap Stocks ^{4,5}			
Total Returns	12.0	18.0	38.9
Income	2.5	2.5	1.7
Capital Appreciation	9.5	15.4	38.3
Long-Term Corporate Bonds			
Total Returns	6.1	6.4	8.4
Long-Term Government Bonds			
Total Returns	5.7	6.1	9.8
Income	5.1	5.2	2.6
Capital Appreciation	0.4	0.8	8.7
Intermediate-Term Government Bonds			
Total Returns	5.4	5.5	5.7
Income	4.6	4.6	2.9
Capital Appreciation	0.6	0.7	4.6
Treasury Bills			
Total Returns	3.6	3.6	3.1
Inflation	3.0	3.1	4.2

¹ Total return is equal to the sum of three component returns: income return, capital appreciation return, and reinvestment return.

² Mid-Cap stocks are represented here by CRSP NYSE/AMEX/NASDAQ deciles 3-5.

³ Low-Cap stocks are represented here by CRSP NYSE/AMEX/NASDAQ deciles 6-8.

⁴ Micro-Cap stocks are represented here by CRSP NYSE/AMEX/NASDAQ deciles 9-10.

⁵ Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2012 Center for Research in Security Price (CRSP®). The University of Chicago Booth School of Business. Used with permission.

Value Line Natural Gas Diversified Industry (All)
Risk Premium Indicator - January 1, 2012

Company Name	Ticker	S&P Rating	Numerical Rating	Bloomberg Yields	Risk Prem Indicator
ATP Oil & Gas Corp	ATPG	CCC-	21	N/A	N/A
Cabot Oil & Gas 'A'	COG				
Callon Pete Co	CPE				
Chesapeake Energy	CHK	BB+	13	6.76	12.16
Cimarex Energy	XEC	BB+	13	6.76	12.16
Crosstex Energy	XTXI	B+	16	8.73	14.13
Devon Energy	DVN	BBB+	10	4.81	10.21
EOG Resources	EOG	A-	9	4.48	9.88
EQT Corp.	EQT	BBB	11	5.12	10.52
Energen Corp.	EGN	BBB	11	5.12	10.52
Linn Energy LLC	LINE	B	17	8.59	13.99
MDU Resources	MDU	BBB+	10	4.81	10.21
National Fuel Gas	NFG	BBB	11	5.12	10.52
Newfield Exploration	NFX	BB+	13	6.76	12.16
Pengrowth Energy	PGH				
Penn Virginia Corp.	PVA	BB-	15	7.36	12.76
Petroleum Development Corp.	PETD	B-	18	9.21	14.61
QEP Resources	QEP	BB+	13	6.76	12.16
Questar Corp.	STR	A	8	4.23	9.63
Quicksilver Res.	KWK	B	17	8.59	13.99
Southwestern Energy	SWN	BBB	11	5.12	10.52
	Average	BB+	13	6.76	12.16
	Median	BB+	13	6.76	12.16

* Source: Mergent Database, S&P Compustat, Bloomberg, SBBI, Jan. 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
Risk Premium Indicator - January 1, 2012

Company Name	Ticker	S&P Rating	Numerical Rating	Bloomberg Yields	Risk Prem Indicator
Atlas Energy LP	ATLS	B	17	8.59	13.99
Boardwalk Pipeline	BWP	BBB-	12	5.52	10.92
Buckeye Partners L.P.	BPL	BBB	11	5.12	10.52
Chesapeake Midstream Ptners LP	CHKM	BB+	13	6.76	12.16
Clean Energy Fuels	CLNE				
Copano Energy	CPNO	B+	16	8.73	14.13
Crosstex Energy LP	XTEX	B+	16	8.73	14.13
Eagle Rock Energy Partners Ltd	EROC	B-	18	9.21	14.61
El Paso Corp.	EP	BB-	15	7.36	12.76
El Paso Pipeline	EPB	BB	14	7.57	12.97
Enbridge Energy Partners LLP	EEP	BBB	11	5.12	10.52
Enbridge Inc.	ENB.TO	A-	9	4.48	9.88
Energy Transfer	ETP	BBB-	12	5.52	10.92
Enterprise Products	EPD	BBB-	12	5.52	10.92
Ferrellgas Partners L P	FGP	B-	18	9.21	14.61
Inergy L.P.	NRGY	B+	16	8.73	14.13
Kinder Morgan Energy	KMP	BBB	11	5.12	10.52
Magellan Midstream	MMP	BBB	11	5.12	10.52
Markwest Energy Partners LP	MWE	BB	14	7.57	12.97
NGL Energy Partners LP	NGL	BB-	15	7.36	12.76
ONEOK Inc.	OKE	BBB	11	5.12	10.52
ONEOK Partners LP	OKS	BBB	11	5.12	10.52
PAA Natural Gas Storage L.P.	PNG				
Plains All Amer. Pipe.	PAA	BBB-	12	5.52	10.92
Southern Union	SUG	BBB-	12	5.52	10.92
Spectra Energy	SE	BBB	11	5.12	10.52
Suburban Propane	SPH				
Sunoco Logistics Partners L.P.	SXL	BBB	11	5.12	10.52
Targa Resources Corp	TRGP	BB	14	7.57	12.97
Tesoro Logistics LP	TLLP	BB+	13	6.76	12.16
TransCanada Corp.	TRP	A-	9	4.48	9.88
Western Gas Partners LP	WES	BB+	13	6.76	12.16
Williams Cos.	WMB	BB+	13	6.76	12.16
Williams Partners L.P.	WPZ	BBB-	12	5.52	10.92
	Average	BB+	13	6.76	12.16
	Median	BBB-	12	5.52	10.92

* Source: *Mergent Database, S&P Compustat, Bloomberg, SBBI*, Jan. 2012.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large
Risk Premium Indicator - January 1, 2012**

Company Name	Ticker	S&P Rating	Numerical Rating	Bloomberg Yields	Risk Prem Indicator
Boardwalk Pipeline	BWP	BBB-	12	5.52	10.92
Buckeye Partners L.P.	BPL	BBB	11	5.12	10.52
Chesapeake Midstream Ptners LP	CHKM	BB+	13	6.76	12.16
Cimarex Energy	XEC	BB+	13	6.76	12.16
Crosstex Energy	XTXI	B+	16	8.73	14.13
Crosstex Energy LP	XTEX	B+	16	8.73	14.13
Devon Energy	DVN	BBB+	10	4.81	10.21
EOG Resources	EOG	A-	9	4.48	9.88
EQT Corp.	EQT	BBB	11	5.12	10.52
El Paso Corp.	EP	BB-	15	7.36	12.76
El Paso Pipeline	EPB	BB	14	7.57	12.97
Enbridge Energy Partners LLP	EEP	BBB	11	5.12	10.52
Enbridge Inc.	ENB.TO	A-	9	4.48	9.88
Energen Corp.	EGN	BBB	11	5.12	10.52
Energy Transfer	ETP	BBB-	12	5.52	10.92
Enterprise Products	EPD	BBB-	12	5.52	10.92
Ferrellgas Partners L P	FGP	B-	18	9.21	14.61
Inergy L.P.	NRGY	B+	16	8.73	14.13
Kinder Morgan Energy	KMP	BBB	11	5.12	10.52
MDU Resources	MDU	BBB+	10	4.81	10.21
Magellan Midstream	MMP	BBB	11	5.12	10.52
Markwest Energy Partners LP	MWE	BB	14	7.57	12.97
National Fuel Gas	NFG	BBB	11	5.12	10.52
Newfield Exploration	NFX	BB+	13	6.76	12.16
ONEOK Inc.	OKE	BBB	11	5.12	10.52
ONEOK Partners LP	OKS	BBB	11	5.12	10.52
Penn Virginia Corp.	PVA	BB-	15	7.36	12.76
Plains All Amer. Pipe.	PAA	BBB-	12	5.52	10.92
QEP Resources	QEP	BB+	13	6.76	12.16
Questar Corp.	STR	A	8	4.23	9.63
Southern Union	SUG	BBB-	12	5.52	10.92
Southwestern Energy	SWN	BBB	11	5.12	10.52
Spectra Energy	SE	BBB	11	5.12	10.52
Suburban Propane	SPH				
Sunoco Logistics Partners L.P.	SXL	BBB	11	5.12	10.52
Targa Resources Corp	TRGP	BB	14	7.57	12.97
TransCanada Corp.	TRP	A-	9	4.48	9.88
Williams Cos.	WMB	BB+	13	6.76	12.16
Williams Partners L.P.	WPZ	BBB-	12	5.52	10.92
	Average	BBB-	12	5.52	10.92
	Median	BBB-	12	5.52	10.92

* Source: Mergent Database, S&P Compustat, Bloomberg, SBBI, Jan. 2012.

Value Line Pipeline MLPs
Risk Premium Indicator - January 1, 2012

Company Name	Ticker	S&P Rating	Numerical Rating	Bloomberg Yields	Risk Prem Indicator
Atlas Energy LP	ATLS	B	17	8.59	13.99
Boardwalk Pipeline	BWP	BBB-	12	5.52	10.92
Buckeye Partners L.P.	BPL	BBB	11	5.12	10.52
Chesapeake Midstream Ptners LP	CHKM	BB+	13	6.76	12.16
Crosstex Energy LP	XTEX	B+	16	8.73	14.13
Eagle Rock Energy Partners Ltd	EROC	B-	18	9.21	14.61
El Paso Pipeline	EPB	BB	14	7.57	12.97
Enbridge Energy Partners LLP	EEP	BBB	11	5.12	10.52
Energy Transfer	ETP	BBB-	12	5.52	10.92
Enterprise Products	EPD	BBB-	12	5.52	10.92
Ferrellgas Partners L P	FGP	B-	18	9.21	14.61
Inergy L.P.	NRGY	B+	16	8.73	14.13
Kinder Morgan Energy	KMP	BBB	11	5.12	10.52
Magellan Midstream	MMP	BBB	11	5.12	10.52
Markwest Energy Partners LP	MWE	BB	14	7.57	12.97
ONEOK Partners LP	OKS	BBB	11	5.12	10.52
PAA Natural Gas Storage L.P.	PNG				
Plains All Amer. Pipe.	PAA	BBB-	12	5.52	10.92
Suburban Propane	SPH				
Sunoco Logistics Partners L.P.	SXL	BBB	11	5.12	10.52
Targa Resources Corp	TRGP	BB	14	7.57	12.97
Tesoro Logistics LP	TLLP	BB+	13	6.76	12.16
Western Gas Partners LP	WES	BB+	13	6.76	12.16
Williams Partners L.P.	WPZ	BBB-	12	5.52	10.92
Average		BB+	13	6.76	12.16
Median		BB+	13	6.76	12.16

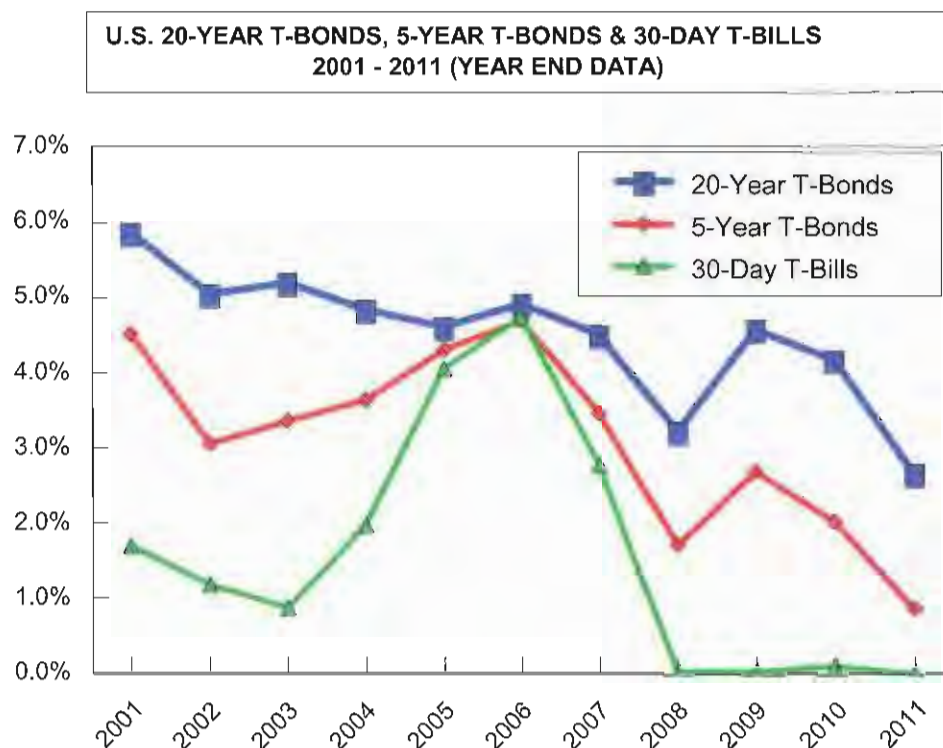
* Source: *Mergent Database, S&P Compustat, Bloomberg, SBBI*, Jan. 2012.

Interstate Natural Gas Pipeline Forum (Pipelines)
Risk Premium Indicator - January 1, 2012

Company Name	Ticker	S&P Rating	Numerical Rating	Bloomberg Yields	Risk Prem Indicator
Boardwalk Pipeline	BWP	BBB-	12	5.52	10.92
CenterPoint Energy	CNP	A-	9	4.48	9.88
El Paso Corp.	EP	BB-	15	7.36	12.76
El Paso Pipeline	EPB	BB	14	7.57	12.97
Kinder Morgan Energy	KMP	BBB	11	5.12	10.52
MDU Resources	MDU	BBB+	10	4.81	10.21
National Fuel Gas	NFG	BBB	11	5.12	10.52
ONEOK Inc.	OKE	BBB	11	5.12	10.52
ONEOK Partners LP	OKS	BBB	11	5.12	10.52
Questar Corp.	STR	A	8	4.23	9.63
Southern Union	SUG	BBB-	12	5.52	10.92
Spectra Energy	SE	BBB	11	5.12	10.52
TransCanada Corp.	TRP	A-	9	4.48	9.88
Williams Cos.	WMB	BB+	13	6.76	12.16
Williams Partners L.P.	WPZ	BBB-	12	5.52	10.92
	Average	BBB	11	5.12	10.52
	Median	BBB	11	5.12	10.52

* Source: Mergent Database, S&P Compustat, Bloomberg, SBBI, Jan. 2012.

US 20-Year T-Bonds, 5-Year T-Bonds, and 30-Day T-Bills



U.S. 20-YEAR TREASURY BONDS U.S. 5-YEAR TREASURY BONDS U.S. 30-DAY TREASURY BILLS

Year End Date	20-Year T-Bonds	5 -Year T-Bonds	30-DAY T-Bills
2001	5.86%	4.52%	1.70%
2002	5.05%	3.05%	1.18%
2003	5.21%	3.36%	0.88%
2004	4.84%	3.64%	1.99%
2005	4.62%	4.30%	4.05%
2006	4.91%	4.70%	4.75%
2007	4.50%	3.45%	2.76%
2008	3.22%	1.72%	0.04%
2009	4.58%	2.69%	0.04%
2010	4.18%	2.02%	0.11%
2011	2.67%	0.89%	0.01%

Source: Federal 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 Morningstar in their SBBI publication*). The CAPM method is much like the risk premium method, however the risk premium is adjusted by beta before it is added to the appropriate risk level. The two elements of risk are a risk free rate, which is the price of time (the reward for postponing consumption and for not exposing funds to risk), and a risk premium, which is the additional compensation for assuming risk. The nominal risk free rate includes the real risk free rate and an inflation premium. The risk premium includes an interest rate risk, business risk, financial risk, and liquidity risk. All of these elements are accounted for when we calculate the cost of equity using the CAPM method.

Our *ex post* CAPM calculations were based upon the long-term risk premium using the entire period data provided by Morningstar, which includes data from 1926 through 2011. The indicated cost of equity by this method was 9.60% at January 1, 2012. Our *ex ante* CAPM calculations were based upon the expected risk premium of 11.33% 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 14.57% at January 1, 2012.

Our 'safe rates' for the CAPM calculations were derived as described in the risk premium method discussed earlier. Our beta estimate of 1.05 was based on observing the average and median 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

$$K_e = R_f + \beta R_p$$

where

K_e = Cost of equity

R_f = Risk free rate

β = Beta

R_p = Risk premium

Figure 4

Group of Companies	Avg.	Med.
Value Line Betas		
VL Nat Gas Diver. (all)	1.38	1.25
VL Oil/Gas Dist. + MLPs	1.00	0.90
VL Nat Gas Diver & Oil Gas Dist. + MLPs (large)	1.06	1.00
VL Pipeline MLPs	0.97	0.85
Nat Gas PL Forum (pipes)	0.98	1.00
S&P Screened Comps.	0.88	0.85
S&P 500 BBB- rated debt	1.12	1.10

Figure 5 - Value Line Betas

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

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

The first step in deriving the *ex ante* risk premium is to use a single-stage discounted cash flow analysis (otherwise known as the Gordon Growth Model) to calculate the cost of equity for the market proxy, (i.e., the S&P 500). The cost of equity is calculated by using the most recent I/B/E/S consensus long-term growth rates for each firm in the S&P 500 and adding it to the dividend growth yield. I/B/E/S is a service that polls analysts about their growth estimates for individual stocks. The dividend yield for the S&P 500 should be an estimate for Year 1's dividend (D_1). D_1 can be estimated by multiplying the S&P 500's current weighted average dividend yield (D_0) by 1 plus its weighted average long-term earnings growth rate. By adding the weighted average long-term growth rate to the dividend yield at the end of Year 1, the cost of equity is estimated. If for example, the long-term growth rate is equal to 10% and the current dividend yield is 4%, then the cost of equity is $(4\% \times 1.1) + 10\%$, or 14.40 %. This can also be described in the following formula:

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

Where:	DY	=	dividend yield
	G	=	long-term growth
	K_{e500}	=	cost of equity for the S&P 500

The second step is to calculate the risk premium of the S&P 500 (RP_{500}). For the CAPM, the *ex ante* risk premium is calculated by subtracting the risk-free rate (R_f), from the cost of equity for the S&P 500. For the build up method, the

ex ante risk premium is calculated by subtracting the weighted average bond yield for the S&P 500 from the cost of equity for the S&P 500.⁴¹

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

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 14.01%. This figure was further checked for reasonableness using Value Line information for the S&P 500, which indicated the weighted average cost of capital to be 13.95%. (We gave the most weight to the S&P data arriving at an estimate for the market cost of capital of 14.00%.) We then subtracted the current long-term Treasury bond rate of 2.67% to obtain the expected equity risk premium of 11.33%. 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 *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.

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 **12.50%** of January 1, 2012. This conclusion gives weight and consideration to both indicators. A summary of the CAPM indicators and the supporting data begins below and on the following page.

Summary of CAPM Indicators - January 1, 2012

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
CAPM Indicator *				
Long-Term Gov't Bonds (ex post)	2.67	6.60	1.05	9.60
Long-Term Gov't Bonds (ex ante)	2.67	11.33	1.05	14.57

CAPM Formula: $K_e = R_f + B(R_p)$

* CAPM Indicator is based upon a *Value Line* beta of 1.05. 2012 Ibbotson S&P Risk Premia Over Time Report; & Federal Reserve data January 3, 2011.

⁴¹ Pratt, Shannon P. *Cost of Capital, Estimation and Applications*, (NY: John Wiley & Sons, Inc. 1998) p. 178.

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 12.50% for the Interstate Natural Gas Pipelines as of January 1, 2012.

Beginning on the following page are the *Value Line* betas for the various companies in the Natural Gas Diversified Industry (all), Oil/Gas Distribution Industry (all + MLPs), Natural Gas Diversified & Oil/Gas Distribution/MLPs (large), Value Line Pipeline MLPs, Interstate Natural Gas Pipeline Forum (Pipeline) groups, Pipeline Screened Comparables Group, and all companies in the S&P 500 with "BBB-" rated debt. Shown after the betas for the various groups are the calculations for the *ex ante* CAPM with supporting data from *Standard & Poor's Compustat* and from the *Value Line Investment Survey* database at January 1, 2012.

Value Line Natural Gas Diversified Ind. (All)
Beta (Value Line) - January 1, 2012

Company Name	Ticker	Beta
ATP Oil & Gas Corp	ATPG	2.05
Cabot Oil & Gas 'A'	COG	1.25
Callon Pete Co	CPE	1.85
Chesapeake Energy	CHK	1.35
Cimarex Energy	XEC	1.25
Crosstex Energy	XTXI	2.25
Devon Energy	DVN	1.20
EOG Resources	EOG	1.15
EQT Corp.	EQT	1.20
Energen Corp.	EGN	1.15
Linn Energy LLC	LINE	0.90
MDU Resources	MDU	1.00
National Fuel Gas	NFG	1.05
Newfield Exploration	NFX	1.35
Pengrowth Energy	PGH	1.25
Penn Virginia Corp.	PVA	1.55
Petroleum Development Corp.	PETD	1.60
QEP Resources	QEP	
Questar Corp.	STR	
Quicksilver Res.	KWK	1.65
Southwestern Energy	SWN	1.15
	Average	1.38
	Median	1.25

Source: *Value Line*, January 2012.

Value Line Oil/Gas Distribution Industry (All + MLPs)
Beta (Value Line) - January 1, 2012

Company Name	Ticker	Beta
Atlas Energy LP	ATLS	1.90
Boardwalk Pipeline	BWP	0.85
Buckeye Partners L.P.	BPL	0.80
Chesapeake Midstream Ptners LP	CHKM	
Clean Energy Fuels	CLNE	1.40
Copano Energy	CPNO	1.15
Crosstex Energy LP	XTEX	1.70
Eagle Rock Energy Partners Ltd	EROC	1.05
El Paso Corp.	EP	1.35
El Paso Pipeline	EPB	0.75
Enbridge Energy Partners LLP	EEP	0.90
Enbridge Inc.	ENB.TO	0.60
Energy Transfer	ETP	0.80
Enterprise Products	EPD	0.85
Ferrellgas Partners L P	FGP	0.80
Inergy L.P.	NRGY	1.00
Kinder Morgan Energy	KMP	0.75
Magellan Midstream	MMP	0.85
Markwest Energy Partners LP	MWE	1.15
NGL Energy Partners LP	NGL	
ONEOK Inc.	OKE	1.00
ONEOK Partners LP	OKS	0.85
PAA Natural Gas Storage L.P.	PNG	
Plains All Amer. Pipe.	PAA	0.85
Southern Union	SUG	1.00
Spectra Energy	SE	1.00
Suburban Propane	SPH	0.75
Sunoco Logistics Partners L.P.	SXL	0.85
Targa Resources Corp	TRGP	
Tesoro Logistics LP	TLLP	
TransCanada Corp.	TRP	0.90
Western Gas Partners LP	WES	0.80
Williams Cos.	WMB	1.30
Williams Partners L.P.	WPZ	1.05
Average		1.00
Median		0.90

Source: *Value Line*, January 2012.

**VL Nat. Gas Diversified & Oil/Gas Dist./MLP - Large
Beta (Value Line) - January 1, 2012**

Company Name	Ticker	Beta
Boardwalk Pipeline	BWP	0.85
Buckeye Partners L.P.	BPL	0.80
Chesapeake Energy	CHK	1.35
Cimarex Energy	XEC	1.25
Crosstex Energy	XTXI	2.25
Crosstex Energy LP	XTEX	1.70
Devon Energy	DVN	1.20
EOG Resources	EOG	1.15
EQT Corp.	EQT	1.20
El Paso Corp.	EP	1.35
El Paso Pipeline	EPB	0.75
Enbridge Energy Partners LLP	EEP	0.90
Enbridge Inc.	ENB.TO	0.60
Energen Corp.	EGN	1.15
Energy Transfer	ETP	0.80
Enterprise Products	EPD	0.85
Ferrellgas Partners L.P.	FGP	0.80
Inergy L.P.	NRGY	1.00
Kinder Morgan Energy	KMP	0.75
MDU Resources	MDU	1.00
Magellan Midstream	MMP	0.85
Markwest Energy Partners LP	MWE	1.15
National Fuel Gas	NFG	1.05
Newfield Exploration	NFX	1.35
ONEOK Inc.	OKE	1.00
ONEOK Partners LP	OKS	0.85
Pengrowth Energy	PGH	1.25
Plains All Amer. Pipe.	PAA	0.85
QEP Resources	QEP	
Questar Corp.	STR	
Southern Union	SUG	1.00
Southwestern Energy	SWN	1.15
Spectra Energy	SE	1.00
Suburban Propane	SPH	0.75
Sunoco Logistics Partners L.P.	SXL	0.85
Targa Resources Corp	TRGP	
TransCanada Corp.	TRP	0.90
Williams Cos.	WMB	1.30
Williams Partners L.P.	WPZ	1.05
Average		1.06
Median		1.00

Source: *Value Line*, January 2012.

Value Line Pipeline MLPs
Beta (Value Line) - January 1, 2012

Company Name	Ticker	Beta
Atlas Energy LP	ATLS	1.90
Boardwalk Pipeline	BWP	0.85
Buckeye Partners L.P.	BPL	0.80
Chesapeake Midstream Ptners LP	CHKM	
Crosstex Energy LP	XTEX	1.70
Eagle Rock Energy Partners Ltd	EROC	1.05
El Paso Pipeline	EPB	0.75
Enbridge Energy Partners LLP	EEP	0.90
Energy Transfer	ETP	0.80
Enterprise Products	EPD	0.85
Ferrellgas Partners L P	FGP	0.80
Inergy L.P.	NRGY	1.00
Kinder Morgan Energy	KMP	0.75
Magellan Midstream	MMP	0.85
Markwest Energy Partners LP	MWE	1.15
ONEOK Partners LP	OKS	0.85
PAA Natural Gas Storage L.P.	PNG	
Plains All Amer. Pipe.	PAA	0.85
Suburban Propane	SPH	0.75
Sunoco Logistics Partners L.P.	SXL	0.85
Targa Resources Corp	TRGP	
Tesoro Logistics LP	TLLP	
Western Gas Partners LP	WES	0.80
Williams Partners L.P.	WPZ	1.05
Average		0.97
Median		0.85

Source: *Value Line*, January 2012.

Interstate Nat. Gas PL Forum (Pipelines)
Beta (Value Line) - January 1, 2012

Company Name	Ticker	Beta
Boardwalk Pipeline	BWP	0.85
CenterPoint Energy	CNP	0.80
El Paso Corp.	EP	1.35
El Paso Pipeline	EPB	0.75
Kinder Morgan Energy	KMP	0.75
MDU Resources	MDU	1.00
National Fuel Gas	NFG	1.05
ONEOK Inc.	OKE	1.00
ONEOK Partners LP	OKS	0.85
Questar Corp.	STR	
Southern Union	SUG	1.00
Spectra Energy	SE	1.00
TransCanada Corp.	TRP	0.90
Williams Cos.	WMB	1.30
Williams Partners L.P.	WPZ	1.05
Average		0.98
Median		1.00

Pipeline Screened Comparables Group
Beta (Value Line) - January 1, 2012

Company Name	Ticker	Beta
Avista Corp.	AVA	0.70
Black Hills	BKH	0.85
Constellation Energy	CEG	0.80
EQT Corp.	EQT	1.20
G't Plains Energy	GXP	0.75
NiSource Inc.	NI	0.85
Noble Energy	NBL	1.20
NorthWestern Corp	NWE	0.70
Safeway Inc.	SWY	0.70
Southern Union	SUG	1.00
Telephone & Data	TDS	0.90
U.S. Cellular	USM	1.10
UIL Holdings	UIL	0.70
Average		0.88
Median		0.85

Source: *Value Line*, January 2012.

All Companies in S&P 500 with "BBB-" Rated Debt
Beta (Value Line) - January 1, 2012

Company Name	Ticker	Beta
Alcoa Inc.	AA	1.45
Allegheny Techn.	ATI	1.55
Anadarko Petroleum	APC	1.30
Beam Inc.	BEAM	
Best Buy Co.	BBY	1.05
Cliffs Natural Res.	CLF	1.95
CMS Energy Corp.	CMS	0.75
Constellation Energy	CEG	0.80
Discover Fin'l Svcs.	DFS	1.35
Edison Int'l	EIX	0.80
Expedia Inc.	EXPE	1.15
Family Dollar Stores	FDO	0.55
First Horizon National	FHN	1.15
FirstEnergy Corp.	FE	0.80
FLIR Systems	FLIR	0.90
L-3 Communic.	LLL	0.90
Lorillard Inc.	LO	0.55
Macy's Inc.	M	1.35
Marsh & McLennan	MMC	0.75
Masco Corp.	MAS	1.40
Molson Coors Brewing	TAP	0.65
Newell Rubbermaid	NWL	1.25
NiSource Inc.	NI	0.85
Pioneer Natural Res.	PXD	1.45
Reynolds American	RAI	0.60
Roper Inds.	ROP	1.05
Southwest Airlines	LUV	1.00
Textron Inc.	TXT	1.65
Tyson Foods 'A'	TSN	1.05
Unum Group	UNM	1.35
Weyerhaeuser Co.	WY	
Williams Cos.	WMB	1.30
Wyndham Worldwide	WYN	1.85
Xerox Corp.	XRX	1.25
Yum! Brands	YUM	0.90
Zions Bancorp.	ZION	1.50
Average		1.12
Median		1.10

Source: *Value Line*, January 2012.

Cost of Equity Indication Using Expected Risk Premium

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

CAPM Calculations:

		LT Gov't. Bond Yield		Cost of Equity by CAPM	
S&P 500 Expected Equity Cost (Wt. Avg)	14.00				
Current Yield on L-T Gov't. Bonds	2.67				
Expected Equity Risk Premium	<u>11.33</u>				
Beta	1.05				
Adjusted Risk Premium	<u>11.90</u>	+	2.67	=	14.57 <i>Ex Ante</i>

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 2012)

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2012

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
3M CO	2.42	81.73	2.96	10.00	12.96	57,280.06
ABBOTT LABORATORIES	2.08	56.23	3.70	8.50	12.20	87,594.87
ABERCROMBIE & FITCH -CL A	0.83	48.84	1.69	18.00	19.69	4,198.33
ACCENTURE PLC	1.51	53.23	2.84	11.80	14.64	34,450.93
ACE LTD	1.54	70.12	2.20	10.00	12.20	23,644.96
AETNA INC	0.67	42.19	1.58	11.00	12.58	15,285.44
AFLAC INC	1.46	43.26	3.37	10.50	13.87	20,193.25
AGL RESOURCES INC	1.87	42.26	4.43	4.00	8.43	4,933.01
AIR PRODUCTS & CHEMICALS INC	2.59	85.19	3.05	11.85	14.90	17,934.37
AIRGAS INC	1.45	78.08	1.85	13.00	14.85	5,927.44
ALCOA INC	0.15	8.65	1.72	23.65	25.37	9,206.23
ALLEGHENY TECHNOLOGIES INC	1.05	47.80	2.20	45.83	48.03	5,084.01
ALLERGAN INC	0.23	87.74	0.26	14.80	15.06	26,763.51
ALLSTATE CORP	0.92	27.41	3.37	10.00	13.37	13,851.70
ALTERA CORP	0.37	37.10	0.99	15.00	15.99	11,904.02
ALTRIA GROUP INC	1.77	29.65	5.97	8.00	13.97	60,972.94
AMERICAN ELECTRIC POWER CO	1.94	41.31	4.69	2.96	7.65	19,949.09
AMERICAN EXPRESS CO	0.80	47.17	1.69	11.00	12.69	54,787.11
AMERIPRISE FINANCIAL INC	1.04	49.64	2.09	12.50	14.59	11,231.30
AMERISOURCEBERGEN CORP	0.58	37.19	1.57	12.16	13.73	9,607.78
AMGEN INC	1.21	64.21	1.88	8.00	9.88	56,282.89
AMPHENOL CORP	0.07	45.39	0.15	11.34	11.49	7,522.89
ANADARKO PETROLEUM CORP	0.46	76.33	0.60	26.40	27.00	38,010.20
ANALOG DEVICES	1.10	35.78	3.07	10.00	13.07	10,661.04
AON CORP	0.66	46.80	1.42	10.56	11.98	15,129.92
APACHE CORP	0.68	90.58	0.75	13.15	13.90	34,788.06
APARTMENT INVST & MGMT CO	0.50	22.91	2.20	5.00	7.20	2,770.19
APPLIED MATERIALS INC	0.35	10.71	3.23	8.00	11.23	13,983.37
ARCHER-DANIELS-MIDLAND CO	0.76	28.60	2.65	8.40	11.05	19,104.26
ASSURANT INC	0.79	41.06	1.93	10.00	11.93	3,781.95
AT&T INC	1.81	30.24	5.97	5.00	10.97	179,202.23
AUTOMATIC DATA PROCESSING	1.74	54.01	3.22	10.00	13.22	26,394.58
AVALONBAY COMMUNITIES INC	3.86	130.60	2.95	8.00	10.95	12,417.71
AVERY DENNISON CORP	1.01	28.68	3.53	1.10	4.63	3,045.73
AVON PRODUCTS	0.98	17.47	5.62	6.80	12.42	7,525.64
BAKER HUGHES INC	0.80	48.64	1.65	33.50	35.15	21,229.71
BALL CORP	0.31	35.71	0.86	9.90	10.76	5,807.98
BANK OF AMERICA CORP	0.05	5.56	0.83	15.50	16.33	56,355.45
BANK OF NEW YORK MELLON CORP	0.57	19.91	2.86	9.55	12.41	24,143.50
BARD (C.R.) INC	0.84	85.50	0.98	10.00	10.98	7,334.36
BAXTER INTERNATIONAL INC	1.48	49.48	2.98	10.10	13.08	27,900.09
BB&T CORP	0.68	25.17	2.71	6.50	9.21	17,546.51
BEAM INC	0.84	51.23	1.63	10.00	11.63	7,964.16
BECTON DICKINSON & CO	1.97	74.72	2.64	9.60	12.24	15,960.49
BEMIS CO INC	1.03	30.08	3.42	7.30	10.72	3,097.61
BEST BUY CO INC	0.69	23.37	2.96	8.00	10.96	8,258.93
BLACKROCK INC	6.16	178.24	3.46	12.00	15.46	24,784.27
BLOCK H & R INC	0.88	16.33	5.39	10.00	15.39	4,783.06
BOEING CO	1.91	73.35	2.60	13.40	16.00	54,516.21
BOSTON PROPERTIES INC	2.39	99.60	2.40	8.65	11.05	14,725.76

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2012

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
BROADCOM CORP -CL A	0.41	29.36	1.41	15.00	16.41	14,268.96
BROWN-FORMAN -CL B	1.53	80.51	1.90	9.15	11.05	11,355.09
C H ROBINSON WORLDWIDE INC	1.52	69.78	2.18	15.00	17.18	11,431.78
CA INC	0.22	20.22	1.10	11.00	12.10	9,973.92
CABLEVISION SYS CORP -CL A	0.66	14.22	4.62	9.45	14.07	3,203.97
CABOT OIL & GAS CORP	0.16	75.90	0.21	34.00	34.21	7,931.09
CAMPBELL SOUP CO	1.22	33.24	3.66	5.00	8.66	10,594.45
CAPITAL ONE FINANCIAL CORP	0.22	42.29	0.51	7.50	8.01	19,439.74
CARDINAL HEALTH INC	0.98	40.61	2.40	13.50	15.90	14,031.00
CARNIVAL CORP/PLC (USA)	1.12	32.64	3.44	12.35	15.79	19,434.41
CATERPILLAR INC	2.21	90.60	2.44	20.00	22.44	58,583.77
CBS CORP	0.48	27.14	1.75	18.90	20.65	17,784.20
CENTERPOINT ENERGY INC	0.83	20.09	4.13	5.00	9.13	8,556.99
CENTURYLINK INC	3.07	37.20	8.26	6.00	14.26	22,974.94
CF INDUSTRIES HOLDINGS INC	1.91	144.98	1.31	19.10	20.41	9,479.95
CHESAPEAKE ENERGY CORP	0.39	22.29	1.75	11.50	13.25	14,695.04
CHEVRON CORP	3.45	106.40	3.24	6.45	9.69	211,893.89
CHUBB CORP	1.72	69.22	2.48	10.00	12.48	19,248.14
CIGNA CORP	0.04	42.00	0.11	11.20	11.31	11,989.49
CINCINNATI FINANCIAL CORP	1.69	30.46	5.55	5.00	10.55	4,936.93
CINTAS CORP	0.60	34.81	1.72	11.00	12.72	4,515.97
CISCO SYSTEMS INC	0.26	18.08	1.46	10.00	11.46	97,195.63
CITIGROUP INC	0.04	26.31	0.17	11.33	11.50	76,922.76
CLIFFS NATURAL RESOURCES INC	1.25	62.35	2.01	12.00	14.01	8,916.80
CLOROX CO/DE	2.60	66.56	3.91	8.35	12.26	8,779.60
CME GROUP INC	6.26	243.67	2.57	11.80	14.36	16,176.76
CMS ENERGY CORP	0.89	22.08	4.03	6.00	10.03	5,598.63
COACH INC	1.03	61.04	1.69	14.50	16.19	17,813.06
COCA-COLA CO	1.98	69.97	2.84	5.55	8.39	158,918.11
COCA-COLA ENTERPRISES INC	0.57	25.78	2.22	10.10	12.32	8,043.77
COLGATE-PALMOLIVE CO	2.55	92.39	2.76	10.00	12.76	44,716.67
COMCAST CORP	0.52	23.71	2.20	16.10	18.30	64,930.11
COMERICA INC	0.47	25.80	1.82	17.16	18.97	5,126.00
COMPUTER SCIENCES CORP	0.86	23.70	3.65	8.00	11.65	3,674.95
CONAGRA FOODS INC	1.03	26.40	3.89	7.00	10.89	10,892.22
CONOCOPHILLIPS	2.67	72.87	3.67	1.25	4.92	96,752.34
CONSOL ENERGY INC	0.68	36.70	1.85	35.75	37.60	8,324.37
CONSOLIDATED EDISON INC	2.49	62.03	4.01	3.72	7.74	18,168.90
CONSTELLATION ENERGY GRP INC	0.99	39.67	2.50	3.15	5.65	7,996.04
COOPER INDUSTRIES PLC	1.32	54.15	2.44	14.00	16.44	8,561.17
CORNING INC	0.33	12.98	2.54	10.00	12.54	20,399.10
COSTCO WHOLESALE CORP	1.08	83.32	1.30	12.60	13.90	36,238.29
COVIDIEN PLC	0.99	45.01	2.20	10.00	12.20	21,714.08
CSX CORP	0.55	21.06	2.60	14.25	16.85	22,112.01
CUMMINS INC	1.90	88.02	2.16	19.00	21.16	16,974.83
CVS CAREMARK CORP	0.55	40.78	1.35	10.00	11.35	53,080.47
D R HORTON INC	0.17	12.61	1.33	11.75	13.08	3,988.87
DANAHER CORP	0.12	47.04	0.25	16.40	16.65	32,285.76
DARDEN RESTAURANTS INC	1.94	45.58	4.25	12.50	16.75	6,008.54
DEERE & CO	1.89	77.35	2.44	15.00	17.44	31,259.15

Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2012

Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
DENTSPLY INTERNATL INC	0.24	34.99	0.70	10.80	11.50	4,953.04
DEVON ENERGY CORP	0.76	62.00	1.22	11.18	12.40	25,041.80
DEVRY INC	0.34	38.46	0.87	12.00	12.87	2,587.47
DIAMOND OFFSHORE DRILLING INC	4.06	55.26	7.35	16.00	23.35	7,682.63
DISCOVER FINANCIAL SVCS INC	0.44	24.00	1.83	10.00	11.83	13,191.29
DISNEY (WALT) CO	0.68	37.50	1.82	13.60	15.42	67,369.23
DOMINION RESOURCES INC	2.03	53.08	3.82	2.85	6.67	30,234.95
DONNELLEY (R R) & SONS CO	1.15	14.43	8.00	11.00	19.00	2,709.95
DOVER CORP	1.43	58.05	2.46	13.50	15.96	10,761.08
DOW CHEMICAL	1.07	28.76	3.72	7.00	10.72	33,988.91
DR PEPPER SNAPPLE GROUP INC	1.38	39.48	3.50	8.00	11.50	8,463.76
DTE ENERGY CO	2.43	54.45	4.46	3.30	7.76	9,215.72
DU PONT (E I) DE NEMOURS	1.83	45.78	4.00	11.60	15.60	42,297.01
DUKE ENERGY CORP	1.05	22.00	4.77	5.00	9.77	29,320.13
DUN & BRADSTREET CORP	1.53	74.83	2.04	6.00	8.04	3,637.41
EASTMAN CHEMICAL CO	1.14	39.06	2.92	9.65	12.57	5,373.76
EATON CORP	1.52	43.53	3.48	11.50	14.98	14,547.73
ECOLAB INC	0.91	57.81	1.58	14.00	15.58	17,366.99
EDISON INTERNATIONAL	1.35	41.40	3.26	3.85	7.11	13,488.58
EMERSON ELECTRIC CO	1.80	46.59	3.86	12.30	16.16	34,256.51
EOG RESOURCES INC	1.05	98.51	1.07	64.00	65.07	26,484.51
EQT CORP	1.11	54.79	2.03	26.60	28.63	8,187.65
EQUIFAX INC	0.70	38.74	1.82	10.00	11.82	4,690.68
EQUITY RESIDENTIAL	2.43	57.03	4.26	7.00	11.26	16,916.75
EXPEDIA INC	0.62	29.02	2.12	10.00	12.12	3,503.09
EXPEDITORS INTL WASH INC	0.56	40.96	1.37	12.00	13.37	8,684.75
EXXON MOBIL CORP	2.06	84.76	2.43	9.34	11.77	406,272.31
FAMILY DOLLAR STORES	0.83	57.66	1.44	15.00	16.44	6,797.02
FASTENAL CO	0.67	43.61	1.54	20.00	21.54	12,873.85
FEDERATED INVESTORS INC	1.01	15.15	6.65	5.00	11.65	1,579.84
FEDEX CORP	0.60	83.51	0.72	15.00	15.72	26,262.56
FIDELITY NATIONAL INFO SVCS	0.22	26.59	0.84	12.00	12.84	7,962.93
FIFTH THIRD BANCORP	0.33	12.72	2.62	4.00	6.62	11,699.59
FIRST HORIZON NATIONAL CORP	0.04	8.00	0.54	7.50	8.04	2,108.95
FIRSTENERGY CORP	2.26	44.30	5.09	2.50	7.59	18,526.97
FLIR SYSTEMS INC	0.28	25.07	1.10	15.00	16.10	3,910.69
FLOWSERVE CORP	1.54	99.32	1.55	20.00	21.55	5,518.02
FLUOR CORP	0.56	50.25	1.11	11.50	12.61	8,525.62
FMC CORP	0.68	86.04	0.78	12.50	13.28	6,059.19
FRANKLIN RESOURCES INC	1.19	96.06	1.24	10.00	11.24	21,184.79
FREEPORT-MCMORAN COP&GOLD	1.06	36.79	2.87	5.53	8.40	34,873.64
FRONTIER COMMUNICATIONS CORP	0.84	5.15	16.22	11.40	27.62	5,124.90
GANNETT CO	0.34	13.37	2.54	6.00	8.54	3,185.91
GAP INC	0.49	18.55	2.62	8.00	10.62	9,058.06
GENERAL DYNAMICS CORP	2.01	66.41	3.03	7.00	10.03	23,649.46
GENERAL ELECTRIC CO	0.78	17.91	4.33	14.00	18.33	189,082.16
GENERAL MILLS INC	1.32	40.41	3.26	8.00	11.26	26,050.35
GENUINE PARTS CO	1.96	61.20	3.20	8.80	12.00	9,525.96
GOLDMAN SACHS GROUP INC	1.49	90.43	1.64	6.20	7.84	44,519.86
GOODRICH CORP	1.31	123.70	1.06	13.35	14.41	15,490.08

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Company Name	Expected Dividend	Recent Price	Yield %	Growth Rate %	Equity Cost %	Market Value
GRAINGER (W W) INC	3.01	187.19	1.61	14.00	15.61	13,056.13
HALLIBURTON CO	0.45	34.51	1.30	25.00	26.30	31,754.89
HARLEY-DAVIDSON INC	0.59	38.87	1.51	17.40	18.91	9,032.26
HARMAN INTERNATIONAL INDS	0.39	38.04	1.03	31.00	32.03	2,666.79
HARRIS CORP	1.23	36.04	3.42	10.00	13.42	4,173.58
HARTFORD FINANCIAL SERVICES	0.44	16.25	2.70	9.50	12.20	7,243.27
HASBRO INC	1.35	31.89	4.24	12.70	16.94	4,113.33
HEINZ (H J) CO	2.08	54.04	3.85	8.25	12.10	17,305.50
HELMERICH & PAYNE	0.36	58.36	0.61	27.30	27.91	6,253.04
HERSHEY CO	1.48	61.78	2.40	7.60	10.00	10,162.07
HESS CORP	0.43	56.80	0.76	7.70	8.46	19,306.32
HEWLETT-PACKARD CO	0.50	25.76	1.95	4.50	6.45	51,108.69
HOME DEPOT INC	1.33	42.04	3.17	15.00	18.17	64,807.52
HONEYWELL INTERNATIONAL INC	1.71	54.35	3.15	14.80	17.95	42,039.56
HORMEL FOODS CORP	0.56	29.29	1.92	10.00	11.92	7,733.64
HUDSON CITY BANCORP INC	0.33	6.25	5.32	4.00	9.32	3,296.73
HUMANA INC	1.09	87.61	1.24	8.55	9.79	14,324.58
HUNTINGTON BANCSHARES	0.17	5.49	3.12	7.00	10.12	4,743.77
ILLINOIS TOOL WORKS	1.66	46.71	3.55	15.00	18.55	22,569.95
INGERSOLL-RAND PLC	0.55	30.47	1.82	15.30	17.12	9,512.03
INTEGRYS ENERGY GROUP INC	2.98	54.18	5.49	9.40	14.89	4,241.64
INTEL CORP	0.92	24.25	3.81	10.00	13.81	123,481.00
INTERPUBLIC GROUP OF COS	0.28	9.73	2.86	16.00	18.86	4,487.21
INTL BUSINESS MACHINES CORP	3.31	183.88	1.80	10.35	12.15	216,724.28
INTL FLAVORS & FRAGRANCES	1.33	52.42	2.54	7.40	9.94	4,240.67
INTL GAME TECHNOLOGY	0.27	17.20	1.58	13.45	15.03	5,118.72
INTL PAPER CO	1.08	29.60	3.64	2.50	6.14	12,937.30
INTUIT INC	0.69	52.59	1.31	15.00	16.31	15,632.33
INVESCO LTD	0.55	20.09	2.74	12.50	15.24	9,060.49
IRON MOUNTAIN INC	1.13	30.80	3.67	13.00	16.67	5,717.03
JABIL CIRCUIT INC	0.36	19.66	1.82	12.00	13.82	4,119.56
JOHNSON & JOHNSON	2.42	65.58	3.69	6.00	9.69	179,089.08
JOHNSON CONTROLS INC	0.85	31.26	2.71	17.50	20.21	22,663.80
JOY GLOBAL INC	0.84	74.97	1.11	19.40	20.51	7,881.22
JPMORGAN CHASE & CO	1.08	33.25	3.25	8.00	11.25	126,342.22
KELLOGG CO	1.86	50.57	3.69	8.40	12.09	18,162.21
KEYCORP	0.13	7.69	1.70	8.85	10.55	7,327.71
KIMBERLY-CLARK CORP	2.97	73.56	4.03	6.00	10.03	28,989.78
KLA-TENCOR CORP	1.53	48.25	3.18	9.50	12.68	8,041.54
KOHL'S CORP	1.13	49.35	2.30	13.50	15.80	12,506.82
KRAFT FOODS INC	1.28	37.36	3.42	10.00	13.42	66,005.74
KROGER CO	0.51	24.22	2.10	10.40	12.50	13,920.91
L-3 COMMUNICATIONS HLDGS INC	1.92	66.68	2.87	6.50	9.37	6,658.86
LAUDER (ESTEE) COS INC -CL A	1.19	112.32	1.06	13.50	14.56	13,096.17
LEGG MASON INC	0.36	24.05	1.50	13.00	14.50	3,361.54
LEGGETT & PLATT INC	1.29	23.04	5.59	15.00	20.59	3,205.60
LENNAR CORP	0.18	19.65	0.93	14.15	15.08	3,547.30
LIMITED BRANDS INC	0.92	40.35	2.27	14.60	16.87	11,957.72
LINCOLN NATIONAL CORP	0.22	19.42	1.15	11.90	13.05	5,858.33
LINEAR TECHNOLOGY CORP	1.06	30.03	3.52	10.00	13.52	6,839.84

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LOCKHEED MARTIN CORP	4.35	80.90	5.38	8.75	14.13	26,176.81
LORILLARD INC	5.79	114.00	5.08	11.30	16.38	15,391.14
LOWE'S COMPANIES INC	0.63	25.38	2.49	12.95	15.44	31,790.00
M & T BANK CORP	3.07	76.34	4.02	9.70	13.72	9,590.29
MACY'S INC	0.45	32.18	1.39	11.80	13.19	13,509.90
MARATHON OIL CORP	0.65	29.27	2.23	8.80	11.03	20,597.94
MARATHON PETROLEUM CORP	1.29	33.29	3.87	28.75	32.62	11,868.48
MARRIOTT INTL INC	0.47	29.17	1.61	17.40	19.01	9,775.62
MARSH & MCLENNAN COS	0.98	31.62	3.09	11.00	14.09	17,010.55
MASCO CORP	0.35	10.48	3.29	15.00	18.29	3,749.74
MASTERCARD INC	0.72	372.82	0.19	19.50	19.69	45,246.18
MATTEL INC	1.02	27.76	3.67	10.60	14.27	9,400.81
MCCORMICK & CO INC	1.34	50.42	2.66	8.00	10.66	6,690.22
MCDONALD'S CORP	3.08	100.33	3.07	10.00	13.07	102,659.46
MCGRAW-HILL COMPANIES	1.10	44.97	2.46	10.50	12.96	13,194.20
MCKESSON CORP	0.92	77.91	1.18	14.70	15.88	19,131.66
MEAD JOHNSON NUTRITION CO	1.16	68.73	1.69	11.50	13.19	13,991.02
MEADWESTVACO CORP	1.10	29.95	3.67	10.00	13.67	5,113.69
MEDTRONIC INC	1.02	38.25	2.66	5.00	7.66	40,366.79
MERCK & CO	1.75	37.70	4.65	4.30	8.95	114,906.63
METLIFE INC	0.81	31.18	2.61	10.00	12.61	32,977.03
MICROCHIP TECHNOLOGY INC	1.51	36.63	4.12	8.50	12.62	7,001.13
MICROSOFT CORP	0.88	25.96	3.39	10.00	13.39	218,380.25
MOLEX INC	0.88	23.86	3.69	10.00	13.69	3,865.29
MOLSON COORS BREWING CO	1.35	43.54	3.10	5.60	8.70	6,917.72
MONSANTO CO	1.33	70.07	1.90	11.20	13.10	37,511.62
MOODY'S CORP	0.64	33.68	1.89	13.95	15.84	7,476.96
MORGAN STANLEY	0.22	15.13	1.45	10.00	11.45	29,161.59
MOAIC CO	0.24	50.43	0.48	20.20	20.68	15,426.54
MOTOROLA SOLUTIONS INC	0.94	46.29	2.03	7.00	9.03	15,069.06
MURPHY OIL CORP	1.21	55.74	2.17	10.00	12.17	10,786.92
NATIONAL OILWELL VARCO INC	0.56	67.99	0.83	17.50	18.33	28,817.09
NEWELL RUBBERMAID INC	0.35	16.15	2.17	9.50	11.67	4,675.42
NEWMONT MINING CORP	1.48	60.01	2.47	5.84	8.31	29,297.72
NEWS CORP	0.22	17.84	1.24	16.55	17.79	45,239.68
NEXTERA ENERGY INC	2.32	60.88	3.81	5.30	9.11	25,723.99
NIKE INC -CL B	1.59	96.37	1.65	10.10	11.75	36,013.37
NISOURCE INC	1.00	23.81	4.18	8.20	12.38	6,693.25
NOBLE CORP	0.68	30.22	2.24	12.80	15.04	7,894.85
NOBLE ENERGY INC	1.15	94.39	1.22	30.60	31.82	16,673.62
NORDSTROM INC	1.03	49.71	2.08	12.30	14.38	10,410.47
NORFOLK SOUTHERN CORP	1.98	72.86	2.71	15.00	17.71	24,488.68
NORTHEAST UTILITIES	1.18	36.07	3.27	7.15	10.42	6,385.54
NORTHERN TRUST CORP	1.25	39.66	3.16	12.00	15.16	9,557.94
NORTHROP GRUMMAN CORP	2.17	58.48	3.70	8.25	11.95	15,279.71
NUCOR CORP	1.58	39.57	4.00	8.50	12.50	12,531.98
NYSE EURONEXT	1.34	26.10	5.12	11.45	16.57	6,838.20
OCCIDENTAL PETROLEUM CORP	2.24	93.70	2.40	22.00	24.40	76,064.63
OMNICOM GROUP	1.12	44.58	2.52	12.43	14.95	12,298.46
ONEOK INC	2.44	86.69	2.82	9.05	11.87	8,928.12

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ORACLE CORP	0.27	25.65	1.05	12.50	13.55	128,912.72
PACCAR INC	1.74	37.47	4.64	22.50	27.14	13,422.39
PALL CORP	0.78	57.15	1.37	12.00	13.37	6,595.74
PARKER-HANNIFIN CORP	1.57	76.25	2.06	6.00	8.06	11,519.85
PATTERSON COMPANIES INC	0.53	29.52	1.79	10.00	11.79	3,271.58
PAYCHEX INC	1.41	30.11	4.68	10.00	14.68	10,912.47
PEABODY ENERGY CORP	0.45	33.11	1.37	33.03	34.40	8,968.64
PENNEY (J C) CO	0.92	35.15	2.61	14.80	17.41	7,506.25
PEOPLE'S UNITED FINL INC	0.74	12.85	5.73	16.80	22.53	4,634.22
PEPCO HOLDINGS INC	1.13	20.30	5.59	5.00	10.59	4,607.21
PEPSICO INC	2.20	66.35	3.32	7.00	10.32	103,732.25
PERKINELMER INC	0.31	20.00	1.55	10.90	12.45	2,261.68
PERRIGO CO	0.36	97.30	0.37	12.40	12.77	9,067.58
PFIZER INC	0.82	21.64	3.80	2.90	6.70	166,345.97
PG&E CORP	1.87	41.22	4.53	2.70	7.23	16,730.50
PHILIP MORRIS INTERNATIONAL	3.46	78.48	4.41	12.47	16.88	136,318.34
PINNACLE WEST CAPITAL CORP	2.20	48.18	4.58	5.00	9.58	5,260.34
PIONEER NATURAL RESOURCES CO	0.09	89.48	0.10	10.00	10.10	10,903.14
PITNEY BOWES INC	1.58	18.54	8.52	6.70	15.22	3,701.29
PNC FINANCIAL SVCS GROUP INC	1.50	57.67	2.60	7.30	9.90	30,340.88
PPG INDUSTRIES INC	2.56	83.49	3.07	12.25	15.32	12,892.69
PPL CORP	1.52	29.42	5.16	8.40	13.56	17,013.56
PRAXAIR INC	2.24	106.90	2.09	11.94	14.03	32,044.34
PRECISION CASTPARTS CORP	0.14	164.79	0.08	13.60	13.68	23,761.07
PRICE (T. ROWE) GROUP	1.39	56.95	2.44	12.00	14.44	14,387.85
PRINCIPAL FINANCIAL GRP INC	0.79	24.60	3.20	12.60	15.80	7,506.81
PROCTER & GAMBLE CO	2.29	66.71	3.43	9.00	12.43	183,540.56
PROGRESS ENERGY INC	2.57	56.02	4.59	3.60	8.19	16,526.18
PROGRESSIVE CORP-OHIO	0.44	19.51	2.25	10.00	12.25	11,973.29
PRUDENTIAL FINANCIAL INC	1.64	50.12	3.27	13.00	16.27	23,556.40
PUBLIC SERVICE ENTRP GRP INC	1.39	33.01	4.22	1.65	5.87	16,699.92
PUBLIC STORAGE	4.52	134.46	3.36	19.00	22.36	23,000.59
QEP RESOURCES INC	0.10	29.30	0.35	26.51	26.86	5,184.69
QUALCOMM INC	1.00	54.70	1.82	15.75	17.57	92,255.66
QUEST DIAGNOSTICS INC	0.45	58.06	0.77	12.00	12.77	9,159.49
RALPH LAUREN CORP	0.91	138.08	0.66	13.50	14.16	8,464.03
RANGE RESOURCES CORP	0.22	61.94	0.35	37.00	37.35	9,988.20
RAYTHEON CO	1.87	48.38	3.86	8.50	12.36	16,744.32
REGIONS FINANCIAL CORP	0.04	4.30	1.00	7.00	8.00	5,413.17
REPUBLIC SERVICES INC	1.00	27.55	3.65	14.15	17.80	10,203.53
REYNOLDS AMERICAN INC	2.37	41.42	5.73	6.00	11.73	24,144.21
ROBERT HALF INTL INC	0.66	28.46	2.32	18.00	20.32	4,068.64
ROCKWELL AUTOMATION	1.94	73.37	2.64	14.00	16.64	10,445.17
ROCKWELL COLLINS INC	1.08	55.37	1.96	13.00	14.96	8,221.23
ROPER INDUSTRIES INC/DE	0.51	86.87	0.58	15.00	15.58	8,380.96
ROSS STORES INC	0.49	47.53	1.04	12.00	13.04	10,867.26
RYDER SYSTEM INC	1.30	53.14	2.44	12.00	14.44	2,716.78
SAFEWAY INC	0.63	21.04	3.01	9.10	12.11	7,151.50
SARA LEE CORP	0.51	18.92	2.67	10.00	12.67	11,176.88
SCANA CORP	2.03	45.06	4.50	4.50	9.00	5,842.12

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SCHLUMBERGER LTD	1.25	68.31	1.82	24.55	26.37	91,680.63
SCHWAB (CHARLES) CORP	0.28	11.26	2.46	15.30	17.76	14,300.05
SCRIPPS NETWORKS INTERACTIVE	0.46	42.42	1.08	15.00	16.08	5,308.01
SEALED AIR CORP	0.57	17.21	3.29	8.89	12.17	3,304.35
SEMPRA ENERGY	2.05	55.00	3.74	7.00	10.74	13,190.04
SHERWIN-WILLIAMS CO	1.63	89.27	1.83	11.75	13.58	9,262.74
SIGMA-ALDRICH CORP	0.79	62.46	1.27	10.00	11.27	7,522.56
SIMON PROPERTY GROUP INC	4.37	128.94	3.39	21.40	24.79	37,887.99
SMUCKER (JM) CO	2.07	78.17	2.65	7.90	10.55	8,861.90
SOUTHERN CO	2.00	46.29	4.33	5.93	10.26	39,898.65
SOUTHWEST AIRLINES	0.02	8.56	0.21	1.42	1.64	6,664.15
SPECTRA ENERGY CORP	1.20	30.75	3.90	7.20	11.10	19,998.11
ST JUDE MEDICAL INC	0.92	34.30	2.69	10.00	12.69	10,941.32
STANLEY BLACK & DECKER INC	1.94	67.60	2.87	18.10	20.97	11,417.78
STAPLES INC	0.44	13.89	3.16	9.80	12.96	9,714.99
STARBUCKS CORP	0.80	46.01	1.74	17.53	19.27	34,295.86
STARWOOD HOTELS&RESORTS WRLD	0.64	47.97	1.34	28.80	30.14	9,370.08
STATE STREET CORP	0.81	40.31	2.01	12.60	14.61	19,830.54
STRYKER CORP	0.94	49.71	1.90	11.00	12.90	19,022.67
SUNOCO INC	0.66	41.02	1.60	9.30	10.90	4,379.17
SUNTRUST BANKS INC	0.21	17.70	1.20	6.50	7.70	9,504.85
SUPERVALU INC	0.37	8.12	4.57	6.10	10.67	1,723.30
SYSCO CORP	1.11	29.33	3.79	6.80	10.59	17,301.86
TARGET CORP	1.34	51.22	2.61	11.60	14.21	34,399.20
TE CONNECTIVITY LTD	0.80	30.81	2.61	11.68	14.29	13,077.33
TECO ENERGY INC	0.90	19.14	4.72	5.00	9.72	4,129.78
TEXAS INSTRUMENTS INC	0.75	29.11	2.57	10.00	12.57	33,262.54
TEXTRON INC	0.13	18.49	0.69	59.30	59.99	5,143.33
TIFFANY & CO	1.33	66.26	2.01	15.00	17.01	8,412.24
TIME WARNER CABLE INC	2.20	63.57	3.46	14.60	18.06	20,285.95
TIME WARNER INC	1.06	36.14	2.94	13.00	15.94	36,171.95
TITANIUM METALS CORP	0.35	14.98	2.30	15.00	17.30	2,624.20
TJX COMPANIES INC	0.85	64.55	1.32	12.00	13.32	24,344.39
TORCHMARK CORP	0.53	43.39	1.22	10.00	11.22	4,423.18
TOTAL SYSTEM SERVICES INC	0.44	19.56	2.25	10.00	12.25	3,938.56
TRAVELERS COS INC	1.77	59.17	2.99	8.00	10.99	24,423.78
TYCO INTERNATIONAL LTD	1.13	46.71	2.42	13.10	15.52	21,579.09
TYSON FOODS INC -CL A	0.17	20.64	0.83	7.00	7.83	6,179.78
U S BANCORP	0.57	27.05	2.11	13.91	16.02	51,622.33
UNION PACIFIC CORP	2.76	105.94	2.61	15.20	17.81	51,177.18
UNITED PARCEL SERVICE INC	2.33	73.19	3.18	12.00	15.18	52,962.19
UNITED STATES STEEL CORP	0.21	26.46	0.79	5.00	5.79	3,810.19
UNITED TECHNOLOGIES CORP	2.14	73.09	2.93	11.40	14.33	66,225.97
UNITEDHEALTH GROUP INC	0.73	50.68	1.44	12.15	13.59	54,026.20
UNUM GROUP	0.46	21.07	2.19	10.00	12.19	6,160.45
VALERO ENERGY CORP	0.83	21.05	3.95	38.56	42.51	11,782.25
VERIZON COMMUNICATIONS INC	2.18	40.12	5.43	9.00	14.43	113,583.37
VF CORP	3.25	126.99	2.56	13.00	15.56	14,015.00
VIACOM INC	1.17	45.41	2.58	17.15	19.73	25,483.05
VISA INC	1.06	101.53	1.04	20.00	21.04	52,957.23

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VULCAN MATERIALS CO	0.04	39.35	0.11	12.00	12.11	5,085.32
WAL-MART STORES INC	1.60	59.76	2.68	9.80	12.48	204,659.89
WALGREEN CO	0.99	33.06	2.99	10.00	12.99	28,877.98
WASTE MANAGEMENT INC	1.50	32.71	4.57	10.00	14.57	15,057.39
WELLPOINT INC	1.09	66.25	1.65	9.35	11.00	23,045.79
WELLS FARGO & CO	0.55	27.56	2.01	15.36	17.37	145,338.38
WESTERN UNION CO	0.36	18.26	1.96	12.00	13.96	11,305.46
WEYERHAEUSER CO	0.62	18.67	3.29	2.50	5.79	10,014.87
WHOLE FOODS MARKET INC	0.47	69.58	0.67	16.60	17.27	12,489.61
WILLIAMS COS INC	1.27	33.02	3.83	26.50	30.33	19,462.35
WINDSTREAM CORP	1.02	11.74	8.69	2.00	10.69	6,849.95
WISCONSIN ENERGY CORP	1.12	34.96	3.22	8.10	11.32	8,085.13
WYNDHAM WORLDWIDE CORP	0.69	37.83	1.82	14.81	16.63	5,826.50
WYNN RESORTS LTD	10.30	110.49	9.33	47.20	56.53	13,806.50
XCEL ENERGY INC	1.09	27.64	3.96	5.22	9.17	13,404.18
XEROX CORP	0.21	7.96	2.59	21.05	23.64	11,040.94
XILINX INC	0.86	32.06	2.68	13.00	15.68	8,414.53
XL GROUP PLC	0.48	19.77	2.45	10.00	12.45	6,336.62
XYLEM INC	0.43	25.69	1.66	5.10	6.76	4,741.60
YUM BRANDS INC	1.29	59.01	2.18	13.00	15.18	27,173.87
ZIONS BANCORPORATION	0.04	16.28	0.27	8.00	8.27	3,000.24

Market Weighted Average = **14.01**

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
3M Company	MMM	2.62	12.00	14.62	58,429.37
Abbott Labs.	ABT	3.40	8.50	11.90	87,018.43
Abercrombie & Fitch	ANF	1.52	26.50	28.02	3,914.27
Accenture Plc	ACN	2.60	14.00	16.60	33,413.30
ACE Limited	ACE	2.69	2.50	5.19	23,557.39
Aetna Inc.	AET	1.60	10.00	11.60	15,966.56
Aflac Inc.	AFL	3.00	13.00	16.00	20,644.11
AGL Resources	GAS	4.31	4.50	8.81	3,240.87
Air Products & Chem.	APD	2.68	11.00	13.68	18,397.64
Airgas Inc.	ARG	1.72	14.00	15.72	6,027.83
Allegheny Techn.	ATI	1.49	22.00	23.49	5,102.77
Allergan Inc.	AGN	0.23	10.00	10.23	26,560.96
Allstate Corp.	ALL	3.02	11.00	14.02	14,150.10
Altera Corp.	ALTR	0.85	13.50	14.35	12,028.85
Altria Group	MO	5.68	6.00	11.68	58,990.88
Amer. Elec. Power	AEP	4.63	4.50	9.13	19,701.57
Amer. Express	AXP	1.63	15.00	16.63	56,427.63
Amer. Tower 'A'	AMT	1.32	23.00	24.32	23,706.39
Ameriprise Fin'l	AMP	2.18	22.00	24.18	11,606.83
AmerisourceBergen	ABC	1.35	12.00	13.35	10,498.41
Amgen	AMGN	1.73	7.00	8.73	56,924.04
Amphenol Corp.	APH	0.13	13.50	13.63	7,627.95
Anadarko Petroleum	APC	0.44	21.50	21.94	39,972.13
Analog Devices	ADI	2.76	14.00	16.76	10,749.82
Aon Corp.	AON	1.29	11.50	12.79	14,916.55
Apache Corp.	APA	0.61	11.00	11.61	37,265.98
Applied Materials	AMAT	2.95	18.00	20.95	14,379.06
Archer Daniels Mid'd	ADM	2.39	9.00	11.39	19,418.76
AT&T Inc.	T	5.78	7.50	13.28	175,874.56
Automatic Data Proc.	ADP	2.88	8.00	10.88	26,792.42
Avery Dennison	AVY	3.42	3.50	6.92	3,139.68
Avon Products	AVP	2.74	9.00	11.74	7,555.78
Baker Hughes	BHI	1.18	16.50	17.68	22,373.20
Ball Corp.	BLL	0.77	9.00	9.77	6,032.07
Bank of New York Mellon	BK	3.27	27.50	30.77	24,798.32
Bard (C.R.)	BCR	0.88	8.50	9.38	7,349.80
Baxter Int'l Inc.	BAX	2.69	9.50	12.19	28,235.74
BB&T Corp.	BBT	2.44	12.50	14.94	17,978.24
Becton Dickinson	BDX	2.47	10.00	12.47	15,880.15
Bemis Co.	BMS	3.17	15.00	18.17	3,127.92
Best Buy Co.	BBY	2.73	5.00	7.73	8,853.77
BlackRock Inc.	BLK	3.06	19.00	22.06	32,039.37
Block (H&R)	HRB	4.92	9.00	13.92	4,762.60
Boeing	BA	2.39	14.00	16.39	54,958.49
Bristol-Myers Squibb	BMJ	4.04	8.00	12.04	57,986.85
Broadcom Corp. 'A'	BRCM	1.22	15.00	16.22	16,245.46
Brown-Forman 'B'	BF/B	1.77	8.50	10.27	11,022.11
C.H. Robinson	CHRW	1.94	10.50	12.44	11,168.91
CA Inc.	CA	0.98	9.50	10.48	10,067.23

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
Cablevision Sys. 'A'	CVC	4.04	11.50	15.54	4,149.88
Cabot Oil & Gas 'A'	COG	0.14	14.00	14.14	8,410.99
Campbell Soup	CPB	3.64	6.50	10.14	10,001.10
Capital One Fin'l	COF	0.44	19.50	19.94	20,592.96
Cardinal Health	CAH	2.10	12.50	14.60	14,346.51
Carnival Corp.	CCL	3.00	9.50	12.50	25,735.62
Caterpillar Inc.	CAT	1.94	25.00	26.94	61,920.33
CBS Corp. 'B'	CBS	1.43	15.50	16.93	18,230.24
CenterPoint Energy	CNP	4.04	3.00	7.04	8,322.46
CF Industries	CF	1.00	18.50	19.50	10,478.84
Chesapeake Energy	CHK	1.48	6.00	7.48	15,337.58
Chevron Corp.	CVX	2.97	10.00	12.97	215,697.63
Chubb Corp.	CB	2.23	4.00	6.23	19,264.76
CIGNA Corp.	CI	0.09	14.00	14.09	11,787.87
Cincinnati Financial	CINF	5.21	3.50	8.71	4,968.54
Cintas Corp.	CTAS	1.47	11.00	12.47	4,839.93
Cisco Systems	CSCO	1.26	9.50	10.76	101,243.35
Cliffs Natural Res.	CLF	1.68	24.00	25.68	9,522.97
Clorox Co.	CLX	3.72	10.50	14.22	8,858.67
CME Group	CME	2.34	10.50	12.84	15,472.55
CMS Energy Corp.	CMS	4.21	7.00	11.21	5,450.76
Coach Inc.	COH	1.45	14.50	15.95	18,247.66
Coca-Cola	KO	2.71	10.00	12.71	156,540.03
Colgate-Palmolive	CL	2.57	11.00	13.57	43,705.66
Comerica Inc.	CMA	1.46	41.50	42.96	5,553.29
Computer Sciences	CSC	3.29	8.50	11.79	3,648.56
ConAgra Foods	CAG	3.62	7.50	11.12	10,882.69
ConocoPhillips	COP	3.82	6.00	9.82	96,473.45
CONSOL Energy	CNX	1.34	15.00	16.34	8,746.94
Consol. Edison	ED	4.01	3.00	7.01	17,309.38
Constellation Energy	CEG	2.54	16.50	19.04	7,572.76
Cooper Inds.	CBE	2.13	9.50	11.63	8,491.60
Corning Inc.	GLW	2.25	10.50	12.75	21,212.88
Costco Wholesale	COST	1.15	9.00	10.15	35,312.16
Covidien Plc	COV	2.03	10.00	12.03	22,170.07
CSX Corp.	CSX	2.10	17.50	19.60	23,823.43
Cummins Inc.	CMI	1.69	21.50	23.19	17,864.23
CVS Caremark Corp.	CVS	1.55	8.50	10.05	54,229.68
Danaher Corp.	DHR	0.20	14.00	14.20	33,171.15
Darden Restaurants	DRI	3.78	17.00	20.78	5,845.03
Deere & Co.	DE	2.13	13.50	15.63	34,065.95
Dentsply Int'l	XRAY	0.62	8.00	8.62	4,975.87
Devon Energy	DVN	1.04	8.00	9.04	26,366.20
DeVry Inc.	DV	0.76	11.00	11.76	2,805.47
Diamond Offshore	DO	6.29	2.50	8.79	7,824.44
Discover Fin'l Svcs.	DFS	1.63	34.50	36.13	13,078.19
Disney (Walt)	DIS	1.51	15.00	16.51	72,644.18
Dominion Resources	D	4.06	4.50	8.56	29,295.10
Donnelley (R.R.) & Sons	RRD	6.93	13.50	20.43	2,773.81

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
Dover Corp.	DOV	2.14	12.50	14.64	10,688.72
Dow Chemical	DOW	3.65	20.50	24.15	35,832.54
Dr Pepper Snapple	DPS	3.45	8.50	11.95	8,256.95
DTE Energy	DTE	4.48	4.50	8.98	9,058.26
Du Pont	DD	3.59	14.50	18.09	42,534.20
Duke Energy	DUK	4.69	6.00	10.69	28,651.32
Dun & Bradstreet	DNB	1.96	8.50	10.46	3,689.42
Eastman Chemical	EMN	2.59	13.50	16.09	5,684.64
Eaton Corp.	ETN	2.97	14.00	16.97	15,135.92
Ecolab Inc.	ECL	1.37	13.00	14.37	13,528.93
El Paso Corp.	EP	0.15	6.00	6.15	20,140.40
Emerson Electric	EMR	3.35	10.50	13.85	34,838.05
Entergy Corp.	ETR	4.61	0.50	5.11	12,589.36
EOG Resources	EOG	0.65	17.00	17.65	27,537.59
EQT Corp.	EQT	1.56	19.00	20.56	8,337.09
Equifax Inc.	EFX	1.66	9.00	10.66	4,715.63
Expeditors Int'l	EXPD	1.21	13.50	14.71	8,831.04
Exxon Mobil Corp.	XOM	2.19	9.50	11.69	407,997.78
Family Dollar Stores	FDO	1.24	14.50	15.74	6,454.85
Fastenal Co.	FAST	1.24	15.00	16.24	13,346.13
Federated Investors	FII	5.80	5.50	11.30	1,777.51
FedEx Corp.	FDX	0.61	21.00	21.61	26,885.24
FirstEnergy Corp.	FE	5.23	0.50	5.73	17,652.90
FLIR Systems	FLIR	0.94	7.50	8.44	3,914.37
Flowserve Corp.	FLS	1.24	7.50	8.74	5,637.36
Fluor Corp.	FLR	0.96	9.00	9.96	8,774.40
FMC Corp.	FMC	0.75	12.50	13.25	6,195.11
Franklin Resources	BEN	1.09	13.50	14.59	21,659.06
Freep't-McMoRan C&G	FCX	2.92	12.50	15.42	36,845.30
Frontier Communic.	FTR	14.94	4.00	18.94	5,085.15
Gannett Co.	GCI	2.33	3.00	5.33	3,269.31
Gap (The) Inc.	GPS	2.57	7.00	9.57	8,802.00
Gen'l Dynamics	GD	2.96	5.00	7.96	24,080.29
Gen'l Electric	GE	3.66	12.50	16.16	196,894.58
Gen'l Mills	GIS	3.07	8.50	11.57	25,841.14
Genuine Parts	GPC	2.90	11.50	14.40	9,616.24
Goldman Sachs	GS	1.48	7.00	8.48	46,020.75
Goodrich Corp.	GR	0.94	9.50	10.44	15,480.10
Grainger (W.W.)	GWW	1.45	15.00	16.45	13,275.64
Halliburton Co.	HAL	1.04	19.50	20.54	32,181.60
Harley-Davidson	HOG	1.25	19.00	20.25	9,197.21
Harman Int'l	HAR	0.76	44.50	45.26	2,770.04
Harris Corp.	HRS	3.16	10.50	13.66	4,199.48
Hartford Fin'l Svcs.	HIG	2.39	18.00	20.39	7,293.05
Hasbro Inc.	HAS	3.67	8.50	12.17	4,129.97
Heinz (H.J.)	HNZ	3.60	8.50	12.10	16,978.86
Helmerich & Payne	HP	0.44	14.50	14.94	6,806.51
Hershey Co.	HSY	2.26	11.00	13.26	13,675.16
Hess Corp.	HES	0.69	8.50	9.19	19,034.98

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
Hewlett-Packard	HPQ	1.81	7.00	8.81	52,562.40
Home Depot	HD	2.69	10.00	12.69	66,571.20
Honeywell Int'l	HON	2.68	10.50	13.18	42,681.57
Hormel Foods	HRL	2.08	10.00	12.08	7,723.48
Hudson City Bancorp	HCBK	4.79	0.50	5.29	3,380.62
Humana Inc.	HUM	1.09	12.00	13.09	15,083.15
Illinois Tool Works	ITW	2.97	14.00	16.97	23,091.79
Ingersoll-Rand	IR	1.98	20.00	21.98	9,995.88
Int'l Business Mach.	IBM	1.70	12.00	13.70	215,144.92
Int'l Flavors & Frag.	IFF	2.34	10.00	12.34	4,292.78
Int'l Game Tech.	IGT	1.38	11.00	12.38	5,178.20
Int'l Paper	IP	3.45	17.00	20.45	13,523.87
Integrus Energy	TEG	5.06	9.00	14.06	4,144.19
Intel Corp.	INTC	3.30	14.50	17.80	129,229.50
Interpublic Group	IPG	2.43	18.00	20.43	4,763.91
Intuit Inc.	INTU	1.14	14.50	15.64	15,861.90
Iron Mountain	IRM	3.20	15.00	18.20	5,900.77
Jabil Circuit	JBL	1.54	24.50	26.04	4,245.29
Johnson & Johnson	JNJ	3.48	5.00	8.48	177,131.83
Johnson Controls	JCI	2.18	17.00	19.18	22,546.94
Joy Global	JOY	0.92	15.50	16.42	8,114.54
JPMorgan Chase	JPM	2.80	17.50	20.30	138,222.42
Kellogg	K	3.40	8.50	11.90	18,133.09
Kimberly-Clark	KMB	3.84	7.00	10.84	28,565.38
KLA-Tencor	KLAC	2.94	24.50	27.44	7,954.87
Kohl's Corp.	KSS	2.47	12.50	14.97	11,813.54
Kraft Foods	KFT	3.07	8.50	11.57	66,341.39
Kroger Co.	KR	1.97	8.00	9.97	13,836.68
L-3 Communic.	LLL	2.81	5.50	8.31	6,766.02
Lauder (Estee)	EL	0.94	20.00	20.94	21,575.25
Leggett & Platt	LEG	4.84	18.00	22.84	3,166.64
Lexmark Int'l 'A'	LXK	3.23	6.00	9.23	2,564.32
Limited Brands	LTD	2.03	14.50	16.53	11,544.39
Lincoln Nat'l Corp.	LNC	1.58	8.50	10.08	6,051.28
Linear Technology	LLTC	3.17	10.00	13.17	6,828.40
Lockheed Martin	LMT	5.12	6.00	11.12	26,377.40
Loews Corp.	L	0.65	13.00	13.65	14,990.00
Lorillard Inc.	LO	4.55	14.00	18.55	15,398.10
Lowe's Cos.	LOW	2.35	13.00	15.35	33,188.40
M&T Bank Corp.	MTB	3.53	13.50	17.03	9,985.12
Macy's Inc.	M	2.35	17.50	19.85	14,509.08
Marathon Oil Corp.	MRO	1.91	3.00	4.91	21,605.76
Marriott Int'l	MAR	1.27	14.00	15.27	10,636.90
Marsh & McLennan	MMC	2.82	28.50	31.32	16,527.36
Masco Corp.	MAS	2.60	35.00	37.60	3,964.92
MasterCard Inc.	MA	0.17	16.50	16.67	43,526.15
Mattel Inc.	MAT	3.23	11.00	14.23	9,563.14
McCormick & Co.	MKC	2.46	14.50	16.96	6,683.86
McDonald's Corp.	MCD	2.80	9.00	11.80	102,935.73

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
McGraw-Hill	MHP	2.17	10.00	12.17	13,499.33
McKesson Corp.	MCK	1.02	10.50	11.52	19,318.21
Mead Johnson Nutrition	MJN	1.67	12.50	14.17	14,486.14
MeadWestvaco	MWV	3.35	18.50	21.85	5,024.61
Medtronic Inc.	MDT	2.59	5.00	7.59	41,189.96
Merck & Co.	MRK	4.33	1.00	5.33	117,408.41
MetLife Inc.	MET	2.57	13.50	16.07	34,793.73
Microchip Technology	MCHP	3.84	12.50	16.34	6,807.94
Microsoft Corp.	MSFT	2.89	12.00	14.89	236,405.11
Molex Inc.	MOLX	3.24	17.50	20.74	4,361.52
Molson Coors Brewing	TAP	2.94	5.00	7.94	7,890.53
Monsanto Co.	MON	1.56	7.50	9.06	41,450.10
Moody's Corp.	MCO	1.79	12.00	13.79	7,954.26
Morgan Stanley	MS	1.22	27.50	28.72	30,647.87
Mosaic Company	MOS	0.43	17.50	17.93	23,524.74
Murphy Oil Corp.	MUR	1.93	8.50	10.43	10,974.58
National Oilwell Varco	NOV	0.67	11.50	12.17	30,010.48
Newell Rubbermaid	NWL	1.92	16.00	17.92	4,921.50
News Corp.	NWS	1.01	15.00	16.01	47,500.52
NextEra Energy	NEE	3.82	4.50	8.32	24,895.82
NIKE Inc. 'B'	NKE	1.46	12.50	13.96	45,434.83
NiSource Inc.	NI	3.98	9.50	13.48	6,465.55
Noble Energy	NBL	0.90	10.00	10.90	17,119.44
Nordstrom Inc.	JWN	1.93	15.50	17.43	10,450.38
Norfolk Southern	NSC	2.27	13.50	15.77	25,312.14
Northeast Utilities	NU	3.36	7.50	10.86	6,195.07
Northern Trust Corp.	NTRS	2.73	4.00	6.73	9,883.25
Northrop Grumman	NOC	3.61	7.00	10.61	15,374.77
Nucor Corp.	NUE	3.66	22.00	25.66	13,038.66
NYSE Euronext	NYX	4.42	8.00	12.42	7,066.14
Occidental Petroleum	OXY	2.03	10.00	12.03	77,744.94
Omnicom Group	OMC	2.26	9.50	11.76	12,149.49
ONEOK Inc.	OKE	2.74	8.50	11.24	8,981.06
Oracle Corp.	ORCL	0.90	13.00	13.90	135,511.77
PACCAR Inc.	PCAR	1.78	24.00	25.78	14,374.13
Pall Corp.	PLL	1.22	11.50	12.72	6,483.79
Parker-Hannifin	PH	1.87	19.00	20.87	11,729.85
Patterson Cos.	PDCO	1.63	9.00	10.63	3,278.23
Paychex Inc.	PAYX	4.16	7.00	11.16	11,158.91
Peabody Energy	BTU	0.93	5.50	6.43	9,746.74
Penney (J.C.)	JCP	2.35	9.00	11.35	7,446.48
People's United Fin'l	PBCT	4.84	26.50	31.34	4,674.59
Pepco Holdings	POM	5.32	2.50	7.82	4,546.66
PepsiCo Inc.	PEP	3.15	9.50	12.65	102,531.52
PerkinElmer Inc.	PKI	1.36	11.50	12.86	2,388.36
Perrigo Co.	PRGO	0.33	14.50	14.83	8,951.74
Pfizer Inc.	PFE	4.07	10.50	14.57	165,807.84
PG&E Corp.	PCG	4.43	6.00	10.43	16,547.18
Phillip Morris Int'l	PM	3.93	10.00	13.93	134,135.31

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
Pinnacle West Capital	PNW	4.41	6.00	10.41	5,174.09
Pioneer Natural Res.	PXD	0.08	31.00	31.08	10,938.06
Pitney Bowes	PBI	7.90	1.00	8.90	3,788.98
Plum Creek Timber	PCL	4.49	6.00	10.49	6,055.15
PNC Financial Serv.	PNC	2.34	11.50	13.84	31,512.66
PPG Inds.	PPG	2.69	14.50	17.19	13,088.81
PPL Corp.	PPL	4.86	7.00	11.86	16,480.11
Praxair Inc.	PX	2.03	13.00	15.03	32,361.98
Precision Castparts	PCP	0.07	10.00	10.07	24,458.95
Price (T. Rowe) Group	TROW	2.23	16.50	18.73	14,840.42
Principal Fin'l Group	PFG	2.80	12.00	14.80	7,465.80
Procter & Gamble	PG	3.15	10.00	13.15	182,577.59
Progress Energy	PGN	4.53	3.50	8.03	16,142.40
Progressive (Ohio)	PGR	2.05	18.50	20.55	12,108.45
Prudential Fin'l	PRU	3.14	13.50	16.64	24,988.75
Public Serv. Enterprise	PEG	4.28	1.00	5.28	16,123.16
Qualcomm Inc.	QCOM	1.53	13.00	14.53	94,180.32
Quest Diagnostics	DGX	1.18	8.00	9.18	9,131.99
Ralph Lauren	RL	0.56	11.50	12.06	12,958.47
Range Resources Corp.	RRC	0.26	21.50	21.76	9,606.27
Raytheon Co.	RTN	3.89	5.00	8.89	16,630.87
Republic Services	RSG	3.18	11.00	14.18	10,323.07
Reynolds American	RAI	5.51	5.00	10.51	23,572.92
Robert Half Int'l	RHI	1.96	20.00	21.96	4,065.74
Rockwell Automation	ROK	2.24	15.00	17.24	10,270.72
Rockwell Collins	COL	1.70	8.00	9.70	8,697.39
Roper Inds.	ROP	0.61	13.50	14.11	8,667.49
Ross Stores	ROST	0.87	19.00	19.87	11,601.19
Ryder System	R	2.11	13.50	15.61	2,793.98
Safeway Inc.	SWY	2.91	6.50	9.41	7,277.64
Sara Lee Corp.	SLE	2.54	10.50	13.04	11,165.06
SCANA Corp.	SCG	4.50	3.00	7.50	5,658.17
Schlumberger Ltd.	SLB	1.46	15.00	16.46	90,969.23
Schwab (Charles)	SCHW	2.01	10.00	12.01	15,285.24
Scripps Networks	SNI	0.92	16.50	17.42	6,951.41
Sealed Air	SEE	2.99	11.50	14.49	2,811.79
Sempra Energy	SRE	3.67	3.50	7.17	13,378.59
Sherwin-Williams	SHW	1.61	11.00	12.61	9,597.80
Sigma-Aldrich	SIAL	1.14	11.00	12.14	7,508.11
SLM Corporation	SLM	2.92	6.50	9.42	7,010.31
Smucker (J.M.)	SJM	2.47	9.50	11.97	8,814.34
Snap-on Inc.	SNA	2.62	13.00	15.62	3,025.63
Southern Co.	SO	4.31	6.00	10.31	38,119.36
Southwest Airlines	LUV	0.23	28.00	28.23	6,633.01
Spectra Energy	SE	3.70	7.00	10.70	19,803.00
St. Jude Medical	STJ	2.40	11.00	13.40	11,036.23
Stanley Black & Decker	SWK	2.31	15.50	17.81	11,899.14
Staples Inc.	SPLS	3.05	11.00	14.05	10,160.09
Starbucks Corp.	SBUX	1.46	19.00	20.46	34,965.25

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
Starwood Hotels	HOT	0.98	17.50	18.48	9,579.80
State Street Corp.	STT	1.72	5.50	7.22	20,591.06
Stryker Corp.	SYK	1.66	8.00	9.66	19,707.61
SUPERVALU INC.	SVU	4.22	3.50	7.72	1,744.76
Sysco Corp.	SYU	3.73	8.50	12.23	16,990.64
Target Corp.	TGT	2.57	12.50	15.07	32,865.03
TE Connectivity	TEL	2.25	12.50	14.75	14,005.73
TECO Energy	TE	4.66	10.50	15.16	4,087.25
Texas Instruments	TXN	2.28	8.00	10.28	34,028.09
Textron Inc.	TXT	0.41	7.50	7.91	5,316.07
Tiffany & Co.	TIF	1.74	14.50	16.24	8,352.03
Time Warner	TWX	2.55	12.00	14.55	37,134.80
Time Warner Cable	TWC	2.95	12.50	15.45	20,528.02
TJX Companies	TJX	1.14	14.00	15.14	25,064.72
Torchmark Corp.	TMK	1.09	7.00	8.09	4,440.96
Total System Svcs.	TSS	2.04	6.00	8.04	3,699.91
Travelers Cos.	TRV	2.76	7.00	9.76	24,499.68
Tyco Int'l	TYC	2.07	11.50	13.57	22,369.44
Tyson Foods 'A'	TSN	0.78	23.00	23.78	7,625.47
U.S. Bancorp	USB	1.78	14.00	15.78	53,085.75
U.S. Steel Corp.	X	0.72	34.00	34.72	3,931.12
Union Pacific	UNP	2.22	16.00	18.22	51,976.34
United Parcel Serv.	UPS	2.84	11.00	13.84	71,128.64
United Technologies	UTX	2.58	9.00	11.58	66,959.83
UnitedHealth Group	UNH	1.23	13.50	14.73	55,630.12
Unum Group	UNM	1.93	5.00	6.93	6,273.53
V.F. Corp.	VFC	2.13	16.50	18.63	14,714.53
Verizon Communic.	VZ	5.13	6.00	11.13	108,515.69
Viacom Inc. 'B'	VIA/B	2.12	14.50	16.62	24,052.40
Visa Inc.	V	0.86	16.00	16.86	82,179.36
Vornado R'ty Trust	VNO	3.59	14.50	18.09	14,195.12
Vulcan Materials	VMC	0.10	26.00	26.10	5,077.53
Wal-Mart Stores	WMT	2.45	8.50	10.95	202,783.00
Walgreen Co.	WAG	2.75	12.50	15.25	28,895.45
Washington Post	WPO	2.53	12.50	15.03	2,935.39
Waste Management	WM	4.38	6.50	10.88	15,214.99
WellPoint Inc.	WLP	1.46	6.50	7.96	24,700.05
Wells Fargo	WFC	1.65	18.00	19.65	152,578.06
Western Union	WU	1.74	8.00	9.74	11,335.72
Whirlpool Corp.	WHR	3.97	14.00	17.97	3,760.48
Whole Foods Market	WFM	0.77	22.50	23.27	13,037.21
Williams Cos.	WMB	3.63	10.50	14.13	16,105.32
Windstream Corp.	WIN	8.61	9.00	17.61	6,034.86
Wisconsin Energy	WEC	3.46	8.50	11.96	7,976.40
Wyndham Worldwide	WYN	1.60	10.00	11.60	5,783.20
Wynn Resorts	WYNN	1.35	34.50	35.85	13,279.38
Xcel Energy Inc.	XEL	3.88	5.00	8.88	13,190.59
Xerox Corp.	XRX	2.09	11.00	13.09	11,235.13
Xilinx Inc.	XLNX	2.34	7.00	9.34	8,441.41

Value Line Data for S&P 500 - Jan. 1, 2012

Company Name	Ticker	Current Yield %	EPS Growth %	Equity Cost %	Market Value
Yum! Brands	YUM	1.91	11.00	12.91	27,590.85
Zimmer Holdings	ZMH	1.33	10.00	11.33	9,737.99
Market Weighted Average =				13.95	

Flotation Cost Adjustment

Flotation costs are the costs associated with financing the investment – 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. In the appraisal process it is appropriate to include the interest rate and any other charges necessary to obtain the financing for the investment. In other words, the cost of financing an investment includes not only the interest rate but also flotation costs (the cost of issuing securities – both debt and equity). The Appraisal Institute's *The Appraisal of Real Estate* and the International Association of Assessing Officers' *Property Assessment Valuation* state the following regarding the cost of financing:

The cost of financing includes the interest rate and any points, discounts, equity participations, or other charges that the lender requires to increase the effective yield on the loan.⁴²

The investor considers risk, return, management, liquidity, and other factors in deciding an acceptable discount rate. The discount rate is the annual percentage rate reflecting the competitive rate of return on an investment. The discount rate, also known as the *overall yield rate* [Y_o], is the weighted average cost of capital for a particular investment and includes the costs associated with issuing debt and equity.⁴³

Flotation costs can be accounted for either by amortizing the cost (reducing the cash flow to discount), or by including them in the cost of capital. Many studies have been made regarding the amount of flotation costs for debt and equity capital.

In general, the adjustment for flotation costs is a refinement of the basic unadjusted cost. In other words, usually the adjusted and unadjusted costs will not be very different. However, this doesn't imply that you shouldn't make the adjustment. The information needed to make the adjustment is readily available, and the adjustment itself doesn't require much effort or computer processing time. To paraphrase the film maker, Spike Lee, you should do the right thing (*especially if the right thing is relatively easy to do*).⁴⁴

⁴² *The Appraisal of Real Estate*, 13th ed., (Chicago: Appraisal Institute, 2008) p. 154.

⁴³ *Property Assessment Valuation*, 3rd ed., (Kansas City: International Association of Assessing Officers, 2010), p. 305.

⁴⁴ Ehrhardt, Michael C., *The Search for Value: Measuring the Company's Cost of Capital*, (Harvard Business School Press: Boston, MA, 1994), p. 134.

Flotation costs occur when new issues of stock or debt are sold to the public. The firm usually incurs several kinds of flotation or transaction costs, which reduces the actual proceeds received by the firm. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the firm's required returns on these proceeds equate to a higher return to compensate for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the cash flow to discount, or by incorporating the cost into the cost of capital. Because flotation costs are not typically applied to operating cash flow, one must incorporate them into the cost of capital.⁴⁵

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....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.⁴⁶

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.⁴⁷ [This

⁴⁵ Pratt, Shannon P., *Cost of Capital, Estimation and Applications*, (NY: John Wiley & Sons, Inc. 1998) p. 176.

⁴⁶ Roger A. Morin, PhD, *Regulatory Finance: Utilities' Cost of Capital*, (Arlington, VA: Public Utilities Reports, Inc., 1994), p. 170-171. (emphasis added)

⁴⁷ Brigham, Eugene F. and Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 10th ed. (Thomson Learning, Inc.: Stamford, CT, 2002), p. 452.

identical quote is also found in *Fundamentals of Financial Management*, 9th ed. (Dryden Press) by Eugene F. Brigham and Joel F. Houston, Chapter 10.]

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

Although the cost of capital estimation techniques set forth later in this book are applicable to rate setting, certain adjustments may be necessary. One such adjustment is for flotation costs (amounts that must be paid to underwriters by the issuer to attract and retain capital).⁴⁸

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

Issue costs. If accepting the project forces the firm to issue securities, then the present value of issue costs should be subtracted from base-case NPV.⁴⁹

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

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

⁴⁸ *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 2

⁴⁹ Brealey, Richard & Stewart C. Myers, *Principles of Corporate Finance*, 7th ed. (New York: McGraw-Hill, 2002), p. 552.

taken from the *Journal of Property Tax Assessment & Administration* published by the International Association of Assessing Officers.⁵⁰

Flotation Cost Measurement

[illegible]

⁵⁰ Tegarden, Thomas K., "The Appraisal of Public Utilities: Adjustment to the WACC for Flotation Costs," *Journal of Property Tax Management & Administration*, (Chicago: IAAO), Vol. 5, Issue 1, 2008, pp. 71-74.

As one can see from the above mathematical example the same \$950 value results in either case. Actually, it is wrong to presuppose that one knows how much flotation cost to deduct in a valuation problem because in order to know exactly how much flotation cost will be, one has to already know what the value in order to know how much debt and equity will have to be issued. Thus, the appraiser must be biased or clairvoyant or both. **In solving a valuation problem, the WACC adjustment method is best.** If one already knew how much debt and equity securities would have to be issued, one would have to already know the purchase price and thus the valuation. It's a 'Catch 22.' If one already knew the value, why do an appraisal at all?

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

From information derived from *Public Utility Finance Tracker* we determined the average flotation cost associated with the issuance of long-term debt and common stock of natural gas and natural gas transmission companies. We found the average issuance cost of long-term debt to be 1.05% and the average issuance cost of common equity to be 4.30%. We selected 1.00% and 4.25% to be representative of the typical flotation cost associated with the issuance of long-term debt and common stock securities respectively.

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

Debt Issuance Cost
Natural Gas/Transmission Utilities (1997 - 2011)

Company	Type of Utility	Issue Date	Amount Offered (\$000)	Price to Public (\$/100)	Net Proceeds	Issue Cost
Michigan Con Gas Company	Gas	14-May-97	15,000	100.000	96.8683	3.23%
Michigan Con Gas Company	Gas	15-May-97	30,000	100.000	99.2467	0.76%
Michigan Con Gas Company	Gas	15-May-97	40,000	100.000	99.3605	0.64%
Seagull Energy Corp.	Gas	25-Sep-97	150,000	99.544	98.5437	1.02%
SONAT Inc.	Gas	25-Sep-97	100,000	99.748	99.0970	0.66%
Southern Natural Gas Co.	Gas	25-Sep-97	100,000	99.891	99.2393	0.66%
Laclede Gas	Gas	16-Oct-97	25,000	98.682	98.3519	0.34%
Kn Energy Inc.	Gas	22-Oct-97	150,000	100.000	99.3740	0.63%
Northern Illinois Gas Co.	Gas	23-Oct-97	50,000	99.500	98.9960	0.51%
Enron Oil & Gas Co.	Gas	25-Nov-97	100,000	99.709	99.0580	0.66%
Consolidated Natural Gas 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	100.000	99.375	0.63%
Northwest Natural Gas	Gas	24-Sep-02	30,000	100.000	99.250	0.76%
UGI Utilities Inc.	Gas	25-Sep-02	20,000	100.000	99.375	0.63%
California Gas Co.	Gas	02-Oct-02	250,000	99.897	99.247	0.65%
AGL Capital Corp.	Gas	07-Jan-03	225,000	99.927	99.277	0.65%
Atmos Energy Corp	Gas	13-Jan-03	250,000	99.915	99.250	0.67%
Septra Energy	Gas	01-Feb-03	400,000	99.658	99.008	0.66%
Michigan Consolidated Gas Co	Gas	12-Feb-03	200,000	99.637	98.762	0.89%
Northwest Natural Gas	Gas	25-Feb-03	10,000	100.000	99.250	0.76%

Debt Issuance Cost
Natural Gas/Transmission Utilities (1997 - 2011)

Company	Type of Utility	Issue Date	Amount Offered (\$000)	Price to Public (\$/100)	Net Proceeds	Issue Cost
Nisource Finance Corp	Gas	01-Mar-03	345,000	100.000	99.354	0.65%
Keyspan Corporation	Gas	01-Apr-03	150,000	99.763	98.888	0.88%
AGL Capital Corp.	Gas	15-Apr-03	225,000	99.927	99.277	0.65%
The Cincinnati Gas & Electric Co.	Gas	12-Jun-03	200,000	99.764	98.889	0.88%
The Cincinnati Gas & Electric Co.	Gas	12-Jun-03	200,000	99.396	98.521	0.89%
Baltimore Gas And Electric Co.	Gas	17-Jun-03	200,000	99.295	98.420	0.89%
Nisource Finance Corp	Gas	16-Jul-03	500,000	99.862	99.212	0.66%
Vectren Coproation	Gas	24-Jul-03	100,000	99.746	99.096	0.66%
Vectren Coproation	Gas	24-Jul-03	100,000	99.177	98.477	0.71%
UGI Utilities	Gas	14-Aug-03	20,000	100.000	99.250	0.76%
UGI Utilities	Gas	14-Aug-03	25,000	100.000	99.370	0.63%
Energy East Corporation	Gas	08-Sep-03	200,000	99.830	98.950	0.89%
Madison Gas & Electric Co	Gas	09-Sep-03	20,000	100.000	99.250	0.76%
Energen Corporation	Gas	30-Oct-03	50,000	99.557	98.907	0.66%
Northwest Natural Gas	Gas	21-Nov-03	40,000	100.000	99.250	0.76%
Piedmont Natural Gas Co Inc	Gas	16-Dec-03	100,000	99.859	98.984	0.88%
Piedmont Natural Gas Co Inc	Gas	16-Dec-03	100,000	100.000	99.350	0.65%
AGL Resources	Gas	14-Dec-04	200,000	99.870	99.220	0.66%
Aquila	Gas	18-Aug-04	300,000	25.000	25.000	0.00%
Atmos Energy	Gas	18-Oct-04	500,000	99.993	99.343	0.65%
Atmos Energy	Gas	18-Oct-04	200,000	99.392	98.517	0.89%
Laclede Gas Co.	Gas	21-Apr-04	50,000	99.585	98.835	0.76%
Laclede Gas Co.	Gas	21-Apr-04	100,000	99.434	98.559	0.89%
Michigan Consolidated Gas	Gas	27-Sep-04	120,000	99.594	98.844	0.76%
Consolidated Natural Gas Co	Gas	15-Nov-04	400,000	99.686	99.036	0.66%
Alabama Gas Corp	Gas	11-Jan-05	40,000	100.000	96.860	3.24%
Alabama Gas Corp	Gas	11-Jan-05	40,000	100.000	99.350	0.65%
Alabama Gas Corp	Gas	14-Nov-05	80,000	100.000	99.400	0.60%
Cascade Natural Gas	Gas	20-Jan-05	30,000	100.000	96.850	3.25%
Cascade Natural Gas	Gas	29-Aug-05	15,000	100.000	99.300	0.70%
Northwest Natural Gas Co.	Gas	02-Jun-05	40,000	100.000	99.375	0.63%
Northwest Natural Gas Co.	Gas	21-Jun-05	10,000	100.000	99.250	0.76%
Vectren Utility Holdings, Inc	Gas	16-Nov-05	75,000	99.799	99.149	0.66%
Vectren Utility Holdings, Inc	Gas	16-Nov-05	75,000	99.779	98.904	0.88%
Laclede Gas Co.	Gas	06-Jun-06	55,000	99.852	98.977	0.88%
Piedmont Natural Gas Co., Inc	Gas	15-Jun-06	200,000	100.000	96.850	3.15%
AGI Capital Resources	Gas	27-Jun-06	175,000	99.856	99.206	0.65%
Southern Union Co.	Gas	18-Oct-06	600,000	99.644	98.344	1.30%
Northwest Natural Gas Co.	Gas	15-Dec-06	25,000	100.000	99.375	0.63%
Alabama Gas Corp	Gas	10-Jan-07	45,000	100.000	99.125	0.88%
Atmos Energy Corp	Gas	11-Jun-07	250,000	99.729	99.079	0.66%
Vectren Utility Holdings, Inc	Gas	05-Mar-08	125,000	100.000	96.850	3.25%
Vectren Utility Holdings, Inc	Gas	24-Mar-08	100,000	99.930	99.062	0.88%
Vectren Utility Holdings, Inc	Gas	24-Mar-08	50,000	99.400	99.290	0.11%
Laclede Gas Co	Gas	18-Sep-08	80,000	100.000	96.850	3.25%
Washington Gas Light	Gas	05-Dec-08	50,000	100.000	99.375	0.63%
AGI Capital Corp	Gas	05-Aug-09	300,000	99.78	99.13	0.66%
Atmos Energy	Gas	23-Mar-09	450,000	99.81	99.16	0.66%
National Fuel Gas Co	Gas	01-Apr-09	250,000	99.76	99.11	0.66%

Debt Issuance Cost
Natural Gas/Transmission Utilities (1997 - 2011)

Company	Type of Utility	Issue Date	Amount Offered (\$000)	Price to Public (\$/100)	Net Proceeds	Issue Cost
Northwest Natural Gas Co.	Gas	20-Mar-09	75,000	100.00	99.38	0.63%
Sempra Energy	Gas	05-Oct-09	750,000	99.16	98.28	0.89%
Central Hudson Gas & Elec Corp	Gas	02-Dec-10	44,150	100.000	99.375	0.63%
Central Hudson Gas & Elec Corp	Gas	02-Dec-10	30,000	100.000	92.467	8.15%
Southwest Gas Corporation	Gas	07-Dec-10	125,000	99.818	99.168	0.66%
Washington Gas Light Co.	Gas	30-Nov-10	75,000	100.000	99.979	0.02%
AGL Capital Corp	Gas	16-Mar-11	500,000	99.833	98.958	0.88%
Atmos Energy Co.	Gas	07-Jun-11	400,000	99.678	98.803	0.89%
Northwest Natural Gas Co.	Gas	19-Aug-11	500,000	100.000	99.375	0.63%
AGL Capital Corp	Gas	15-Sep-11	200,000	113.434	112.559	0.78%
AGL Capital Corp	Gas	15-Sep-11	300,000	98.483	97.833	0.66%
National Fuel Gas Co.	Gas	28-Nov-11	500,000	99.867	99.217	0.66%
					Average	1.05%
					Selected	1.00%

Source: *Public Utility Finance Tracker*, February 1999 - 2012.

Common Stock Issuance Cost
Natural Gas/Transmission Utilities (1990 - 2011)

Company	Type of Company	Issue Date	Number of Shares (000)	Price to Public	Net Proceeds	Issue Cost
Consolidated Natural Gas	Gas	08-Jan-90	3,500	45.50	44.24	2.85%
Washington Energy	Gas	17-Jan-90	1,750	20.13	19.26	4.52%
Colonial Gas	Gas	15-May-90	600	21.50	20.27	6.07%
Atlanta Gas Light	Gas	05-Dec-90	1,000	31.38	30.00	4.60%
Washington Energy	Gas	04-Feb-91	2,650	19.00	18.21	4.34%
Piedmont Natural Gas	Gas	03-Apr-91	1,250	28.50	27.36	4.17%
Panhandle Eastern	Gas	18-Jul-91	13,800	10.75	10.27	4.67%
Bay State Gas Co.	Gas	13-Mar-92	1,550	23.25	22.28	4.35%
El Paso Natural Gas Co.	Gas	12-May-92	5,000	19.00	17.77	6.92%
New Jersey Resources 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%
AgI Resources, Inc	Gas	11-Feb-03	5,600	22.00	21.21	3.70%
Atmos Energy Corp.	Gas	18-Jun-03	4,000	25.31	24.25	4.38%
Sempra Energy	Gas	23-Oct-03	15,000	28.00	27.15	3.12%
Southern Union Co.	Gas	10-Jun-03	3,000	16.15	16.15	0.00%

Common Stock Issuance Cost
Natural Gas/Transmission Utilities (1990 - 2011)

Company	Type of Company	Issue Date	Number of Shares (000)	Price to Public	Net Proceeds	Issue Cost
Southern Union Co.	Gas	05-Jun-03	9,500	16.00	15.38	4.06%
Southern Union Co.	Gas	15-Jun-03	2,500	50.00	48.17	3.80%
Vectren Corporation	Gas	07-Aug-03	6,500	22.81	22.00	3.70%
AGL Resources	Gas	19-Nov-04	9,600	31.010	30.038	3.23%
Ameren	Gas	30-Jun-04	10,000	42.000	40.700	3.19%
Aquila(M)	Gas	18-Aug-04	40,000	2.550	2.451	4.04%
Atmos Energy Co.	Gas	21-Oct-04	14,000	24.750	23.760	4.17%
Northwest Natural Gas Co.	Gas	30-Mar-04	1,200	31.000	29.844	3.87%
Piedmont Natural Gas Co. Inc	Gas	20-Jan-04	4,250	42.500	41.010	3.63%
Southern Union Co.	Gas	26-Jul-04	11,000	18.750	18.003	4.15%
The Laclede Group Inc	Gas	06-May-04	1,500	26.800	25.862	3.63%
UGI Corp.	Gas	18-Mar-04	7,500	32.100	30.696	4.58%
Semco Energy	Gas	09-Aug-05	27,176	6.320	6.067	4.17%
Southern Union Co.	Gas	07-Feb-05	342,999	23.000	22.300	3.14%
Chesapeake Utility Corp	Gas	15-Nov-06	600	30.100	28.975	3.88%
Vectron Corp	Gas	22-Feb-07	4,600	28.33	27.34	3.62%
Clean Energy	Gas	25-Jun-09	8,200	8.30	7.80	6.38%
EQT	Gas	10-Mar-11	12500	44.00	42.24	4.17%
Average						4.30%
Selected						4.25%

Source: *Public Utility Finance Tracker*, February 1999 - 2011.

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%	5.50%	1.65%	1.00%	99.38%	5.53%	1.66%
Equity	70.00%	12.50%	8.75%	4.25%	95.75%	13.05%	9.14%
Totals	100.00%		10.40%				10.80%

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: $1 - (0.01 \times (1 - 0.38)) = 99.38\%$. Next we divide cost of debt of 5.50% by the divisor to obtain the flotation cost adjusted cost of debt, which is then multiplied times the debt portion of the capital structure to obtain the product of 1.66%. 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 12.50% by the divisor to obtain the flotation cost adjusted cost of equity, which is then multiplied times the equity portion of the capital structure to obtain the product of 9.14%. The sum of the two products is **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

Geometric Mean vs. Arithmetic Mean

Occasionally appraisers make the mistake of using the geometric mean rather than the arithmetic mean in measuring the equity risk premium. The geometric mean is backward-looking, measuring the change in wealth over more than one period. On the other hand, the arithmetic mean better represents a typical performance over single periods and serves as the correct rate for forecasting, discounting, and estimating the cost of capital. Dr. Roger Ibbotson has written regarding this issue as follows:

The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless

rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.⁵¹

Additionally, Dr. Roger Morin addressed the issue of the arithmetic versus geometric means in estimating the cost of capital.

In statistical parlance, the arithmetic average is the unbiased measure of the expected value of repeated observations of a random variable, not the geometric mean. This appendix formally illustrates that only arithmetic averages can be used as estimates of cost of capital, and that the geometric mean is not an appropriate measure of cost of capital.⁵²

Brealey, Myers and Allen also addressed this issue:

If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return (geometric averages).⁵³

Income Return

The income return is the appropriate return for use in calculating the equity risk premium. This issue is discussed in SBBI as follows:

Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return, and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the

⁵¹ *Stocks, Bonds, Bills and Inflation: 2010 Valuation Edition Yearbook*, (Chicago: Morningstar, Inc., 2010), p. 56.

⁵² Morin, Roger A., *New Regulatory Finance* (Vienna, VA: Public Utilities Reports, Inc., 2006), p. 133.

⁵³ Richard A. Brealey, Stewart C. Myers, and Paul Allen, *Principles of Corporate Finance*, 8th ed., (Irwin McGraw-Hill, 2006), pp. 156-157.

equity risk premium because it represents the truly riskless portion of the return.⁵⁴

Equity Risk Premium Puzzle

In 1985, Mehra and Prescott published a paper that discussed the equity risk premium from a utility theory perspective. The point that Mehra and Prescott make is that under existing economic theory, economists cannot justify the magnitude of the equity risk premium. The utility theory model employed was incapable of obtaining values consistent with those observed in the market.

This is an interesting point and may be worthy of further study, but it does not do anything to prove that the equity risk premium is too high. It may, on the other hand, indicate that theoretical economic models require further refinement to adequately explain market behavior.⁵⁵

There is no historical data to suggest a systematic decline in the market risk premium in estimating the cost of equity.

Are there any historical data to suggest a systematic decline in the market risk premium? Exhibit 10.5 plots five-year rolling averages of the market equity risk premium from 1930 to 1995. The volatility of the market risk premium has decreased, but what about the average market risk premium? A regression of the rolling five-year market risk premium versus time indicates that there is no statistically significant change in the risk premium between 1926 and 1995. The slope of the regression is not significantly different from zero.⁵⁶

Survivorship Bias

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

⁵⁴ *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 55.

⁵⁵ *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 62.

⁵⁶ Copeland, Tom, Tim Koller & Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, 3rd ed. (New York: John Wiley & Sons, 2000), 217.

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.⁵⁷

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.⁵⁸

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, 2012, and no adjustment is necessary.

⁵⁷ *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 62.

⁵⁸ 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.

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

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_c)*. An example of a yield rate is the property's *overall yield rate*, which is synonymous with the *discount rate* and the *cost of capital*. Under certain conditions, the income and yield rates for a property are equal even though they are not conceptually equal.

Categories of Capitalization

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

Direct Capitalization

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

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

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

When supported by appropriate market data, 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 and change formula, ($R_o = \text{yield} - \text{change in income and value}$) and the Ellwood method.⁵⁹

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

⁵⁹ *The Appraisal of Real Estate*, 13th ed., (Chicago: Appraisal Institute, 2008), p. 501.

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 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.⁶⁰

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 tell us explicitly that an appraiser **may not** 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. For example, IAAO's primary textbook addresses this issue as stated below.

The equity yield rate (Y_E) is different from the equity capitalization rate (R_E). The equity capitalization rate is simply the ratio between the first year's income and the equity value or equity investment. The equity yield rate is the rate of return on equity capital. It is similar in concept to the property's overall yield rate (Y_O). The equity yield rate can be estimated by extraction from recent comparable sales (similar to derivation of the overall yield rate in the previous example), survey and opinion of market participants, and comparison with the equity yield rates (Y_E) achieved in alternative investments of comparable risk such as stocks and bonds. While the equity yield rate (Y_E) can be developed from alternative investments of comparable risks such as stocks and bonds, the equity capitalization rate (R_E) used in direct capitalization cannot be developed correctly from the earnings-to-price ratios of common stocks. Earnings-to-price

⁶⁰ Pratt, Reilly, & Schweih, *Valuing A Business*, 3rd edition, (Chicago: Irwin Professional Publishing, 1996), 708.

ratios of common stocks can only be used in the appraisal of similar common stock, not for the appraisal of real personal property.⁶¹

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 projection period; 2) forecasts all future cash flows or cash flow patterns (including the reversion); 3) chooses an appropriate yield 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 using one of the various yield capitalization formulas. 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 procedures.⁶²

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

⁶¹ *Property Assessment Valuation*, 3rd ed., (Kansas City: International Association of Assessing Officers, 2010), p. 362.

⁶² *The Appraisal of Real Estate*, 13th ed., (Chicago: Appraisal Institute, 2008), 519-520.

the appropriate discount rate. In this model the discount rate and the overall capitalization rate are the same.⁶³

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.⁶⁴ 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.

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

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 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.⁶⁵

The Appraisal Institute goes on to state:

⁶³ *Ibid.*, 560.

⁶⁴ *Ibid.*, 560.

⁶⁵ *Ibid.*, 118-119.

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...⁶⁶

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, as discussed above, 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 113. 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 12, 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 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

⁶⁶ *Ibid.*, 119. NOTE: This reference and the preceding reference can also be found in the 12th ed. at page 119, 11th ed. at pages 554-555, and 10th ed. at pages 506-507, respectively.

for debt and equity and the depreciation expense. For an illustration of this type of analysis, refer to *The Appraisal of Real Estate*, 13th edition, page 542-543.

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.