

# Interstate Natural Gas Pipeline Industry

# 2013 Cost of Capital Study

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



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## Common Terms

AEO	Annual Energy Outlook
Bcf/d	Billion cubic feet per day
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	Liquified Natural Gas
M&A	<i>Mergers and Acquisitions</i>
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
SBBI	<i>Stocks, Bonds, Bills &amp; Inflation</i>
SFV	Straight Fixed Variable
S&P	Standard & Poor's
STEO	Short-Term Energy Outlook
VL	<i>The Value Line Investment Survey</i>
WACC	Weighted Average Cost of Capital
WSJ	<i>Wall Street Journal</i>
YTM	Yield to Maturity

# **2013 Cost of Capital Study of the Interstate Natural Gas Pipeline Industry for the Interstate Natural Gas Pipeline Property Tax Forum January 1, 2013**

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## **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, 2013. 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, 2013, 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 1.12% and 1.85% respectively would need to be made to the capital asset pricing model.<sup>1</sup> 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, 2013.

## **Executive Summary - Cost of Capital**

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

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<sup>1</sup> *2013 Ibbotson SBBi Risk Premia Over Time Report*, p. 7.

capital (WACC) for the INGPI to be **10.60%** as of January 1, 2013. 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, 2013, 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 15.

## **Interstate Natural Gas Pipeline Property Tax Forum**

The INGPPTF represents over 70 companies engaged in the transportation of natural gas. Only a few of the parents of these companies have common equity traded on the major financial markets. Thus, the financial information from the actually traded INGPPTF members (primarily parent companies) may not, by itself, be indicative of the actual cost of capital for the interstate natural gas pipeline industry. The current members of the INGPPTF are listed below:

Boardwalk Pipeline - Houston	El Paso Natural Gas
Gulf South Pipeline Company, LP	Mojave Pipeline
Gulf Crossing Pipeline Company, LLC	Colorado Interstate Gas
Boardwalk Pipeline - Owensboro	Cheyenne Plains Pipeline
Texas Gas Transmission, LLC	Wyoming Interstate Company
Centerpoint Energy	Bear Creek Storage
Centerpoint Energy Gas Transmission	Elba Express
Centerpoint Energy Mississippi River Transmission	Gulf LNG
Columbia Gas/Gulf Transmission Corporation	Ruby Pipeline, LLC
Dominion Transmission Corporation	Southern LNG
Kern River Gas Transmission	Young Gas Storage
Kinder Morgan, Inc.	MDU Resources Group, Inc.
Natural Gas Pipeline Company of America	National Fuel Gas Supply Corporation
Kinder Morgan Interstate Gas Transmission	Northern Natural Gas Company
Rockies Express Pipeline	Oneok Partners, LP
Midcontinent Express Pipeline	Guardian Pipeline Company
Trailblazer Pipeline	Midwestern Gas Transmission Company
TransColorado Gas Pipeline	Viking Gas Transmission Company
Louisiana Pipeline	Questar Pipeline Company
El Paso Corporation	Southern Star Central Gas Pipeline, Inc.
Tennessee Gas Pipeline	Spectra Energy - Canada
Southern Natural Gas	West Coast Pipelines & Field Services

West Coast Gas Services, Inc.  
Maritimes and Northeast Pipeline (Canada)  
Spectra Energy Empress L.P.  
Union Gas Limited  
St. Clair Pipelines (1996)  
Market Hub Partners  
Spectra Energy Income Fund  
Spectra Energy Corp  
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 Companies, Inc.  
Transcontinental Gas Pipeline Corp.  
Northwest Pipeline Corporation

## General Economic Trends - 2013

As 2012 came to a close, the United States economy also turned a page. After several years of upheaval, 2012 finally give investors a year many wished for. The year featured slow, steady gains and low volatility, as the stock market overcame many investors' worries. Behind the gains was continued action by the Federal Reserve to keep interest rates low, revive the economy and encourage investors to shift into stocks and riskier investments. The volatility of the market for U.S. Treasury bonds was the lowest on record.<sup>2</sup>

Having said that, reporting on economic forecasting (of any type) is a mercurial and difficult process. Still, it appears clear to most economic forecasters that the current recovery has been disappointing and the economy has consistently underperformed. The Congressional Budget Office (CBO), in a recently released report (What Accounts for the Slow Growth of the Economy after the Recession?) estimated that growth since the official end of the recession has been less than half the rate of the past post-World War II recoveries according to *EconSouth*.<sup>3</sup> [The most recent recession began in December 2007 and ended in June 2009, though many of the statistics that describe the U.S. economy have yet to return to their pre-recession values.<sup>4</sup>]

Economists are famous for not agreeing about much of anything. But when it comes to

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<sup>2</sup> Zuckerman, Gregory. "A Really Good Year - Wins and Losses of 2012," *The Wall Street Journal*, December 29, 2012, 7:40 p.m. ET, <http://online.wsj.com/article/SB10001424127887323984704578203593473607014.html?K...>

<sup>3</sup> "Cloudy with a Chance of Growth," *EconSouth*, Fourth Quarter 2012, 3.

<sup>4</sup> "The Recession of 2007-2009," *U.S. Bureau of Labor Statistics*, February 2012, <http://www.bls.gov/spotlight>.

their forecasts for U.S. economic growth in 2013, they've achieved a remarkable consensus. And that may be a cause for caution, because such forecasts help drive investment decisions and behavior. If the consensus is setting the stage for a big miss, some investors and companies may be left wrong-footed according to Justin Lahart of the *Wall Street Journal* [WSJ].<sup>5</sup> WSJ's Eric Morath also reported that the corporate economists have a rosier view of 2013. The corporate economists believe that the United States economy would expand at a fairly robust pace in 2013 despite continued uncertainty in Washington.<sup>6</sup>

In a survey of economists the Federal Reserve Bank of Philadelphia conducted in the fourth quarter, individual forecasts for the change in gross domestic product from the end of 2012 to the end of 2013 were unusually clumped around the average forecast of a 2.3% gain. In the 45-year history of the Philadelphia Fed survey, the dispersion in economists' annual G.P. forecasts were slimmer only two times, ahead of both 1994 and 1996.<sup>7</sup>

One might think that as economists considered all the crosswinds the economy faced heading into 2013 that they'd come to varied conclusions. These were forecasts, after all, that were made before it was clear that Washington would come to any sort of agreement on the "fiscal cliff." And as of January 2013, the possibility that budget negotiations would devolve into a government shutdown was very real, according to WSJ's Lahart.

The more likely answer to what is driving the consensus view on 2013 growth: Because an economist who forecasted anything other than tepid annual growth over the past several years had been wrong for it, more economists have opted to hew to the average. It's a group mind-set driven less by complacency than a decision that it was better to be wrong with company than to be wrong alone.<sup>8</sup>

What's up ahead for the U.S. economy? According to *Kiplinger's Economic Outlook*, the last-minute deal to avoid the worst effects of the fiscal cliff wouldn't provide any fuel for the economy. Much of the uncertainty about the economic climate, plus tax and federal spending policies that plagued employers in 2012, remained up in the air for 2013. New March 2013 deadlines for automatic spending cuts totaling about \$1.2 trillion as well as for a showdown over

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<sup>5</sup> Lahart, Justin. "When Economists Agree, Start Worrying," *The Wall Street Journal*, January 25, 2013, 3:21 p.m. ET, <http://online.wsj.com/article/SB10001324127887323854904578264101716263888.html?u...>

<sup>6</sup> Morath, Eric. "Corporate Economists Have Rosier View of 2013," *The Wall Street Journal*, January 28, 2013, 1:00 a.m. ET, <http://blogs.wsj.com/economics/2013/01/28/corporate-economists-have-rosier-view-of-2013...>

<sup>7</sup> *Op. Cit.*, Lahart.

<sup>8</sup> *Ibid.*



raising the debt ceiling were a recipe for continued caution by businesses pondering whether to invest in plants and equipment and/or to do more hiring. Additionally, a payroll tax hike included in the deal would shave up to one percentage point from GDP this year. Looking ahead, looming federal spending cuts that are already written into the books would likely result in GDP growth of about 2%, at best and is slightly lower than the 2.3% growth that *WSJ's* Lahart reported.<sup>9</sup>

Even though consumers would see their paychecks shrinking by an average of \$20 or so a week, *Kiplinger* reported that wouldn't deter consumers from buying houses or cars, and both industries would see growth in 2013. Predictions were that anticipated job growth would average about 166,000 a month in 2013, putting the annual total at around 2 million, slightly better than the 2012 gain of 1.84 million. Similarly, *Kiplinger* expected the unemployment rate, which ended 2012 at the 7.8% mark, to improve modestly over 2013, drifting a bit lower, to around 7.5%, by the end of this year.

Unfortunately, the lack of change was also the bad news. Current and anticipated job growth, while decent, was too low to give the economy much-needed impetus to get the 4.8 million long-term unemployed Americans earning paychecks again. Odds are that growth will pick up in the second half of the year -- a sharp contrast to 2012, when employment gains began strong, then quickly sagged. Two major obstacles would cause companies to remain cautious this year and may derail improvement: a Washington showdown over the federal debt ceiling expected around March and uncertainty over whether automatic spending cuts would be allowed to take effect, also in March.

Most interest rates, but short-term rates in particular, would change little during 2013 reported *Kiplinger*. With the Federal Reserve indicating it will stand pat on its near-zero federal funds rate, the prime lending rate should remain at 3.25%, the three-month Treasury bill rate around 0.1%, and one-year bank CDs about 1%. There is likely to be some increase in long-term rates as the economy posts more growth in the second half of 2013. That would focus more attention on the potential for rising inflation, nudging long-term rates up a bit. With GDP likely to increase only around 2% for the year, a surge wasn't likely.

When political acrimony over the debt ceiling and budget deficits threatened default by the U.S. Treasury in 2011, *Standard & Poor's* lowered its AAA credit rating on Treasuries. Although that lone move had little impact on interest rates, the remaining two rating agencies warn that they may follow suit if Congress and the president are unable to satisfy concerns about rising federal debt. *Moody's* now says that though the Jan. 2, 2013 deal on taxes is a step in the right direction, it does not provide "meaningful improvement in the government's debt ratios." If

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<sup>9</sup> "Kiplinger's Economic Outlook," *Kiplinger*, January 2013, <http://www.kiplinger.com/tool/business/T019-S000-kiplinger-s-economic-outlooks/#5tZI4tb5AyAxufA0.99>.

*Moody's*, or the third major ratings agency, *Fitch*, downgrades U.S. debt, interest rates are likely to climb. As a result, business investment, one of four components of economic growth, would continue to struggle

Business spending this quarter would be helped by the renewal of tax breaks on new or leased equipment. The one-year extension, part of the last-minute fiscal cliff deal, would push business owners and managers to pull the trigger on items they held off buying while they waited for a clearer outlook on taxes. Still, orders won't grow as much as they could because of lingering uncertainty over Congress' ability to take meaningful steps to reduce the federal deficit while increasing the federal debt limit to prevent potential default on U.S. Treasury obligations. Moreover, steep automatic cuts in federal spending remain on the horizon. As long as these threats to economic growth persist, businesses will be cautious about making large new outlays.<sup>10</sup>

In summary, the fiscal uncertainty clouds the economic outlook for growth. The U.S. economy continues to expand at a modest pace. By and large, businesses and consumers remain cautious spenders. A wild card for the economy remains the near-term outlook for fiscal policy. Should the economy plunge over the so-called fiscal cliff, many forecasters expect a recession to follow shortly thereafter. If the impediments that are restraining business capital spending and exports wane, then the economy could grow by more than projected in 2013. However, an extremely large federal budget deficit probably means that fiscal policy would contribute little, if any, to the economy's near-term growth.<sup>11</sup>

## **Natural Gas Pipeline Industry - 2013**

Interstate natural gas 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 natural gas pipeline can expand its service territory through new permitting and construction, whereas this is not usually the case for local distribution companies (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

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<sup>10</sup> *Ibid.*

<sup>11</sup> Kliesen, Kevin L. "Fiscal Uncertainty Clouds Outlook for Growth," *The Regional Economist*, The Federal Reserve Bank of St. Louis, Vol. 21, No. 1, January 2013, 22.

appraiser/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.<sup>12</sup>

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 use of LNG imported via tanker also affects 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 (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 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.<sup>13</sup> *The Value Line Investment Survey's (VL) "Pipeline Master Limited Partnerships Industry"* covered by Bryan J. Fong is ranked in the top quartile of all industries it covers. According to *VL*, pipeline MLPs are high-yield equities that give investors a way to partake in growing energy demand with minimal exposure to commodity-price fluctuations.<sup>14</sup>

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<sup>12</sup> Muir, Christopher B. "Natural Gas Distribution," *Standard & Poor's*, July 12, 2012, 44-45.

<sup>13</sup> *Ibid.*

<sup>14</sup> Fong, Bryan J. "Pipeline MLPs," *Value Line*, December 7, 2012, 612.

## Annual Energy Outlook 2013

The U.S. Energy Information Administration (EIA) has published the *Annual Energy Outlook 2013 (AEO2013)* Early Release Overview. The document is an abridged version of the *Annual Energy Outlook* that highlights changes made to the *Annual Energy Outlook* reference case from the prior year. According to the EIA, the reference case includes projections for the U.S. energy market through 2040, and takes into account only policies that have been enacted through law and final regulations.

Overall, the reference case predicts that total primary energy consumption will grow by 7 percent, from 98 quadrillion Btu in 2011 to 104 quadrillion Btu in 2035. This is 2.5 quadrillion Btu less than the growth assumed in the *2012 Annual Energy Outlook*.<sup>15</sup>

Natural gas production is higher throughout the AEO2013 Reference case projection than it was in *AEO2012*, with natural gas increasingly serving the industrial and electric power sectors, as well as an expanding export market. Relatively low natural gas prices, facilitated by growing shale gas production, spur increased use in the industrial and electric power sectors, particularly over the next 15 years. Natural gas use (excluding lease and plant fuel) in the industrial sector increases by 16 percent, from 6.8 trillion cubic feet per year in 2011 to 7.8 trillion cubic feet per year in 2025.

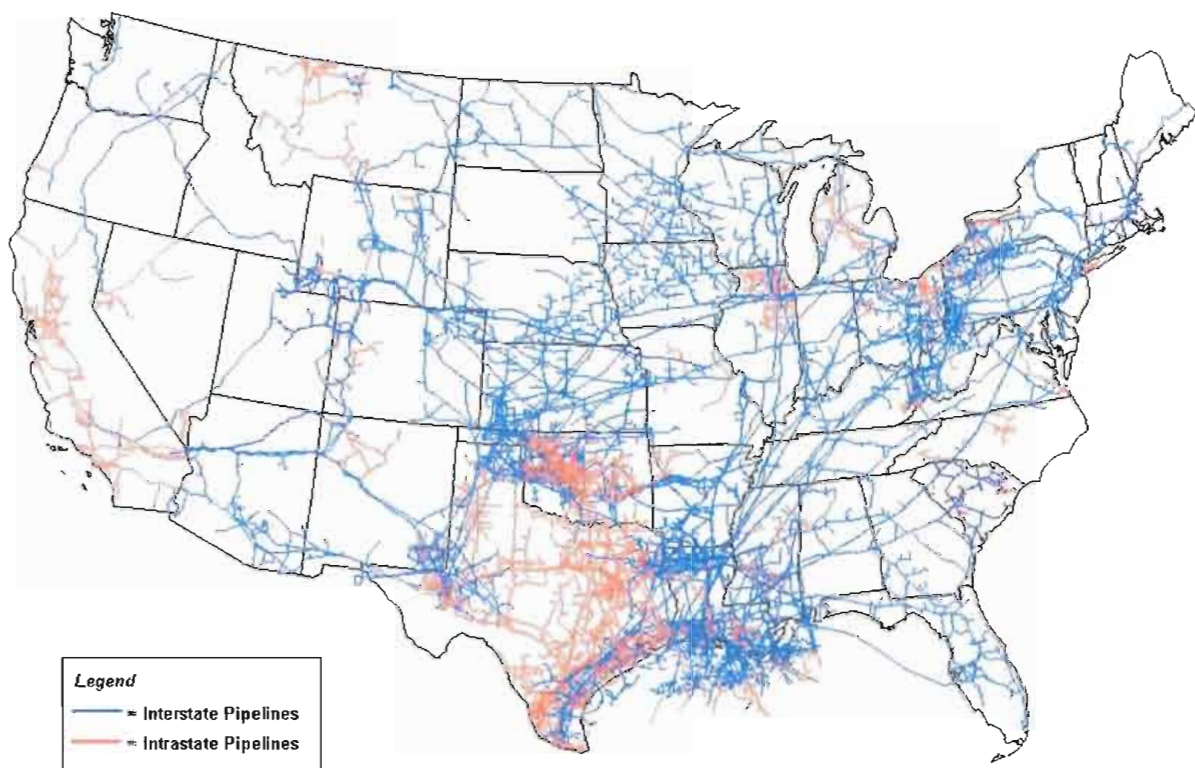
Although natural gas also continues to capture a growing share of total electricity generation, natural gas consumption by power plants does not increase as sharply as generation because new plants are very efficient. After accounting for 16 percent of total generation in 2000, the natural gas share of generation rose to 24 percent in 2010 and is expected to continue increasing, to 27 percent in 2020 and 30 percent in 2040. In the *AEO2013* Reference case, natural gas also reaches other new markets, such as exports, as a fuel for heavy-duty freight (trucking) transportation, and as a feedstock for producing diesel and other fuels.<sup>16</sup>

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<sup>15</sup> Voegele, Erin. "EIA releases Annual Energy Outlook 2013 reference case, *BioMass Magazine*, December 05, 2012, <http://biomassmagazine.com/articles/8392/eia-releases-annual-energy-outlook-2013-reference...>

<sup>16</sup> "Executive Summary," *AEO2013* Early Release Overview, U.S. Energy Information Administration, December 5, 2012, [http://www.eia.gov/forecasts/aeo/er/executive\\_summary.cfm](http://www.eia.gov/forecasts/aeo/er/executive_summary.cfm).

## 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

### Short-Term Natural Gas Outlook

The January 8, 2013, EIA Short-Term Energy Outlook (STEO) expected that natural gas consumption would average 69.7 billion cubic feet per day (Bcf/d) in 2013 and 69.4 Bcf/d in 2014. While total consumption was relatively unchanged from 2012, the makeup of consumption changed. Because of a warm winter in 2012, residential and commercial consumption was very low, and the hot summer (as well as relatively low natural gas prices) led to record-high use of natural gas for power generation. Forecasts for closer-to-normal temperatures in 2013 and 2014 would lead to increases in natural gas used for residential and commercial space heating. These increases were offset by declines in natural gas for power generation, as summer temperatures were expected to be closer to normal, meaning cooler than they were in 2012.

Despite projected declines in electric power consumption from 2012 levels, consumption of natural gas for electric power generation remained high by historical standards and reflected a structural shift toward using more natural gas for power generation. While the shift toward more natural gas for power generation has been most evident in the Southeast, other major consuming

areas have also increased natural gas consumption. Increased pipeline flows in New England during the summer months, for example, represent an increasing reliance on natural gas for power generation.<sup>17</sup>

The January STEO expected continued growth in natural gas production, driven largely by onshore production in shale areas. In particular, production in the Marcellus Shale areas of Pennsylvania and West Virginia was expected to continue rising, as recently drilled wells become operational. Despite relatively low natural gas prices, Pennsylvania drilling continued at a strong pace as producers targeted combination oil-and-gas wells. Production had been rising despite large decreases in the natural gas rig count over the past year. According to Baker Hughes, the natural gas rig count was 431 as of December 28, 2012, compared with 811 at the start of 2012. The oil rig count had also declined in recent months (oil rigs often produce associated natural gas), although declines have been much smaller than declines in the natural gas rig count. The declines in rig counts, coupled with continued production growth, suggested increases in rig efficiency, which would maintain production levels going forward.

The January STEO expected that total marketed production would increase from 69.2 Bcf/d in 2012 to 69.8 Bcf/d in 2013, and drop slightly to 69.5 Bcf/d in 2014. EIA expected growth in the Lower 48 and onshore production would continue through 2014, and be offset by Gulf of Mexico declines next year.

Domestic supply continued to displace pipeline imports from Canada and liquefied natural gas (LNG) imports. EIA expected pipeline gross imports would stay mostly flat in 2013. Projected pipeline imports drop by 0.4 Bcf/d (4.5 percent) in 2014. Gross exports to Mexico have grown substantially since 2010, but EIA expected exports would stay flat in 2013 and increase by 0.2 Bcf/d (5.5 percent) the following year. LNG imports were expected to remain at minimal levels of less than 0.5 Bcf/d in both 2013 and 2014. Exports mainly arrived at the Elba Island terminal in Georgia and the Everett terminal in New England, either to fulfill long-term contract obligations or to take advantage of temporarily high local prices due to cold snaps and disruptions. Higher prices for LNG elsewhere in the world have made the United States a market of last resort for LNG suppliers.<sup>18</sup>

### **Pipeline MLPs**

The Pipeline MLP Industry is ranked in the top quartile of all industries covered in *VL*. Pipeline MLPs are high-yield equities that give investors a way to partake in growing energy

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<sup>17</sup> Short Term Energy Outlook, U.S. Energy Information Administration, January 8, 2013, <http://www.eia.gov/forecasts/steo/report/natgas.cfm>.

<sup>18</sup> *Ibid.*

demand with minimal exposure to commodity price fluctuations. The MLP Industry consists of tax-advantaged oil and gas processing and distribution companies. They may not pay state or federal corporate income taxes. Instead, the general partnerships typically pay out all of their distributable income to unit-holders less a small portion retained to fund growth. MLPs own storage, processing, and transportation facilities, and charge customers fees for storing, processing, and transporting hydrocarbons. They do not usually take title to hydrocarbons and, thus, are not generally directly exposed to commodity price risk. MLPs are operated by a general partner, an entity that sometimes trades separately.<sup>19</sup>

MLPs present unique tax implications for investors. In January 2013, the current 15% tax rate on capital gains and dividends is set to expire. This would drive those rates to 20% and 39.6%, respectively. Additionally, investment income will be subject to an increase of 3.8% for Medicare HI tax, bringing the total taxable amount for these two items to 23.8% and 43.4%, respectively. This could have a significant effect on the equity markets as a whole. However, the unique tax implications of MLPs may leave them relatively unchanged. Also, many investors in these companies are already accustomed to paying higher tax rates on the distribution income received from MLP investments. This is due to the fact that many MLPs do not pay income tax on earnings assuming the bulk of those earnings are paid out as distributions to unit-holders, leaving the unit-holder responsible to pay the tax portion of investment income received.

Most of the companies in the Pipeline MLPs Industry reported on by *VL* have been boosting their capital budgets in an effort to expand into the much publicized shale plays. Just to name a few, Kinder Morgan Energy Partners has one of the more aggressive plans, calling for \$11 billion worth of investments in the next few years according to Bryan J. Fong of *VL*. And, Enterprise Product Partners has almost \$8 billion in capital expenditure slated for construction through 2015. Meanwhile, Kinder Morgan Energy Partners, Williams Partners, Energy Transfer Partners, and Boardwalk Pipeline have all recently completed some form of acquisition, either by increasing an equity stake in an existing holding, or making an outright purchase of a pipeline.<sup>20</sup>

While the *VL* Pipeline MLPs are ranked in the top quartile of all industries covered by *VL*, the Natural Gas (Diversified) Industry<sup>21</sup> is ranked in the lower half of the pack for 2013 relative to price performance. Looking further out, *VL* expected solid growth for the industry out

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<sup>19</sup> Fong, Bryan J. "Pipeline MLPs", *The Value Line Investment Survey*, December 7, 2012, 612.

<sup>20</sup> *Ibid.*

<sup>21</sup> 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.

to 2015-2017, according to Michael Napoli of VL.<sup>22</sup>

### Gas Pipeline Transportation Business Locations

The geographic spread of the Gas Pipeline Transportation industry is complicated by the fact that many pipelines cross state and regional boundaries. Therefore, the starting point of interstate pipelines (or location of the natural gas resource) and the volume of gas delivered is used as the basis for geographic spread.



On this basis, the Southwest region is the most prominent (accounting for more than 31.8% of interstate natural gas shipments), followed by the Southeast (31.0%) and the Plains (10.8%). The most significant states are Texas (21.9% of states) and Louisiana (9.2%). About 6.0% of natural gas shipments originate in the Gulf of Mexico and are split between the Southeast and Southwest regions for the purposes of this analysis. Regional gas markets in the US have different demographics, various weather patterns

and distinct natural gas customer profiles. In the colder, seasonal markets, regional transportation and distribution systems are designed to meet space-heating demands by residential and commercial customers, and are interlaced with backup storage and peaking facilities. In less weather-sensitive markets, where natural gas demand is mainly for electric

<sup>22</sup> Napoli, Michael F. "Natural Gas (Diversified) Industry," *Value Line Investment Survey*, December 7, 2012, 518.



power generation or industrial usage, storage is needed less for backup and more to support short-term demand fluctuations and system balancing.<sup>23</sup> The above map illustrates the Natural Gas Pipeline Transportation Industry's business locations in 2012.<sup>24</sup>

### **Gas Pipeline Transportation Risk Rating**

*IBISWorld Inc.* annually produces an *IBISWorld Industry Risk Rating Report*. In December 2012, 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 and does not include the recovery of natural gas from wells or the processing of natural gas. The forecast period encompasses all of 2013. 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.<sup>25</sup>

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.<sup>26</sup>

Growth Risk Analysis — is expected to be MEDIUM over the outlook period. *IBISWorld* forecasts that annual industry revenue will grow 2.2% to \$18.7 billion. In comparison, revenue expanded 1.5% per year between 2010 and 2012. The Gas Pipeline Transportation industry has expanded during the five years to 2012, growing at an estimated average annual rate of 0.6% to \$18.3 billion in 2012.

Sensitivity Risk Analysis for the year 2013 is forecast to be LOW over the outlook period, down marginally from 2012. The two factors with the most significant impact on the industry are demand from electric power consumption and the industrial production index. A

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<sup>23</sup> Krabeepetcharat, Andrew. "Gas Pipeline Transportation in the US," *IBISWorld Industry Report 48621*, December 2012, 16.

<sup>24</sup> *Ibid.*, 15.

<sup>25</sup> "IBISWorld Industry Risk Rating Report 48621, Gas Pipeline Transportation in the US," *IBISWorld*, December 2012, 2.

<sup>26</sup> *Ibid.*, 2-3.

rise in either of these factors will lower industry risk.

Electric power consumption: 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*.<sup>27</sup>

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 an average 1.4% annually in the 10 years to 2017, while U.S. GDP is forecast to grow an annualized 1.8% during the same period. However, industry activity is poised to expand over the next five years, as new gas pipelines enter service.

The industry's product is well established and the technology required to transport natural gas has not changed rapidly during the past 10 years. Technological change has taken place outside the industry as natural gas producers increasingly use hydraulic fracturing to access shale gas locked deep in the earth's surface. Additionally, the industry has experienced considerable M&A activity since the early 2000s, with financially troubled firms (the most notable example being Enron) selling their assets. Other firms have used these sales as an opportunity to secure assets that offer synergies with their existing operations.

While the industry's service is not new, and the technology employed is changing less rapidly than in other areas of business activity, the industry is expected to stage a solid revival over the next five years. Large natural gas discoveries in the Marcellus Shale region have the industry buzzing. Natural gas producers have started production from shale gas beds at accelerating rates and industry players are scrambling to meet the increased demand for transport from these regions to distributors.<sup>28</sup>

### **Natural Gas Pipeline Transportation Outlook**

The Gas Pipeline Transportation industry has expanded during the five years through 2012, growing at an estimated annualized rate of 0.6% to \$18.3 billion in 2012. Rising revenue is due to rate increases by the Federal Energy Regulation 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 its rate increases during the past five years as industry firms invested in their assets to accommodate natural gas volume growth. Despite the recession, natural gas volume grew during

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<sup>27</sup> *Ibid.*, 3.

<sup>28</sup> *Ibid.*, 7.

the past five years as electricity generation firms increasingly used natural gas as a cheap alternative to coal. Natural gas volume growth added to industry revenue during 2012, with revenue expected to increase 3.0% during the year.<sup>29</sup>

Additionally, large discoveries of natural gas reserves in the Marcellus Shale Basin in the northern Appalachians, northeast of Texas and the Rocky Mountains, have led to substantial growth in the amount of natural gas available. In turn, natural gas production firms are transporting higher volumes of natural gas. Because of advances in new hydraulic fracturing technology that allow for enhanced reservoir contact, these previously untapped reserves are now available. The Oil Drilling and Gas Extraction industry (IBISWorld report 21111) has found large potential reserves and accelerated its production of natural gas, which ultimately needs to be transported.

After modest growth during the five years through 2012, industry revenue will ramp up over the next five years. Electricity generation firms will continue to demand natural gas at higher volumes 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 during the next five years, which will lead to strong growth in the amount of natural gas that needs to be transported. In response, industry 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 expected to grow by an average rate of 2.7% annually to \$20.9 billion in the five years to 2017.<sup>30</sup> All of the political and economic factors discussed in this section will affect the typical investor's cost of capital as the elements of business 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 accept a particular investment opportunity if the expected return on that opportunity is less than the cost of capital required to compensate for the risk involved. 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

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<sup>29</sup> *Op. Cit.*, Krabeepetcharat, 4.

<sup>30</sup> *Ibid.*

used by appraisers to estimate *market value*.<sup>31</sup> 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.<sup>32</sup>] This rate of return is often referred to as the discount rate or the opportunity cost of capital.<sup>33</sup> 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.*<sup>34</sup>

The estimated cost of capital in this report for the Interstate Natural Gas Pipeline Industry as of January 1, 2013, 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.

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<sup>31</sup> 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*, 13<sup>th</sup> ed., (Chicago: Appraisal Institute, 2008), 23.

<sup>32</sup> William N. Kinnard, Jr., *Income Property Valuation*, (Lexington: Heath Lexington Books, 1982), 70.

<sup>33</sup> Richard A. Brealey and Stewart C. Meyers, *Principles of Corporate Finance*, 4<sup>th</sup> ed., (New York: McGraw-Hill, 1991), 13.

<sup>34</sup> *The Appraisal of Real Estate*, 11<sup>th</sup> ed., (Chicago: Appraisal Institute, 1996), 44.

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.

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

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

where

*K* = Weighted Average Cost of Capital  
*D* = Proportion of Debt in Capital Structure  
*K<sub>d</sub>* = Cost of Debt  
*E* = Proportion of Equity in Capital Structure  
*K<sub>e</sub>* = Cost of Equity

Figure 1

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.<sup>35</sup>

### Cost of Capital Study Results

The cost of capital for the Interstate Natural Gas Pipeline Industry as of January 1, 2013 is estimated to be 10.62% (rounded to **10.60%**) 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%	5.56%	1.67%
Equity	70.00%	12.79%	8.95%
Totals	100.00%		10.62%

<sup>35</sup> *SBBI (Stocks, Bonds, Bills and Inflation)*, 2010 Yearbook: Valuation Edition, (Chicago: Morningstar, Inc., 2010), 21.

## 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.<sup>36</sup>

The weights assigned to equity and debt in calculating the weighted average cost of capital have to be based upon market value, not book value. The rationale rests on the fact that the cost of capital measures the cost of issuing securities, stocks as well as bonds, to finance projects, and that these securities are issued at market value, not at book value.<sup>37</sup>

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.

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<sup>36</sup> Eugene F. Brigham and Louis C. Gapenski, *Financial Management*, 7<sup>th</sup> ed. (New York: The Dryden Press, 1994), 599.

<sup>37</sup> Aswath Damodaran, *Investment Valuation*, (New York, NY: John Wiley & Sons, Inc., 1996), p. 64.

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.<sup>38</sup>

**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.<sup>39</sup>

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

Since depreciation-generated funds have the same cost as the firm's WACC when retained earnings are used for the equity component, it is not necessary to consider them when estimating the WACC...Therefore, deferred taxes, like depreciation, have a cost equal to the firm's WACC using retained earnings as the equity component. Indeed, deferred taxes arise solely because a firm records a different depreciation expense on its tax books than on the books used to report income to shareholders... Deferred taxes are treated the same way as depreciation cash flows: they are not included when estimating the firm's WACC...<sup>40</sup>

The appropriate capital structure for use in estimating the INGPI's cost of capital is the

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<sup>38</sup> John Downes and Jordan Elliot Goodman, *Dictionary of Finance and Investment Terms*, (New York: Barron's, 1985), 54.

<sup>39</sup> *Ibid.*, 132.

<sup>40</sup> Eugene F. Brigham and Louis C. Gapenski, *Financial Management*, 7<sup>th</sup> ed. (New York: The Dryden Press, 1994), 368-369.

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 2013. The capital structure study involved the following companies we believe to be representative of the interstate natural gas transmission pipeline industry: 19 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; 45 companies that make up the *Value Line* Oil/Gas Distribution and the Pipeline Master Limited Partnerships (MLPs); 33 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); 36 companies identified as the *Value Line* Pipeline MLPs, a relatively new category of companies separately compiled by *Value Line*, and 11 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 54 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.

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."<sup>41</sup> 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.

### Summary of Capital Structure Data

<b>Value Line Data - Medians</b>	<b>Debt</b>	<b>Pref. Stk.</b>	<b>Com. Stk.</b>
Value Line Natural Gas Diversified Industry	26.69%	0.00%	73.04%
Value Line Oil/Gas Distribution Industry + MLPs	30.92%	0.00%	68.93%
VL Natural Gas Divers. & Oil/Gas Dist./MLP - Large	32.70%	0.00%	65.86%
Interstate Natural Gas Pipeline Forum (Pipelines)	32.93%	0.00%	67.08%
Value Line Pipeline MLPs	30.18%	0.00%	69.83%
All Companies in S&P 500 with "BBB-" Rated Debt	25.86%	0.00%	74.15%
<b>Averages</b>	<b>29.88%</b>	<b>0.00%</b>	<b>69.81%</b>

<b>S&amp;P Data - Medians</b>	<b>Debt</b>	<b>Pref. Stk.</b>	<b>Com. Stk.</b>
Value Line Natural Gas Diversified Industry	28.63%	0.00%	71.37%
Value Line Oil/Gas Distribution Industry + MLPs	31.66%	0.00%	68.19%
VL Natural Gas Divers. & Oil/Gas Dist./MLP - Large	34.18%	0.00%	64.13%
Interstate Natural Gas Pipeline Forum (Pipelines)	35.29%	0.00%	63.79%
Value Line Pipeline MLPs	30.48%	0.00%	69.52%
All Companies in S&P 500 with "BBB-" Rated Debt	28.95%	0.00%	71.05%
<b>Averages</b>	<b>31.53%</b>	<b>0.00%</b>	<b>68.01%</b>

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<sup>41</sup> *SBBI (Stocks, Bonds, Bills and Inflation), 2012 Yearbook: Valuation Edition*, (Chicago: Morningstar, Inc., 2012) p. 15.

**Value Line Natural Gas Diversified Industry  
Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
Cabot Oil & Gas 'A'	COG	8.58%	0.00%	91.42%
Callon Pete Co	CPE	42.08%	0.00%	57.92%
Chesapeake Energy	CHK	52.72%	10.12%	37.17%
Cimarex Energy	XEC	13.68%	0.00%	86.32%
Crosstex Energy	XTXI	58.50%	0.00%	41.50%
Devon Energy	DVN	27.67%	0.00%	72.33%
EOG Resources	EOG	15.62%	0.00%	84.38%
EQT Corp.	EQT	21.69%	0.00%	78.31%
Encana Corp.	ECA			
Energen Corp.	EGN	24.98%	0.00%	75.02%
Linn Energy LLC	LINE	48.37%	0.00%	51.63%
MDU Resources	MDU	26.69%	0.27%	73.04%
National Fuel Gas	NFG	21.27%	0.00%	78.73%
Newfield Exploration	NFX	46.16%	0.00%	53.84%
Pengrowth Energy	PGH			
Penn Virginia Corp.	PVA	76.36%	0.00%	23.64%
Questar Corp.	STR	21.22%	0.00%	78.78%
Quicksilver Res.	KWK	81.73%	0.00%	18.27%
Southwestern Energy	SWN	12.38%	0.00%	87.62%
	Average	35.28%	0.61%	64.11%
	Median	26.69%	0.00%	73.04%

Source: *Value Line*, January 2013.

**Value Line Oil/Gas Distribution Industry + MLPs  
Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
Atlas Energy LP	ATLS	35.31%	0.00%	64.69%
Atlas Pipeline Partners L.P.	APL	31.07%	0.00%	68.93%
Boardwalk Pipeline	BWP	35.08%	0.00%	64.92%
Buckeye Partners L.P.	BPL	36.11%	0.00%	63.89%
Cheniere Energy Partners L.P.	CQP	36.04%	0.00%	63.96%
Clean Energy Fuels	CLNE	20.24%	0.00%	79.76%
Copano Energy	CPNO	29.03%	7.58%	63.39%
Crestwood Midstream Partners	CMLP	33.12%	0.00%	66.88%
Crosstex Energy LP	XTEX	45.01%	6.86%	48.13%
DCP Midstream Partners LP	DPM	29.28%	0.00%	70.72%
Eagle Rock Energy Partners Ltd	EROC	40.05%	0.00%	59.95%
El Paso Pipeline	EPB	34.18%	0.00%	65.82%
Enbridge Energy Mgmt LLC	EEQ	0.00%	0.00%	100.00%
Enbridge Energy Partners LLP	EEO	37.22%	0.00%	62.78%
Enbridge Inc.	ENB.TO			
Energy Transfer	ETP	43.77%	0.00%	56.23%
Energy Transfer Equity L.P.	ETE	57.18%	0.23%	42.59%
Enterprise Products	EPD	23.88%	0.00%	76.12%
EQT Midstream Partners LP	EQM	14.79%	0.00%	85.21%
Ferrellgas Partners L P	FGP	43.30%	0.00%	56.70%
Genesis Energy	GEL	21.77%	0.00%	78.23%
Holly Energy Partners L.P.	HEP	31.23%	0.00%	68.77%
Inergy L.P.	NRGY	17.58%	0.00%	82.42%
Kinder Morgan Energy	KMP	35.08%	0.00%	64.92%
Kinder Morgan Inc.	KMI	46.03%	0.00%	53.97%
Magellan Midstream	MMP	17.04%	0.00%	82.96%
Markwest Energy Partners LP	MWE	28.89%	0.00%	71.11%
ONEOK Inc.	OKE	41.79%	0.00%	58.21%
ONEOK Partners LP	OKS	27.63%	0.00%	72.37%
PAA Natural Gas Storage L.P.	PNG	23.01%	0.00%	76.99%
Pembina Pipeline Corp.	PPL.TO			
Plains All Amer. Pipe.	PAA	26.92%	0.00%	73.08%
Regency Energy Partners LP	RGP	32.69%	1.42%	65.89%
Spectra Energy	SE	35.11%	0.89%	64.00%
Spectra Energy Partners LP	SEP	13.94%	0.00%	86.06%
Suburban Propane	SPH	19.20%	0.00%	80.80%
Sunoco Logistics Partners L.P.	SXL	23.03%	0.00%	76.97%
Targa Resources Partners LP	NGLS	32.71%	0.00%	67.29%
TC PipeLines LP	TCP	23.65%	0.00%	76.35%
Tesoro Logistics LP	TLLP	19.96%	0.00%	80.04%
TransCanada Corp.	TRP			
TransMontaigne Partners L.P.	TLP	15.35%	0.00%	84.65%
Western Gas Partners LP	WES	17.51%	0.00%	82.49%
Williams Cos.	WMB	30.77%	0.00%	69.23%
Williams Partners L.P.	WPZ	31.08%	0.00%	68.92%
	Average	29.44%	0.40%	70.15%
	Median	30.92%	0.00%	68.93%

Source: Value Line, January 2013.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large  
Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
Atlas Energy LP	ATLS	35.31%	0.00%	64.69%
Atlas Pipeline Partners L.P.	APL	31.07%	0.00%	68.93%
Boardwalk Pipeline	BWP	35.08%	0.00%	64.92%
Buckeye Partners L.P.	BPL	36.11%	0.00%	63.89%
Copano Energy	CPNO	29.03%	7.58%	63.39%
Crosstex Energy LP	XTEX	45.01%	6.86%	48.13%
DCP Midstream Partners LP	DPM	29.28%	0.00%	70.72%
Eagle Rock Energy Partners Ltd	EROC	40.05%	0.00%	59.95%
El Paso Pipeline	EPB	34.18%	0.00%	65.82%
Enbridge Energy Partners LLP	EEP	37.22%	0.00%	62.78%
Enbridge Inc.	ENB.TO			
Energy Transfer	ETP	43.77%	0.00%	56.23%
Energy Transfer Equity L.P.	ETE	57.18%	0.23%	42.59%
Enterprise Products	EPD	23.88%	0.00%	76.12%
Ferrellgas Partners L P	FGP	43.30%	0.00%	56.70%
Genesis Energy	GEL	21.77%	0.00%	78.23%
Inergy L.P.	NRGY	17.58%	0.00%	82.42%
Kinder Morgan Energy	KMP	35.08%	0.00%	64.92%
Kinder Morgan Inc.	KMI	46.03%	0.00%	53.97%
Magellan Midstream	MMP	17.04%	0.00%	82.96%
Markwest Energy Partners LP	MWE	28.89%	0.00%	71.11%
ONEOK Inc.	OKE	41.79%	0.00%	58.21%
ONEOK Partners LP	OKS	27.63%	0.00%	72.37%
Pembina Pipeline Corp.	PPL.TO			
Plains All Amer. Pipe.	PAA	26.92%	0.00%	73.08%
Regency Energy Partners LP	RGP	32.69%	1.42%	65.89%
Spectra Energy	SE	35.11%	0.89%	64.00%
Suburban Propane	SPH	19.20%	0.00%	80.80%
Sunoco Logistics Partners L.P.	SXL	23.03%	0.00%	76.97%
Targa Resources Partners LP	NGLS	32.71%	0.00%	67.29%
TransCanada Corp.	TRP			
Williams Cos.	WMB	30.77%	0.00%	69.23%
Williams Partners L.P.	WPZ	31.08%	0.00%	68.92%
	Average	32.93%	0.57%	66.51%
	Median	32.70%	0.00%	65.86%

Source: *Value Line*, January 2013.

**Value Line Pipeline MLPs  
Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
Atlas Energy LP	ATLS	35.31%	0.00%	64.69%
Atlas Pipeline Partners L.P.	APL	31.07%	0.00%	68.93%
Boardwalk Pipeline	BWP	35.08%	0.00%	64.92%
Buckeye Partners L.P.	BPL	36.11%	0.00%	63.89%
Cheniere Energy Partners L.P.	CQP	36.04%	0.00%	63.96%
Crestwood Midstream Partners	CMLP	33.12%	0.00%	66.88%
Crosstex Energy LP	XTEX	45.01%	6.86%	48.13%
DCP Midstream Partners LP	DPM	29.28%	0.00%	70.72%
EQT Midstream Partners LP	EQM	14.79%	0.00%	85.21%
Eagle Rock Energy Partners Ltd	EROC	40.05%	0.00%	59.95%
El Paso Pipeline	EPB	34.18%	0.00%	65.82%
Enbridge Energy Mgmt LLC	EEQ	0.00%	0.00%	100.00%
Enbridge Energy Partners LLP	EEP	37.22%	0.00%	62.78%
Energy Transfer	ETP	43.77%	0.00%	56.23%
Energy Transfer Equity L.P.	ETE	57.18%	0.23%	42.59%
Enterprise Products	EPD	23.88%	0.00%	76.12%
Ferrellgas Partners L P	FGP	43.30%	0.00%	56.70%
Genesis Energy	GEL	21.77%	0.00%	78.23%
Holly Energy Partners L.P.	HEP	31.23%	0.00%	68.77%
Inergy L.P.	NRGY	17.58%	0.00%	82.42%
Kinder Morgan Energy	KMP	35.08%	0.00%	64.92%
Magellan Midstream	MMP	17.04%	0.00%	82.96%
Markwest Energy Partners LP	MWE	28.89%	0.00%	71.11%
ONEOK Partners LP	OKS	27.63%	0.00%	72.37%
PAA Natural Gas Storage L.P.	PNG	23.01%	0.00%	76.99%
Plains All Amer. Pipe.	PAA	26.92%	0.00%	73.08%
Regency Energy Partners LP	RGP	32.69%	1.42%	65.89%
Spectra Energy Partners LP	SEP	13.94%	0.00%	86.06%
Suburban Propane	SPH	19.20%	0.00%	80.80%
Sunoco Logistics Partners L.P.	SXL	23.03%	0.00%	76.97%
TC PipeLines LP	TCP	23.65%	0.00%	76.35%
Targa Resources Partners LP	NGLS	32.71%	0.00%	67.29%
Tesoro Logistics LP	TLLP	19.96%	0.00%	80.04%
TransMontaigne Partners L.P.	TLP	15.35%	0.00%	84.65%
Western Gas Partners LP	WES	17.51%	0.00%	82.49%
Williams Partners L.P.	WPZ	31.08%	0.00%	68.92%
	Average	28.71%	0.24%	71.05%
	Median	30.18%	0.00%	69.83%

Source: *Value Line*, January 2013.

**Interstate Natural Gas Pipeline Forum (Pipelines)  
Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
Boardwalk Pipeline	BWP	35.08%	0.00%	64.92%
CenterPoint Energy	CNP	49.83%	0.00%	50.17%
Dominion Resources	D	36.13%	0.00%	63.87%
Kinder Morgan Inc.	KMI	46.03%	0.00%	53.97%
MDU Resources	MDU	26.69%	0.27%	73.04%
National Fuel Gas	NFG	21.27%	0.00%	78.73%
ONEOK Partners LP	OKS	27.63%	0.00%	72.37%
Questar Corp.	STR	21.22%	0.00%	78.78%
Spectra Energy	SE	35.11%	0.89%	64.00%
TransCanada Corp.	TRP			
Williams Cos.	WMB	30.77%	0.00%	69.23%
	Average	32.98%	0.12%	66.91%
	Median	32.93%	0.00%	67.08%

Source: *Value Line*, January 2013.

**Interstate Natural Gas Pipeline Forum (Pipelines)  
Capital Structure (S&P Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
BOARDWALK PIPELINE PRTRNS-LP	BWP	36.67%	0.00%	63.33%
CENTERPOINT ENERGY INC	CNP	50.56%	0.00%	49.44%
DOMINION RESOURCES INC	D	36.35%	0.54%	63.11%
KINDER MORGAN INC	KMI	46.98%	0.00%	53.01%
MDU RESOURCES GROUP INC	MDU	27.18%	0.27%	72.55%
NATIONAL FUEL GAS CO	NFG	21.38%	0.00%	78.62%
ONEOK PARTNERS -LP	OKS	28.82%	0.00%	71.18%
QUESTAR CORP	STR	22.23%	0.00%	77.77%
SPECTRA ENERGY CORP	SE	35.29%	0.92%	63.79%
TRANSCANADA CORP	TRP	35.68%	2.31%	62.01%
WILLIAMS COS INC	WMB	31.66%	0.00%	68.34%
	Average	33.89%	0.37%	65.74%
	Median	35.29%	0.00%	63.79%

Source: *S&P Compustat*, January 2013.

**All Companies in S&P 500 with "BBB-" Rated Debt  
Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
ADT Corp. (The)	ADT			
Alcoa Inc.	AA	45.66%	0.30%	54.04%
Allegheny Techn.	ATI	29.74%	0.00%	70.26%
Ameren Corp.	AEE	47.26%	0.00%	52.74%
Anadarko Petroleum	APC	25.09%	0.00%	74.91%
AutoNation Inc.	AN	26.62%	0.00%	73.38%
Avon Products	AVP	27.43%	0.00%	72.57%
Beam Inc.	BEAM	18.64%	0.03%	81.33%
Big Lots Inc.	BIG	21.60%	0.00%	78.40%
Boston Scientific	BSX	34.35%	0.00%	65.65%
CMS Energy Corp.	CMS	50.90%	0.00%	49.10%
Cliffs Natural Res.	CLF	41.28%	0.00%	58.72%
ConAgra Foods	CAG	22.82%	0.00%	77.18%
Coventry Health Care	CVH	20.94%	0.00%	79.06%
Discover Fin'l Svcs.	DFS	48.64%	0.00%	51.36%
Dollar General	DG	17.10%	0.00%	82.90%
Edison Int'l	EIX	47.53%	5.41%	47.06%
Expedia Inc.	EXPE	12.52%	0.00%	87.48%
FLIR Systems	FLIR	6.54%	0.00%	93.46%
Family Dollar Stores	FDO	7.23%	0.00%	92.77%
First Horizon National	FHN	52.10%	4.91%	42.99%
FirstEnergy Corp.	FE	47.07%	0.00%	52.93%
Fiserv Inc.	FISV	24.20%	0.00%	75.80%
Flowserve Corp.	FLS	10.27%	0.00%	89.73%
Genworth Fin'l	GNW	64.98%	0.00%	35.02%
Harman Int'l	HAR	0.00%	0.00%	100.00%
Health Care REIT	HCN			
Jabil Circuit	JBL	29.28%	0.00%	70.72%
L-3 Communic.	LLL	34.64%	0.00%	65.36%
Lam Research	LRCX	16.08%	0.00%	83.92%
Lorillard Inc.	LO	16.90%	0.00%	83.10%
Masco Corp.	MAS	35.96%	0.00%	64.04%
Molson Coors Brewing	TAP	30.74%	0.00%	69.26%
Newell Rubbermaid	NWL	17.40%	0.00%	82.60%
Newfield Exploration	NFX	46.16%	0.00%	53.84%
NiSource Inc.	NI	46.44%	0.00%	53.56%
Pioneer Natural Res.	PXD	20.35%	0.00%	79.65%
Prologis	PLD			
Red Hat Inc.	RHT	0.00%	0.00%	100.00%
Regions Financial	RF	36.72%	0.00%	63.28%
Reynolds American	RAI	9.47%	0.00%	90.53%
Rowan Cos. plc	RDC	24.67%	0.00%	75.33%
SLM Corporation	SLM			
Southwest Airlines	LUV	26.94%	0.00%	73.06%
Southwestern Energy	SWN	12.38%	0.00%	87.62%
Textron Inc.	TXT	32.46%	0.00%	67.54%
Tyler Technologies Corp.	TYL	1.80%	0.00%	98.20%
Tyson Foods 'A'	TSN	24.16%	0.00%	75.84%

**All Companies in S&P 500 with "BBB-" Rated Debt (cont.)**  
**Capital Structure (VL Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
Weyerhaeuser Co.	WY	19.47%	0.00%	80.53%
Whirlpool Corp.	WHR	18.85%	0.00%	81.15%
Whole Foods Market	WFM	0.11%	0.00%	99.89%
Wyndham Worldwide	WYN	34.72%	0.00%	65.28%
Xerox Corp.	XRX	44.25%	2.07%	53.68%
Zions Bancorp.	ZION	30.53%	14.74%	54.73%
	Average	27.22%	0.55%	72.23%
	Median	25.86%	0.00%	74.15%

Source: *Value Line*, January 2013.



**Value Line Natural Gas Diversified Industry  
Capital Structure (S&P Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
CABOT OIL & GAS CORP	COG	8.64%	0.00%	91.36%
CALLON PETROLEUM CO/DE	CPE	44.75%	0.00%	55.25%
CHESAPEAKE ENERGY CORP	CHK	53.06%	10.18%	36.76%
CIMAREX ENERGY CO	XEC	14.25%	0.00%	85.75%
CROSSTEX ENERGY INC	XTXI	59.34%	0.00%	40.66%
DEVON ENERGY CORP	DVN	28.63%	0.00%	71.37%
ENCANA CORP	ECA	34.78%	0.00%	65.22%
ENERGEN CORP	EGN	26.21%	0.00%	73.79%
EOG RESOURCES INC	EOG	16.16%	0.00%	83.84%
EQT CORP	EQT	22.17%	0.00%	77.83%
LINN ENERGY LLC	LINE	49.30%	0.00%	50.70%
MDU RESOURCES GROUP INC	MDU	27.18%	0.27%	72.55%
NATIONAL FUEL GAS CO	NFG	21.38%	0.00%	78.62%
NEWFIELD EXPLORATION CO	NFX	46.83%	0.00%	53.17%
PENGROWTH ENERGY CORP	PGH	40.13%	0.00%	59.87%
PENN VIRGINIA CORP	PVA	76.92%	0.00%	23.08%
QUESTAR CORP	STR	22.23%	0.00%	77.77%
QUICKSILVER RESOURCES INC	KWK	81.40%	0.00%	18.60%
SOUTHWESTERN ENERGY CO	SWN	12.65%	0.00%	87.35%
	Average	36.11%	0.55%	63.34%
	Median	28.63%	0.00%	71.37%

Source: S&P Compustat, January 2013.

**Value Line Oil/Gas Distribution Industry + MLPs  
Capital Structure (S&P Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
ATLAS ENERGY LP	ATLS	35.87%	0.00%	64.13%
ATLAS PIPELINE PARTNER LP	APL	31.37%	0.00%	68.63%
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.67%	0.00%	63.33%
BUCKEYE PARTNERS LP	BPL	37.50%	0.00%	62.50%
CHENIERE ENERGY PARTNERS LP	CQP	28.21%	0.00%	71.79%
CLEAN ENERGY FUELS CORP	CLNE	21.87%	0.00%	78.13%
COPANO ENERGY LLC	CPNO	29.79%	7.77%	62.44%
CRESTWOOD MIDSTREAM PTNRS LP	CMLP	34.11%	0.00%	65.89%
CROSSTEX ENERGY LP	XTEX	46.98%	7.04%	45.98%
DCP MIDSTREAM PARTNERS LP	DPM	29.59%	0.00%	70.41%
EAGLE ROCK ENERGY PARTNRS LP	EROC	41.30%	0.00%	58.70%
EL PASO PIPELINE PARTNERS LP	EPB	34.73%	0.00%	65.27%
ENBRIDGE ENERGY MGMT LLC	EEQ	0.00%	0.00%	100.00%
ENBRIDGE ENERGY PRTNRS -LP	EEP	38.21%	0.00%	61.79%
ENBRIDGE INC	ENB	33.42%	5.90%	60.68%
ENERGY TRANSFER EQUITY LP	ETE	58.37%	0.00%	41.63%
ENERGY TRANSFER PARTNERS -LP	ETP	45.19%	0.00%	54.81%
ENTERPRISE PRODS PRTNRS -LP	EPD	24.65%	0.00%	75.35%
EQT MIDSTREAM PARTNERS LP	EQM	15.85%	0.00%	84.15%
FERRELLGAS PARTNERS -LP	FGP	44.54%	0.00%	55.46%
GENESIS ENERGY -LP	GEL	22.33%	0.00%	77.67%
HOLLY ENERGY PARTNERS LP	HEP	31.89%	0.00%	68.11%
INERGY LP	NRGY	23.60%	0.00%	76.40%
KINDER MORGAN ENERGY -LP	KMP	36.53%	0.00%	63.47%
KINDER MORGAN INC	KMI	46.98%	0.00%	53.01%
MAGELLAN MIDSTREAM PRTNRS LP	MMP	18.02%	0.00%	81.98%
MARKWEST ENERGY PARTNERS LP	MWE	26.45%	0.00%	73.55%
ONEOK INC	OKE	42.70%	0.00%	57.30%
ONEOK PARTNERS -LP	OKS	28.82%	0.00%	71.18%
PAA NATURAL GAS STORAGE LP	PNG	26.76%	0.00%	73.24%
PEMBINA PIPELINE CORP	PBA	22.92%	0.00%	77.08%
PLAINS ALL AMER PIPELINE -LP	PAA	27.92%	0.00%	72.08%
REGENCY ENERGY PARTNERS LP	RGP	34.18%	1.26%	64.56%
SPECTRA ENERGY CORP	SE	35.29%	0.92%	63.79%
SPECTRA ENERGY PARTNERS LP	SEP	14.24%	0.00%	85.76%
SUBURBAN PROPANE PRTNRS -LP	SPH	39.09%	0.00%	60.91%
SUNOCO LOGISTICS PARTNERS LP	SXL	24.01%	0.00%	75.99%
TARGA RESOURCES PARTNERS LP	NGLS	33.27%	0.00%	66.73%
TC PIPELINES LP	TCP	24.19%	0.00%	75.81%
TESORO LOGISTICS LP	TLLP	20.40%	0.00%	79.60%
TRANSCANADA CORP	TRP	35.68%	2.31%	62.01%
TRANSMONTAIGNE PARTNERS LP	TLP	15.67%	0.00%	84.33%
WESTERN GAS PARTNERS LP	WES	18.11%	0.00%	81.89%
WILLIAMS COS INC	WMB	31.66%	0.00%	68.34%
WILLIAMS PARTNERS LP	WPZ	31.81%	0.00%	68.19%
	Average	30.68%	0.56%	68.76%
	Median	31.66%	0.00%	68.19%

Source: S&P Compustat, January 2013

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large  
Capital Structure (S&P Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
ATLAS ENERGY LP	ATLS	35.87%	0.00%	64.13%
ATLAS PIPELINE PARTNER LP	APL	31.37%	0.00%	68.63%
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.67%	0.00%	63.33%
BUCKEYE PARTNERS LP	BPL	37.50%	0.00%	62.50%
COPANO ENERGY LLC	CPNO	29.79%	7.77%	62.44%
CROSSTEX ENERGY LP	XTEX	46.98%	7.04%	45.98%
DCP MIDSTREAM PARTNERS LP	DPM	29.59%	0.00%	70.41%
EAGLE ROCK ENERGY PARTNRS LP	EROC	41.30%	0.00%	58.70%
EL PASO PIPELINE PARTNERS LP	EPB	34.73%	0.00%	65.27%
ENBRIDGE ENERGY PRTNRS -LP	EEP	38.21%	0.00%	61.79%
ENBRIDGE INC	ENB	33.42%	5.90%	60.68%
ENERGY TRANSFER EQUITY LP	ETE	58.37%	0.00%	41.63%
ENERGY TRANSFER PARTNERS -LP	ETP	45.19%	0.00%	54.81%
ENTERPRISE PRODS PRTNRS -LP	EPD	24.65%	0.00%	75.35%
FERRELLGAS PARTNERS -LP	FGP	44.54%	0.00%	55.46%
GENESIS ENERGY -LP	GEL	22.33%	0.00%	77.67%
INERGY LP	NRGY	23.60%	0.00%	76.40%
KINDER MORGAN ENERGY -LP	KMP	36.53%	0.00%	63.47%
KINDER MORGAN INC	KMI	46.98%	0.00%	53.01%
MAGELLAN MIDSTREAM PRTNRS LP	MMP	18.02%	0.00%	81.98%
MARKWEST ENERGY PARTNERS LP	MWE	26.45%	0.00%	73.55%
ONEOK INC	OKE	42.70%	0.00%	57.30%
ONEOK PARTNERS -LP	OKS	28.82%	0.00%	71.18%
PEMBINA PIPELINE CORP	PBA	22.92%	0.00%	77.08%
PLAINS ALL AMER PIPELNE -LP	PAA	27.92%	0.00%	72.08%
REGENCY ENERGY PARTNERS LP	RGP	34.18%	1.26%	64.56%
SPECTRA ENERGY CORP	SE	35.29%	0.92%	63.79%
SUBURBAN PROPANE PRTNRS -LP	SPH	39.09%	0.00%	60.91%
SUNOCO LOGISTICS PARTNERS LP	SXL	24.01%	0.00%	75.99%
TARGA RESOURCES PARTNERS LP	NGLS	33.27%	0.00%	66.73%
TRANSCANADA CORP	TRP	35.68%	2.31%	62.01%
WILLIAMS COS INC	WMB	31.66%	0.00%	68.34%
WILLIAMS PARTNERS LP	WPZ	31.81%	0.00%	68.19%
	Average	34.23%	0.76%	65.01%
	Median	34.18%	0.00%	64.13%

Source: S&P Compustat, January 2013.

**Value Line Pipeline MLPs**  
**Capital Structure (S&P Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
ATLAS ENERGY LP	ATLS	35.87%	0.00%	64.13%
ATLAS PIPELINE PARTNER LP	APL	31.37%	0.00%	68.63%
BOARDWALK PIPELINE PRTNRS-LP	BWP	36.67%	0.00%	63.33%
BUCKEYE PARTNERS LP	BPL	37.50%	0.00%	62.50%
CHENIERE ENERGY PARTNERS LP	CQP	28.21%	0.00%	71.79%
CRESTWOOD MIDSTREAM PTNRS LP	CMLP	34.11%	0.00%	65.89%
CROSSTEX ENERGY LP	XTEX	46.98%	7.04%	45.98%
DCP MIDSTREAM PARTNERS LP	DPM	29.59%	0.00%	70.41%
EAGLE ROCK ENERGY PARTNRS LP	EROC	41.30%	0.00%	58.70%
EL PASO PIPELINE PARTNERS LP	EPB	34.73%	0.00%	65.27%
ENBRIDGE ENERGY MGMT LLC	EEQ	0.00%	0.00%	100.00%
ENBRIDGE ENERGY PRTNRS -LP	EEP	38.21%	0.00%	61.79%
ENERGY TRANSFER EQUITY LP	ETE	58.37%	0.00%	41.63%
ENERGY TRANSFER PARTNERS -LP	ETP	45.19%	0.00%	54.81%
ENTERPRISE PRODS PRTNRS -LP	EPD	24.65%	0.00%	75.35%
EQT MIDSTREAM PARTNERS LP	EQM	15.85%	0.00%	84.15%
FERRELLGAS PARTNERS -LP	FGP	44.54%	0.00%	55.46%
GENESIS ENERGY -LP	GEL	22.33%	0.00%	77.67%
HOLLY ENERGY PARTNERS LP	HEP	31.89%	0.00%	68.11%
INERGY LP	NRGY	23.60%	0.00%	76.40%
KINDER MORGAN ENERGY -LP	KMP	36.53%	0.00%	63.47%
MAGELLAN MIDSTREAM PRTNRS LP	MMP	18.02%	0.00%	81.98%
MARKWEST ENERGY PARTNERS LP	MWE	26.45%	0.00%	73.55%
ONEOK PARTNERS -LP	OKS	28.82%	0.00%	71.18%
PAA NATURAL GAS STORAGE LP	PNG	26.76%	0.00%	73.24%
PLAINS ALL AMER PIPELNE -LP	PAA	27.92%	0.00%	72.08%
REGENCY ENERGY PARTNERS LP	RGP	34.18%	1.26%	64.56%
SPECTRA ENERGY PARTNERS LP	SEP	14.24%	0.00%	85.76%
SUBURBAN PROPANE PRTNRS -LP	SPH	39.09%	0.00%	60.91%
SUNOCO LOGISTICS PARTNERS LP	SXL	24.01%	0.00%	75.99%
TARGA RESOURCES PARTNERS LP	NGLS	33.27%	0.00%	66.73%
TC PIPELINES LP	TCP	24.19%	0.00%	75.81%
TESORO LOGISTICS LP	TLLP	20.40%	0.00%	79.60%
TRANSMONTAIGNE PARTNERS LP	TLP	15.67%	0.00%	84.33%
WESTERN GAS PARTNERS LP	WES	18.11%	0.00%	81.89%
WILLIAMS PARTNERS LP	WPZ	31.81%	0.00%	68.19%
	Average	30.01%	0.23%	69.76%
	Median	30.48%	0.00%	69.52%

Source: S&P Compustat, January 2013.

**All Companies in S&P 500 with "BBB-" Rated Debt  
Capital Structure (S&P Data) - January 1, 2013**

Company Name	Ticker	LTD %	PS %	CS %
ADT CORP (THE)	ADT	19.03%	0.00%	80.97%
ALCOA INC	AA	47.14%	0.31%	52.55%
ALLEGHENY TECHNOLOGIES INC	ATI	31.00%	0.00%	69.00%
AMEREN CORP	AEE	47.64%	0.00%	52.36%
ANADARKO PETROLEUM CORP	APC	26.08%	0.00%	73.92%
AUTONATION INC	AN	27.84%	0.00%	72.16%
AVON PRODUCTS	AVP	29.75%	0.00%	70.25%
BEAM INC	BEAM	18.64%	0.03%	81.33%
BIG LOTS INC	BIG	22.13%	0.00%	77.87%
BOSTON SCIENTIFIC CORP	BSX	35.09%	0.00%	64.91%
CLIFFS NATURAL RESOURCES INC	CLF	40.60%	0.00%	59.40%
CMS ENERGY CORP	CMS	51.45%	0.33%	48.22%
CONAGRA FOODS INC	CAG	23.26%	0.00%	76.74%
COVENTRY HEALTH CARE INC	CVH	20.84%	0.00%	79.16%
DISCOVER FINANCIAL SVCS INC	DFS	51.04%	0.00%	48.96%
DOLLAR GENERAL CORP	DG	17.26%	0.00%	82.74%
EDISON INTERNATIONAL	EIX	45.41%	5.83%	48.77%
EXPEDIA INC	EXPE	13.06%	0.00%	86.94%
FAMILY DOLLAR STORES	FDO	6.38%	0.00%	93.62%
FIRST HORIZON NATIONAL CORP	FHN	48.03%	0.00%	51.97%
FIRSTENERGY CORP	FE	47.22%	0.00%	52.78%
FISERV INC	FISV	24.58%	0.00%	75.42%
FLIR SYSTEMS INC	FLIR	6.90%	0.00%	93.10%
FLOWERVE CORP	FLS	10.69%	0.00%	89.31%
GENWORTH FINANCIAL INC	GNW	67.17%	0.00%	32.83%
HARMAN INTERNATIONAL INDS	HAR	0.00%	0.00%	100.00%
HEALTH CARE REIT INC	HCN	30.18%	4.22%	65.60%
JABIL CIRCUIT INC	JBL	29.81%	0.00%	70.19%
L-3 COMMUNICATIONS HLDGS INC	LLL	34.96%	0.00%	65.04%
LAM RESEARCH CORP	LRCX	16.80%	0.00%	83.20%
LORILLARD INC	LO	17.04%	0.00%	82.96%
MASCO CORP	MAS	37.06%	0.00%	62.94%
MOLSON COORS BREWING CO	TAP	30.72%	0.00%	69.28%
MYLAN INC	MYL	30.24%	0.00%	69.76%
NEWELL RUBBERMAID INC	NWL	17.58%	0.00%	82.42%
NEWFIELD EXPLORATION CO	NFX	46.83%	0.00%	53.17%
NISOURCE INC	NI	46.95%	0.00%	53.05%
PIONEER NATURAL RESOURCES CO	PXD	21.33%	0.00%	78.67%
PROLOGIS INC	PLD	41.96%	1.94%	56.10%
RED HAT INC	RHT	0.00%	0.00%	100.00%
REGIONS FINANCIAL CORP	RF	38.19%	0.00%	61.81%
REYNOLDS AMERICAN INC	RAI	9.75%	0.00%	90.25%
ROWAN COS PLC	RDC	26.40%	0.00%	73.60%
SLM CORP	SLM	94.80%	0.35%	4.85%
SOUTHWEST AIRLINES	LUV	28.15%	0.00%	71.85%
SOUTHWESTERN ENERGY CO	SWN	12.65%	0.00%	87.35%
TEXTRON INC	TXT	33.71%	0.00%	66.29%
TYSON FOODS INC -CL A	TSN	21.58%	0.00%	78.42%

**All Companies in S&P 500 with "BBB-" Rated Debt (cont.)**  
**Capital Structure (S&P Data) - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>LTD %</b>	<b>PS %</b>	<b>CS %</b>
WEYERHAEUSER CO	WY	20.80%	0.00%	79.20%
WHIRLPOOL CORP	WHR	19.48%	0.00%	80.52%
WHOLE FOODS MARKET INC	WFM	0.14%	0.00%	99.86%
WYNDHAM WORLDWIDE CORP	WYN	35.86%	0.00%	64.14%
XEROX CORP	XRX	45.24%	2.12%	52.64%
ZIONS BANCORPORATION	ZION	31.68%	15.15%	53.16%
	Average	29.59%	0.56%	69.84%
	Median	28.95%	0.00%	71.05%

Source: *S&P Compustat*, January 2013.

## 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.<sup>42</sup> 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.<sup>43</sup>

From information in *Standard and Poor's Compustat* and *Mergent Bond Record* databases we found the *Standard & Poor's* and *Moody's* long-term senior debt ratings to range from **BB+** to **BBB+** and **Ba2** to **Baa2**, respectively, for the typical interstate natural gas pipeline. The predominant ratings were **BBB-** and **Baa3**, respectively. This information is presented in the following table:

**Summary of Pipeline Long-Term Debt Ratings - January 1, 2013**

<b>Averages</b>	<b>S&amp;P Ratings</b>		<b>Moody's Ratings</b>	
Value Line Natural Gas Diversified Industry	BBB-	12	Ba1	13
Value Line Oil/Gas Distribution Ind. + MLPs	BB+	13	Ba2	14
VL Natural Gas Diversified & Oil/Gas Dist./MLP - Large	BB+	13	Ba1	13
Value Line Master Limited Partnerships	BB+	13	Ba2	14
Interstate Natural Gas Pipeline Forum (Pipelines)	BBB+	10	Baa2	11
<b>Average</b>	<b>BBB-</b>	<b>12</b>	<b>Ba1</b>	<b>13</b>
<b>Medians</b>				
Value Line Natural Gas Diversified Industry (All)	BBB	11	Baa3	12
Value Line Oil/Gas Distribution Ind. + MLPs	BBB-	12	Baa3	12
VL Natural Gas Diversified & Oil/Gas Dist./MLP - Large	BBB-	12	Baa3	12
Value Line Master Limited Partnerships	BB+	13	Baa3	12
Interstate Natural Gas Pipeline Forum (Pipelines)	BBB+	10	Baa2	11
<b>Average</b>	<b>BBB-</b>	<b>12</b>	<b>Baa3</b>	<b>12</b>

<sup>42</sup> Brigham, Eugene F. & Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 10<sup>th</sup> ed. (Thomson Learning, Inc.: Stamford, CT, 2002), p. 423.

<sup>43</sup> *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 24

The Reuters Corporate Bond Spread Tables for Utilities, Industrials, and Transportations are shown beginning below.

### Reuters Corporate Spreads for Utilities

Jan. 2013 Rating	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	30 yr	Lg Trm Yld
Aaa/AAA	35	40	46	54	62	71	82	3.84
Aa1/AA+	37	44	51	59	67	76	89	3.91
Aa2/AA	39	48	55	64	71	80	96	3.98
Aa3/AA-	40	52	59	69	76	85	103	4.05
A1/A+	42	55	64	74	81	89	110	4.12
A2/A	44	59	68	79	86	94	117	4.19
A3/A-	56	71	80	91	98	106	129	4.31
Baa1/BBB+	75	93	102	114	121	129	153	4.55
Baa2/BBB	75	97	111	127	138	150	186	4.88
Baa3/BBB-	109	139	156	178	192	207	254	5.56
Ba1/BB+	153	187	211	240	265	291	348	6.50
Ba2/BB	196	234	265	303	337	376	441	7.43
Ba3/BB-	240	282	320	365	410	460	535	8.37
B1/B+	284	330	375	427	483	545	629	9.31
B2/B	328	378	430	490	555	629	723	10.25
B3/B-	371	425	484	552	628	714	816	11.18
Caa/CCC+	415	473	539	615	700	798	910	12.12
US Treasury	0.14	0.26	0.36	0.75	1.24	1.86	3.02	

### Reuters Corporate Spreads for Industrials

Jan. 2013 Rating	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	30 yr	Lg Trm Yld
Aaa/AAA	4	6	10	16	26	41	65	3.67
Aa1/AA+	22	31	38	46	54	65	89	3.91
Aa2/AA	40	56	65	76	82	90	112	4.14
Aa3/AA-	40	56	65	77	84	92	115	4.17
A1/A+	40	56	65	77	85	93	117	4.19
A2/A	54	69	78	89	96	103	127	4.29
A3/A-	67	90	104	121	132	144	181	4.83
Baa1/BBB+	83	106	120	137	149	161	198	5.00
Baa2/BBB	109	134	148	166	178	191	230	5.32
Baa3/BBB-	162	182	194	209	218	229	260	5.62
Ba1/BB+	235	256	270	287	299	313	344	6.46
Ba2/BB	309	330	347	366	381	397	429	7.31
Ba3/BB-	382	405	423	444	462	481	513	8.15
B1/B+	455	479	500	522	543	566	597	8.99
B2/B	528	553	576	601	625	650	681	9.83
B3/B-	602	627	652	679	706	734	766	10.68
Caa/CCC+	675	701	729	757	787	818	850	11.52
US Treasury	0.14	0.26	0.36	0.75	1.24	1.86	3.02	

Source: *BondsOnline* Group, Thompson Reuters



## Reuters Corporate Spreads for Transportations

Jan. 2013 Rating	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	30 yr	Lg Trm Yld
Aaa/AAA	9	11	15	21	31	46	70	3.72
Aa1/AA+	27	36	43	51	59	70	94	3.96
Aa2/AA	45	61	70	81	87	95	117	4.19
Aa3/AA-	45	61	70	82	89	97	120	4.22
A1/A+	45	61	70	82	90	98	122	4.24
A2/A	59	74	83	94	101	108	132	4.34
A3/A-	72	95	109	126	137	149	186	4.88
Baa1/BBB+	88	111	125	142	154	166	203	5.05
Baa2/BBB	114	139	153	171	183	196	235	5.37
Baa3/BBB-	167	187	199	214	223	234	265	5.67
Ba1/BB+	240	261	275	292	304	318	349	6.51
Ba2/BB	314	335	352	371	386	402	434	7.36
Ba3/BB-	387	410	428	449	467	486	518	8.20
B1/B+	460	484	505	527	548	571	602	9.04
B2/B	533	558	581	606	630	655	686	9.88
B3/B-	607	632	657	684	711	739	771	10.73
Caa/CCC+	680	706	734	762	792	823	855	11.57
US Treasury	0.14	0.26	0.36	0.75	1.24	1.86	3.02	

### Average Reuters Corporate Long-Term Yields

Jan. 2013 Rating	Avg. 30 yr Spread	Average Lg-Trm Yld
Aaa/AAA	72	3.74
Aa1/AA+	91	3.93
Aa2/AA	108	4.10
Aa3/AA-	113	4.15
A1/A+	116	4.18
A2/A	125	4.27
A3/A-	165	4.67
Baa1/BBB+	185	4.87
Baa2/BBB	217	5.19
Baa3/BBB-	260	5.62
Ba1/BB+	347	6.49
Ba2/BB	435	7.37
Ba3/BB-	522	8.24
B1/B+	609	9.11
B2/B	697	9.99
B3/B-	784	10.86
Caa/CCC+	872	11.74
US Treasury	3.02	

Source: *BondsOnline* Group, Thompson Reuters

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 2012. The yields for the **Baa** Utility, Corporate, and Industrial bonds were 4.56%, 4.63%, and 4.70%, respectively, at the end of year 2012. The indicated long-term yields of **BBB-** rated bonds for Utilities, Industrials, and Transportations, respectively, provided by *BondsOnline* Group, Thompson Reuters, were 5.56%, 5.62% and 5.67% at the beginning of January 2013. From the information discussed we estimated the appropriate cost of debt capital rated **BBB-** to be **5.50%** at January 1, 2013.

The following tables indicate the long-term debt ratings for the various natural gas industry groups, along with the Reuters yields for the correspondent Standard & Poor's bond ratings. This information is coupled with the Reuters yields to maturity (YTM) for public utility bonds and corporate bonds.

**Value Line Natural Gas Diversified Industry**  
**Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Mergent Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>
Cabot Oil & Gas 'A'	COG					
Callon Pete Co	CPE					
Chesapeake Energy	CHK	BB-	15	Ba3	15	8.24
Cimarex Energy	XEC	BB+	13	Ba1	13	6.49
Crosstex Energy	XTXI			B2	17	
Devon Energy	DVN	BBB+	10	Baa1	10	4.87
EOG Resources	EOG	A-	9	A3	9	4.67
EQT Corp.	EQT	BBB	11	Baa2	11	5.19
Encana Corp.	ECA	BBB	11	Baa2	11	5.19
Energen Corp.	EGN	BBB	11	Baa3	12	5.19
Linn Energy LLC	LINE	B+	16	B2	17	9.11
MDU Resources	MDU	BBB+	10			4.87
National Fuel Gas	NFG	BBB	11	Baa1	10	5.19
Newfield Exploration	NFX	BBB-	12	Ba2	14	5.62
Pengrowth Energy	PGH					
Penn Virginia Corp.	PVA	B	17	B3	18	9.99
Questar Corp.	STR	A	8	A3	9	4.27
Quicksilver Res.	KWK	B-	18	B3	18	10.86
Southwestern Energy	SWN	BBB-	12	Baa3	12	5.62
	Average	BBB-	12	Ba1	13	5.62
	Median	BBB	11	Baa3	12	5.19

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**Value Line Oil/Gas Distribution Industry + MLPs  
Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2013**

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Reuters Avg. Yields
Atlas Energy LP	ATLS			Caa1	19	
Atlas Pipeline Partners L.P.	APL	B+	16	B2	17	9.11
Boardwalk Pipeline	BWP	BBB	11	Baa2	11	5.19
Buckeye Partners L.P.	BPL	BBB	11	Baa3	12	5.19
Cheniere Energy Part. L.P.	CQP	B+	16			9.11
Clean Energy Fuels	CLNE					
Copano Energy	CPNO	B+	16	B1	16	9.11
Crestwood Midstream Part.	CMLP	B	17	B3	18	9.99
Crosstex Energy LP	XTEX	B+	16	B2	17	9.11
DCP Midstream Partners LP	DPM	BBB-	12	Baa3	12	5.62
Eagle Rock Energy Part. Ltd	EROC	B	17	B3	18	9.99
El Paso Pipeline	EPB	BBB-	12	Ba1	13	5.62
Enbridge Energy Mgmt LLC	EEQ					
Enbridge Energy Part. LLP	EEP	BBB	11	Baa2	11	5.19
Enbridge Inc.	ENB.TO	A-	9	Baa1	10	4.67
Energy Transfer	ETP	BBB-	12			5.62
Energy Transfer Equity L.P.	ETE	BB	14	Baa3	12	7.37
Enterprise Products	EPD	BBB	11	Baa2	11	5.19
EQT Midstream Part. LP	EQM					
Ferrellgas Partners L P	FGP	B	17	B2	17	9.99
Genesis Energy	GEL	BB-	15	B2	17	8.24
Holly Energy Part. L.P.	HEP	BB	14	B1	16	7.37
Inergy L.P.	NRGY			Ba3	15	
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.19
Kinder Morgan Inc.	KMI	BB	14	Ba2	14	7.37
Magellan Midstream	MMP	BBB	11	Baa2	11	5.19
Markwest Energy Part. LP	MWE	BB	14	Ba3	15	7.37
ONEOK Inc.	OKE	BBB	11	Ba2	14	5.19
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.19
PAA Nat. Gas Storage L.P.	PNG					
Pembina Pipeline Corp.	PPL.TO	BBB	11			5.19
Plains All Amer. Pipe.	PAA	BBB	11	Baa2	11	5.19
Regency Energy Part. LP	RGP	BB	14	B1	16	7.37
Spectra Energy	SE	BBB+	10	Baa2	11	4.87
Spectra Energy Part. LP	SEP	BBB	11	Baa3	12	5.19
Suburban Propane	SPH	BB-	15			8.24
Sunoco Logistics Part. L.P.	SXL	BBB-	12	Baa3	12	5.62
Targa Resources Part. LP	NGLS	BB	14	Ba3	15	7.37
TC PipeLines LP	TCP	BBB	11	Baa2	11	5.19
Tesoro Logistics LP	TLLP	BB-	15	B1	16	8.24
TransCanada Corp.	TRP	A-	9	A3	9	4.67
TransMontaigne Part. L.P.	TLP					
Western Gas Partners LP	WES	BB+	13	Baa3	12	6.49
Williams Cos.	WMB	BBB	11	Baa3	12	5.19
Williams Partners L.P.	WPZ	BBB	11	Baa2	11	5.19
	Average	BB+	13	Ba2	14	6.49
	Median	BBB-	12	Baa3	12	5.62

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large**  
**Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2013**

Company Name	Ticker	S&P Rating	Numerical Rating	Mergent Rating	Numerical Rating	Reuters Avg. Yields
Atlas Energy LP	ATLS			Caa1	19	
Atlas Pipeline Partners L.P.	APL	B+	16	B2	17	9.11
Boardwalk Pipeline	BWP	BBB	11	Baa2	11	5.19
Buckeye Partners L.P.	BPL	BBB	11	Baa3	12	5.19
Copano Energy	CPNO	B+	16	B1	16	9.11
Crosstex Energy LP	XTEX	B+	16	B2	17	9.11
DCP Midstream Partners LP	DPM	BBB-	12	Baa3	12	5.62
Eagle Rock Energy Part. Ltd	EROC	B	17	B3	18	9.99
El Paso Pipeline	EPB	BBB-	12	Ba1	13	5.62
Enbridge Energy Part. LLP	EEP	BBB	11	Baa2	11	5.19
Enbridge Inc.	ENB.TO	A-	9	Baa1	10	4.67
Energy Transfer	ETP	BBB-	12			5.62
Energy Transfer Equity L.P.	ETE	BB	14	Baa3	12	7.37
Enterprise Products	EPD	BBB	11	Baa2	11	5.19
Ferrellgas Partners L P	FGP	B	17	B2	17	9.99
Genesis Energy	GEL	BB-	15	B2	17	8.24
Inergy L.P.	NRGY			Ba3	15	
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.19
Kinder Morgan Inc.	KMI	BB	14	Ba2	14	7.37
Magellan Midstream	MMP	BBB	11	Baa2	11	5.19
Markwest Energy Part. LP	MWE	BB	14	Ba3	15	7.37
ONEOK Inc.	OKE	BBB	11	Ba2	14	5.19
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.19
Pembina Pipeline Corp.	PPL.TO	BBB	11			5.19
Plains All Amer. Pipe.	PAA	BBB	11	Baa2	11	5.19
Regency Energy Part. LP	RGP	BB	14	B1	16	7.37
Spectra Energy	SE	BBB+	10	Baa2	11	4.87
Suburban Propane	SPH	BB-	15			8.24
Sunoco Logistics Part. L.P.	SXL	BBB-	12	Baa3	12	5.62
Targa Resources Part. LP	NGLS	BB	14	Ba3	15	7.37
TransCanada Corp.	TRP	A-	9	A3	9	4.67
Williams Cos.	WMB	BBB	11	Baa3	12	5.19
Williams Partners L.P.	WPZ	BBB	11	Baa2	11	5.19
	Average	BB+	13	Ba1	13	6.49
	Median	BBB-	12	Baa3	12	5.62

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**Value Line Pipeline MLPs**  
**Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Mergent Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>
Atlas Energy LP	ATLS			Caa1	19	
Atlas Pipeline Partners L.P.	APL	B+	16	B2	17	9.11
Boardwalk Pipeline	BWP	BBB	11	Baa2	11	5.19
Buckeye Partners L.P.	BPL	BBB	11	Baa3	12	5.19
Cheniere Energy Part. L.P.	CQP	B+	16			9.11
Crestwood Midstream Part.	CMLP	B	17	B3	18	9.99
Crosstex Energy LP	XTEX	B+	16	B2	17	9.11
DCP Midstream Part. LP	DPM	BBB-	12	Baa3	12	5.62
EQT Midstream Part. LP	EQM					
Eagle Rock Energy Part. Ltd	EROC	B	17	B3	18	9.99
El Paso Pipeline	EPB	BBB-	12	Ba1	13	5.62
Enbridge Energy Mgmt LLC	EEQ					
Enbridge Energy Part. LLP	EEP	BBB	11	Baa2	11	5.19
Energy Transfer	ETP	BBB-				
Energy Transfer Equity L.P.	ETE	BB	14	Baa3	12	7.37
Enterprise Products	EPD	BBB	11	Baa2	11	5.19
Ferrellgas Partners L P	FGP	B	17	B2	17	9.99
Genesis Energy	GEL	BB-	15	B2	17	8.24
Holly Energy Part. L.P.	HEP	BB	14	B1	16	7.37
Inergy L.P.	NRGY			Ba3	15	
Kinder Morgan Energy	KMP	BBB	11	Baa2	11	5.19
Magellan Midstream	MMP	BBB	11	Baa2	11	5.19
Markwest Energy Part. LP	MWE	BB	14	Ba3	15	7.37
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.19
PAA Nat. Gas Storage L.P.	PNG					
Plains All Amer. Pipe.	PAA	BBB	11	Baa2	11	5.19
Regency Energy Part. LP	RGP	BB	14	B1	16	7.37
Spectra Energy Part. LP	SEP	BBB	11	Baa3	12	5.19
Suburban Propane	SPH	BB-	15			8.24
Sunoco Logistics Part. L.P.	SXL	BBB-	12	Baa3	12	5.62
TC PipeLines LP	TCP	BBB	11	Baa2	11	5.19
Targa Resources Part. LP	NGLS	BB	14	Ba3	15	7.37
Tesoro Logistics LP	TLLP	BB-	15	B1	16	8.24
TransMontaigne Part. L.P.	TLP					
Western Gas Partners LP	WES	BB+	13	Baa3	12	6.49
Williams Partners L.P.	WPZ	BBB	11	Baa2	11	5.19
	Average	BB+	13	Ba2	14	6.49
	Median	BB+	13	Baa3	12	6.49

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

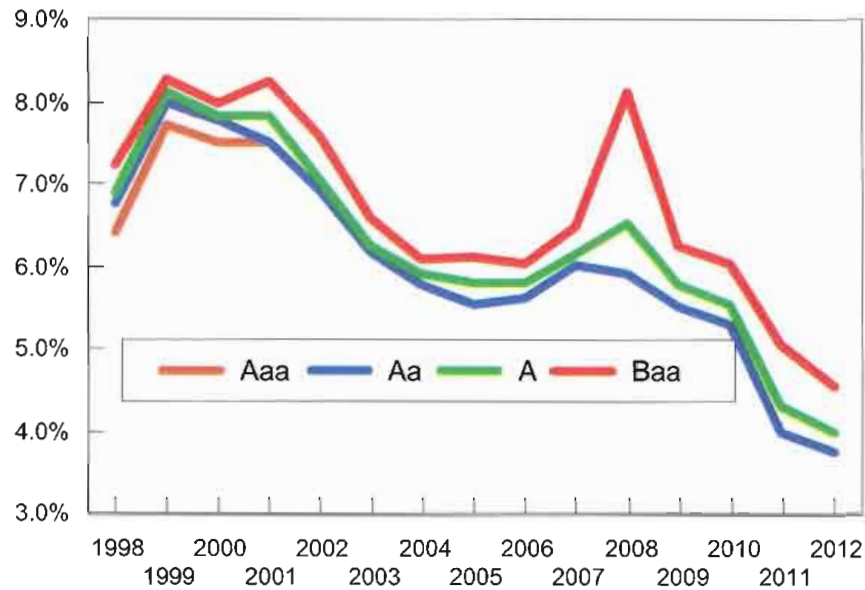
**Interstate Natural Gas Pipeline Forum (Pipelines)**  
**Long-Term Debt Ratings & Corporate Bond Yields - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Mergent Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>
Boardwalk Pipeline	BWP	BBB	11	Baa2	11	5.19
CenterPoint Energy	CNP	BBB+	10	A3	9	4.87
Dominion Resources	D	A-	9	Baa2	11	4.67
Kinder Morgan Inc.	KMI	BB	14	Ba2	14	7.37
MDU Resources	MDU	BBB+	10			4.87
National Fuel Gas	NFG	BBB	11	Baa1	10	5.19
ONEOK Partners LP	OKS	BBB	11	Baa2	11	5.19
Questar Corp.	STR	A	8	A3	9	4.27
Spectra Energy	SE	BBB+	10	Baa2	11	4.87
TransCanada Corp.	TRP	A-	9	A3	9	4.67
Williams Cos.	WMB	BBB	11	Baa3	12	5.19
	Average	BBB+	10	Baa2	11	4.87
	Median	BBB+	10	Baa2	11	4.87

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

## Mergent Utility Bond Yields

Moody's Utility Bond Yield Avg.  
Utility Avg. Year End. 1998 - 2012



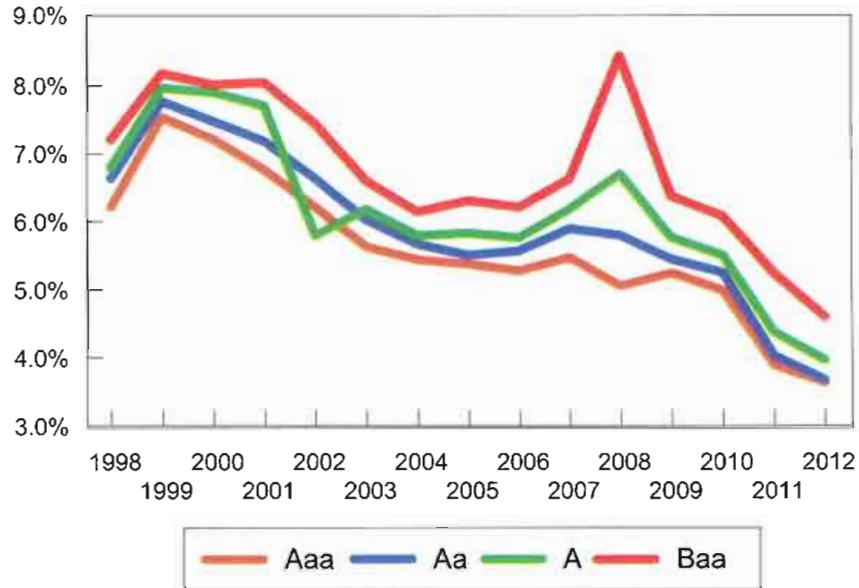
Public Utility Bond Yields - Year End Data (1998 - 2012)				
Year End Date	Aaa	Aa	A	Baa
1998	6.43%	6.78%	6.91%	7.24%
1999	7.74%	8.00%	8.14%	8.28%
2000	7.51%	7.79%	7.84%	8.01%
2001	7.53%	7.53%	7.83%	8.27%
2002	---	6.94%	7.07%	7.61%
2003	---	6.18%	6.27%	6.61%
2004	---	5.78%	5.92%	6.10%
2005	---	5.55%	5.80%	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%
2012	---	3.75%	4.00%	4.56%

Source: Mergent's Bond Record, January 1999 - 2013



## Mergent Corporate Bond Yields

**Moody's Corporate Bond Yield Avg.  
Corp. Avg. Year End. 1998 - 2012**



Corp. Bond Yields - Year End Data (1998 - 2012)				
Year End Date	Aaa	Aa	A	Baa
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%
2012	3.65%	3.70%	3.98%	4.63%

Source: Mergent's Bond Record, January 1999 - 2013.

## 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 **12.25%**. 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, 2013

Company Groups	Value Line Data		S&P (IBES) Data	
	Average	Median	Average	Median
Value Line Natural Gas (Diversified)	15.94	11.10	14.89	11.18
Value Line Oil/Gas Distribution + MLPs	15.61	14.46	18.85	17.26
VL Nat. Gas Diversified, Oil/Gas Dist./MLPs - Large	16.14	14.59	18.72	17.26
Value Line Pipeline MLPs	16.00	15.63	18.97	17.45
Interstate Natural Gas Pipeline Forum (Pipes)	12.04	12.04	13.47	10.25
S&P Screened Comparables Group	14.28	14.50	13.11	13.24
All Companies in S&P 500 with "BBB-" Rated Debt	16.42	14.30	13.08	12.63
<b>Averages</b>	<b>15.20</b>	<b>13.80</b>	<b>15.87</b>	<b>14.18</b>

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, 2013

#### General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
30-Year Treasury Bonds (ex post)	2.95	6.70	9.65
30-Year Treasury Bonds (ex ante)	2.95	9.80	12.75

#### Risk Premium Indicators by Groups

Indicators	Median S&P Rating		Reuters Yields	Risk Prem. Indicator
	Rating	Number		
Value Line Natural Gas Diversified Industry	BBB	11	5.19	10.59
Value Line Oil/Gas Distribution Industry + MLPs	BBB-	12	5.62	11.02
VL Nat. Gas Divers., Oil/Gas Dist./MLP - Large	BBB-	12	5.62	11.02
Value Line Pipeline MLPs	BB+	13	6.49	11.89
Interstate Natural Gas Pipeline Forum (Pipes)	BBB+	10	4.87	10.27
Pipeline Screened Comparables Group	BBB	11	5.19	10.59
<b>Average</b>			<b>5.50</b>	<b>10.90</b>

\* Base Rate: Average YTM for Reuters Utilities, Industrials, Transportations, *BondsOnline*, Thompson Reuters. Risk Premium: 2013 Ibbotson Risk Premia Over Time Report.

### Capital Asset Pricing Model (CAPM) - January 1, 2013

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
<b>CAPM Indicator *</b>				
Long-Term Gov't Bonds (ex post)	2.95	6.70	0.95	9.32
Long-Term Gov't Bonds (ex ante)	2.95	9.80	0.95	12.26

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

\* CAPM Indicator is based upon a *Value Line* beta of 0.95. 2013 Ibbotson S&P Risk Premia Over Time Report; & Federal Reserve data Dec. 31, 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 9,481 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-**.

(Several of these companies have double-B rated debt.) 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. 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 0.88 presently. Thus we excluded all companies with *S&P* adjusted betas less than 0.80 and greater than 1.00. 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, 2013**  
**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large (S&P Data)**

Company Name	Ticker	S&P Debt Rating Letter	S&P Debt Rating Number	S&P Adj. Beta	Return on Net Invest.
ATLAS ENERGY LP	ATLS			2.09	4.77
ATLAS PIPELINE PARTNER LP	APL	B+	16	1.34	6.03
BOARDWALK PIPELINE PRTRNS-LP	BWP	BBB	11	0.52	6.37
BUCKEYE PARTNERS LP	BPL	BBB	11	0.53	9.31
COPANO ENERGY LLC	CPNO	B+	16	1.00	5.82
CROSSTEX ENERGY LP	XTEX	B+	16	1.20	6.87
DCP MIDSTREAM PARTNERS LP	DPM	BBB-	12	1.13	10.41
EAGLE ROCK ENERGY PARTNRS LP	EROC	B	17	0.82	6.30
EL PASO PIPELINE PARTNERS LP	EPB	BBB-	12	0.51	13.48
ENBRIDGE ENERGY PRTRNS -LP	EEL	BBB	11	0.79	6.40
ENBRIDGE INC	ENB	A-	9	0.78	8.36
ENERGY TRANSFER EQUITY LP	ETE	BB	14	0.88	8.63
ENERGY TRANSFER PARTNERS -LP	ETP	BBB-	12	0.79	10.12
ENTERPRISE PRODS PRTRNS -LP	EPD	BBB	11	0.76	12.16
FERRELLGAS PARTNERS -LP	FGP	B	17	0.68	14.52
GENESIS ENERGY -LP	GEL	BB-	15	0.92	19.84
INERGY LP	NRGY			0.75	7.99
KINDER MORGAN ENERGY -LP	KMP	BBB	11	0.59	12.21
KINDER MORGAN INC	KMI	BB	14		8.58
MAGELLAN MIDSTREAM PRTRNS LP	MMP	BBB	11	0.60	15.88
MARKWEST ENERGY PARTNERS LP	MWE	BB	14	1.04	11.42
ONEOK INC	OKE	BBB	11	1.02	13.74
ONEOK PARTNERS -LP	OKS	BBB	11	0.62	16.49
PEMBINA PIPELINE CORP	PBA	BBB	11		10.29
PLAINS ALL AMER PIPELINE -LP	PAA	BBB	11	0.68	16.86
REGENCY ENERGY PARTNERS LP	RGP	BB	14	0.96	1.98
SPECTRA ENERGY CORP	SE	BBB+	10	0.98	9.66
SUBURBAN PROPANE PRTRNS -LP	SPH	BB-	15	0.63	6.95
SUNOCO LOGISTICS PARTNERS LP	SXL	BBB-	12	0.51	18.44
TARGA RESOURCES PARTNERS LP	NGLS	BB	14	1.17	12.65
TRANSCANADA CORP	TRP	A-	9	0.83	8.42
WILLIAMS COS INC	WMB	BBB	11	1.20	14.85
WILLIAMS PARTNERS LP	WPZ	BBB	11	1.09	14.23
Average		BBB-	12	0.88	10.61

Source: S&P Compustat, January 2013.

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

EQT Corp.	Safeway Inc.
Great Plains Energy	Selective Ins. Group
NiSource, Inc.	U.S. Cellular
PNM Resources	

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; 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 – 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.<sup>44</sup> 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 **14.00%** as of January 1, 2013. The result of all of the DCF analysis and research can be found on the following pages.

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<sup>44</sup> 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)	15.94	11.10	14.89	11.18
Value Line Oil/Gas Distribution + MLPs	15.61	14.46	18.85	17.26
VL Nat. Gas Divers. & Oil/Gas Dist./MLPs - Large	16.14	14.59	18.72	17.26
Value Line Pipeline MLPs	16.00	15.63	18.97	17.45
Interstate Natural Gas Pipeline Forum (Pipes)	12.04	12.04	13.47	10.25
S&P Screened Comparables Group	14.28	14.50	13.11	13.24
All Companies in S&P 500 with "BBB-" Rated Debt	16.42	14.30	13.08	12.63
<b>Averages</b>	<b>15.20</b>	<b>13.80</b>	<b>15.87</b>	<b>14.18</b>

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 DCF Indicator (VL Data) - January 1, 2013

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Cabot Oil & Gas 'A'	COG	0.16	22.50	22.66
Callon Pete Co	CPE			
Chesapeake Energy	CHK	2.08	2.00	4.08
Cimarex Energy	XEC	0.80	8.50	9.30
Crosstex Energy	XTXI	3.18		
Devon Energy	DVN	1.49	8.00	9.49
EOG Resources	EOG	0.56	26.50	27.06
EQT Corp.	EQT	0.20	14.50	14.70
Encana Corp.	ECA	4.02	6.00	10.02
Energen Corp.	EGN	1.19	8.00	9.19
Linn Energy LLC	LINE	8.17	11.00	19.17
MDU Resources	MDU	3.18	9.00	12.18
National Fuel Gas	NFG	2.86	4.50	7.36
Newfield Exploration	NFX			
Pengrowth Energy	PGH	9.61	36.50	46.11
Penn Virginia Corp.	PVA			
Questar Corp.	STR	3.36		
Quicksilver Res.	KWK		(0.50)	
Southwestern Energy	SWN		8.50	
	Average	2.92	11.79	15.94
	Median	2.47	8.50	11.10

Source: *Value Line*, January 2013.

**Value Line Oil/Gas Distribution Industry + MLPs  
DCF Indicator (VL Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Atlas Energy LP	ATLS			
Atlas Pipeline Partners L.P.	APL		11.00	
Boardwalk Pipeline	BWP	8.15	10.00	18.15
Buckeye Partners L.P.	BPL	9.03	7.50	16.53
Cheniere Energy Partners L.P.	CQP			
Clean Energy Fuels	CLNE			
Copano Energy	CPNO	7.26	32.50	39.76
Crestwood Midstream Partners	CMLP		16.60	
Crosstex Energy LP	XTEX			
DCP Midstream Partners LP	DPM		18.35	
Eagle Rock Energy Partners Ltd	EROC		15.30	
El Paso Pipeline	EPB	6.05	10.50	16.55
Enbridge Energy Mgmt LLC	EEQ		3.00	
Enbridge Energy Partners LLP	EEP		6.70	6.70
Enbridge Inc.	ENB.TO	2.62	10.00	12.62
Energy Transfer	ETP	8.12	3.00	11.12
Energy Transfer Equity L.P.	ETE		17.10	
Enterprise Products	EPD	5.22	9.50	14.72
EQT Midstream Partners LP	EQM			
Ferrellgas Partners L P	FGP			
Genesis Energy	GEL		14.73	
Holly Energy Partners L.P.	HEP		7.30	
Inergy L.P.	NRGY	6.01	18.00	24.01
Kinder Morgan Energy	KMP	6.20	13.50	19.70
Kinder Morgan Inc.	KMI	3.92		
Magellan Midstream	MMP	4.47	7.00	11.47
Markwest Energy Partners LP	MWE		2.50	
ONEOK Inc.	OKE	3.09	11.50	14.59
ONEOK Partners LP	OKS		(2.70)	
PAA Natural Gas Storage L.P.	PNG		6.20	
Pembina Pipeline Corp.	PPL.TO	5.66	1.50	7.16
Plains All Amer. Pipe.	PAA	4.83	9.50	14.33
Regency Energy Partners LP	RGP		29.40	
Spectra Energy	SE	4.39	7.50	11.89
Spectra Energy Partners LP	SEP		4.00	
Suburban Propane	SPH	8.33	(1.00)	
Sunoco Logistics Partners L.P.	SXL		10.20	
Targa Resources Partners LP	NGLS			
TC PipeLines LP	TCP			
Tesoro Logistics LP	TLLP		39.10	
TransCanada Corp.	TRP	3.69	11.50	15.19
TransMontaigne Partners L.P.	TLP			
Western Gas Partners LP	WES		19.55	
Williams Cos.	WMB	4.14	9.00	13.14
Williams Partners L.P.	WPZ	6.87	6.50	13.37
	Average	5.69	11.31	15.61
	Median	5.66	10.00	14.46

Source: *Value Line*, January 2013.



**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large  
DCF Indicator (VL Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Atlas Energy LP	ATLS			
Atlas Pipeline Partners L.P.	APL		11.00	
Boardwalk Pipeline	BWP	8.15	10.00	18.15
Buckeye Partners L.P.	BPL	9.03	7.50	16.53
Copano Energy	CPNO	7.26	32.50	39.76
Crosstex Energy LP	XTEX			
DCP Midstream Partners LP	DPM		18.35	
Eagle Rock Energy Partners Ltd	EROC		15.30	
El Paso Pipeline	EPB	6.05	10.50	16.55
Enbridge Energy Partners LLP	EEP		6.70	
Enbridge Inc.	ENB.TO	2.62	10.00	12.62
Energy Transfer	ETP	8.12	3.00	11.12
Energy Transfer Equity L.P.	ETE		17.10	
Enterprise Products	EPD	5.22	9.50	14.72
Ferrellgas Partners L P	FGP			
Genesis Energy	GEL		14.73	
Inergy L.P.	NRGY	6.01	18.00	24.01
Kinder Morgan Energy	KMP	6.20	13.50	19.70
Kinder Morgan Inc.	KMI	3.92		
Magellan Midstream	MMP	4.47	7.00	11.47
Markwest Energy Partners LP	MWE		2.50	
ONEOK Inc.	OKE	3.09	11.50	14.59
ONEOK Partners LP	OKS		(2.70)	
Pembina Pipeline Corp.	PPL.TO	5.66	1.50	7.16
Plains All Amer. Pipe.	PAA	4.83	9.50	14.33
Regency Energy Partners LP	RGP		29.40	
Spectra Energy	SE	4.39	7.50	11.89
Suburban Propane	SPH	8.33	(1.00)	
Sunoco Logistics Partners L.P.	SXL		10.20	
Targa Resources Partners LP	NGLS			
TransCanada Corp.	TRP	3.69	11.50	15.19
Williams Cos.	WMB	4.14	9.00	13.14
Williams Partners L.P.	WPZ	6.87	6.50	13.37
	Average	5.69	10.72	16.14
	Median	5.66	10.00	14.59

Source: *Value Line*, January 2013.

**Value Line Pipeline MLPs**  
DCF Indicator (VL Data) - January 1, 2013

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Atlas Energy LP	ATLS			
Atlas Pipeline Partners L.P.	APL		11.00	
Boardwalk Pipeline	BWP	8.15	10.00	18.15
Buckeye Partners L.P.	BPL	9.03	7.50	16.53
Cheniere Energy Partners L.P.	CQP			
Crestwood Midstream Partners	CMLP		16.60	
Crosstex Energy LP	XTEX			
DCP Midstream Partners LP	DPM		18.35	
EQT Midstream Partners LP	EQM			
Eagle Rock Energy Partners Ltd	EROC		15.30	
El Paso Pipeline	EPB	6.05	10.50	16.55
Enbridge Energy Mgmt LLC	EEQ		3.00	
Enbridge Energy Partners LLP	EEP		6.70	
Energy Transfer	ETP	8.12	3.00	11.12
Energy Transfer Equity L.P.	ETE		17.10	
Enterprise Products	EPD	5.22	9.50	14.72
Ferrellgas Partners L P	FGP			
Genesis Energy	GEL		14.73	
Holly Energy Partners L.P.	HEP		7.30	
Inergy L.P.	NRGY	6.01	18.00	24.01
Kinder Morgan Energy	KMP	6.20	13.50	19.70
Magellan Midstream	MMP	4.47	7.00	11.47
Markwest Energy Partners LP	MWE		2.50	
ONEOK Partners LP	OKS		(2.70)	
PAA Natural Gas Storage L.P.	PNG		6.20	
Plains All Amer. Pipe.	PAA	4.83	9.50	14.33
Regency Energy Partners LP	RGP		29.40	
Spectra Energy Partners LP	SEP		4.00	
Suburban Propane	SPH	8.33	(1.00)	
Sunoco Logistics Partners L.P.	SXL		10.20	
TC PipeLines LP	TCP			
Targa Resources Partners LP	NGLS			
Tesoro Logistics LP	TLLP		39.10	
TransMontaigne Partners L.P.	TLP			
Western Gas Partners LP	WES		19.55	
Williams Partners L.P.	WPZ	6.87	6.50	13.37
	Average	6.66	11.15	16.00
	Median	6.20	9.75	15.63

Source: *Value Line*, January 2013.

**Interstate Natural Gas Pipeline Forum (Pipelines)  
DCF Indicator (VL Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Boardwalk Pipeline	BWP	8.15	10.00	18.15
CenterPoint Energy	CNP	4.21	5.00	9.21
Dominion Resources	D	4.22	5.00	9.22
Kinder Morgan Inc.	KMI	3.92		
MDU Resources	MDU	3.18	9.00	12.18
National Fuel Gas	NFG	2.86	4.50	7.36
ONEOK Partners LP	OKS		(2.70)	
Questar Corp.	STR	3.36		
Spectra Energy	SE	4.39	7.50	11.89
TransCanada Corp.	TRP	3.69	11.50	15.19
Williams Cos.	WMB	4.14	9.00	13.14
	Average	4.21	6.53	12.04
	Median	4.03	7.50	12.04

Source: *Value Line*, January 2013.

**Interstate Natural Gas Pipeline Forum (Pipelines)  
DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
BOARDWALK PIPELINE PRTRNS-LP	BWP	9.53	11.37	20.90
CENTERPOINT ENERGY INC	CNP	4.44	5.60	10.04
DOMINION RESOURCES INC	D	4.28	5.14	9.43
KINDER MORGAN INC	KMI	4.90	20.23	25.13
MDU RESOURCES GROUP INC	MDU	3.46	6.55	10.01
NATIONAL FUEL GAS CO	NFG	3.15	9.20	12.35
ONEOK PARTNERS -LP	OKS	4.94	(2.70)	
QUESTAR CORP	STR	3.59	4.20	7.79
SPECTRA ENERGY CORP	SE	4.68	5.00	9.68
TRANSCANADA CORP	TRP	3.98	6.47	10.45
WILLIAMS COS INC	WMB	4.54	14.40	18.94
	Average	4.68	7.77	13.47
	Median	4.44	6.47	10.25

Source: *S&P Compustat*, January 2013.

**Pipeline Screened Comparables Group**  
**DCF Indicator (VL Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
EQT Corp.	EQT	0.20	14.50	14.70
G't Plains Energy	GXP	4.24	5.50	9.74
NiSource Inc.	NI	3.80	10.50	14.30
PNM Resources	PNM	2.74	16.00	18.74
Safeway Inc.	SWY	4.08	7.50	11.58
Selective Ins. Group	SIGI	2.60	14.00	16.60
U.S. Cellular	USM		5.50	
	Average	2.94	10.50	14.28
	Median	3.27	10.50	14.50

Source: *Value Line*, January 2013.

**Pipeline Screened Comparables Group**  
**DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
EQT CORP	EQT	1.69	13.20	14.89
GREAT PLAINS ENERGY INC	GXP	4.69	9.40	14.09
NISOURCE INC	NI	4.12	6.70	10.82
PNM RESOURCES INC	PNM	3.09	9.30	12.39
SAFEWAY INC	SWY	4.28	10.50	14.78
SELECTIVE INS GROUP INC	SIGI	2.93	8.75	11.68
US CELLULAR CORP	USM		5.50	
	Average	3.47	9.05	13.11
	Median	3.61	9.30	13.24

Source: *S&P Compustat*, January 2013.

**All Companies in S&P 500 with "BBB-" Rated Debt  
DCF Indicator (VL Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ADT Corp. (The)	ADT	1.08		
Alcoa Inc.	AA	1.32		
Allegheny Techn.	ATI	2.30	33.00	35.30
Ameren Corp.	AEE	5.13	(1.00)	
Anadarko Petroleum	APC	0.47		
AutoNation Inc.	AN		21.00	
Avon Products	AVP	1.53	5.00	6.53
Beam Inc.	BEAM	1.34	9.00	10.34
Big Lots Inc.	BIG		10.50	
Boston Scientific	BSX		6.00	
CMS Energy Corp.	CMS	4.09	7.00	11.09
Cliffs Natural Res.	CLF	6.55	9.50	16.05
ConAgra Foods	CAG	3.33	9.00	12.33
Coventry Health Care	CVH	1.12	7.50	8.62
Discover Fin'l Svcs.	DFS	1.42	18.50	19.92
Dollar General	DG		20.50	
Edison Int'l	EIX	2.91		
Expedia Inc.	EXPE	0.82	14.50	15.32
FLIR Systems	FLIR	1.34	7.00	8.34
Family Dollar Stores	FDO	1.50	14.50	16.00
First Horizon National	FHN	0.39		
FirstEnergy Corp.	FE	5.23	5.00	10.23
Fiserv Inc.	FISV		10.50	
Flowserve Corp.	FLS	0.94	8.50	9.44
Genworth Fin'l	GNW		34.50	
Harman Int'l	HAR	1.30	18.00	19.30
Health Care REIT	HCN	4.98		
Jabil Circuit	JBL	1.74	16.50	18.24
L-3 Communic.	LLL	2.64	4.00	6.64
Lam Research	LRCX		10.50	
Lorillard Inc.	LO	5.21	13.50	18.71
Masco Corp.	MAS	1.73	54.00	55.73
Molson Coors Brewing	TAP	2.98	4.50	7.48
Newell Rubbermaid	NWL	2.67	14.00	16.67
Newfield Exploration	NFX			
NiSource Inc.	NI	3.80	10.50	14.30
Pioneer Natural Res.	PXD	0.07	31.00	31.07
Prologis	PLD	3.20		
Red Hat Inc.	RHT		18.50	
Regions Financial	RF	0.54		
Reynolds American	RAI	5.52	9.00	14.52
Rowan Cos. plc	RDC		12.00	
SLM Corporation	SLM	2.88	7.50	10.38
Southwest Airlines	LUV	0.37	20.00	20.37
Southwestern Energy	SWN		8.50	
Textron Inc.	TXT	0.31	25.00	25.31
Tyler Technologies Corp.	TYL		18.13	
Tyson Foods 'A'	TSN	0.98	12.50	13.48

**All Companies in S&P 500 with "BBB-" Rated Debt (cont.)**  
**DCF Indicator (VL Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
Weyerhaeuser Co.	WY	2.33		
Whirlpool Corp.	WHR	1.87	6.00	7.87
Whole Foods Market	WFM	0.87	22.50	23.37
Wyndham Worldwide	WYN	1.66	12.50	14.16
Xerox Corp.	XRX	2.36	9.50	11.86
Zions Bancorp.	ZION	0.18		
	Average	2.21	14.14	16.42
	Median	1.70	10.50	14.30

Source: *Value Line*, January 2013.

**Value Line Natural Gas Diversified Industry**  
**DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
CABOT OIL & GAS CORP	COG	0.19	16.00	16.19
CALLON PETROLEUM CO/DE	CPE			
CHESAPEAKE ENERGY CORP	CHK	2.25	6.90	9.15
CIMAREX ENERGY CO	XEC	0.78	(5.90)	
CROSSTEX ENERGY INC	XTXI			
DEVON ENERGY CORP	DVN	1.59	3.40	4.99
ENCANA CORP	ECA	5.71	41.10	46.81
ENERGEN CORP	EGN	1.32	6.10	7.42
EOG RESOURCES INC	EOG	0.67	18.60	19.27
EQT CORP	EQT	1.69	13.20	14.89
LINN ENERGY LLC	LINE			
MDU RESOURCES GROUP INC	MDU	3.46	6.55	10.01
NATIONAL FUEL GAS CO	NFG	3.15	9.20	12.35
NEWFIELD EXPLORATION CO	NFX		15.00	
PENGROWTH ENERGY CORP	PGH	9.11	(6.80)	
PENN VIRGINIA CORP	PVA			
QUESTAR CORP	STR	3.59	4.20	7.79
QUICKSILVER RESOURCES INC	KWK			
SOUTHWESTERN ENERGY CO	SWN		10.00	
	Average	2.79	9.83	14.89
	Median	1.97	8.05	11.18

Source: *S&P Compustat*, January 2013.

**Value Line Oil/Gas Distribution Industry + MLPs  
DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATLAS ENERGY LP	ATLS	3.92	26.00	29.92
ATLAS PIPELINE PARTNER LP	APL	6.61		
BOARDWALK PIPELINE PRTNRS-LP	BWP	9.53	11.37	20.90
BUCKEYE PARTNERS LP	BPL	9.55	4.55	14.10
CHENIERE ENERGY PARTNERS LP	CQP			
CLEAN ENERGY FUELS CORP	CLNE		23.00	
COPANO ENERGY LLC	CPNO	7.64	5.00	12.64
CRESTWOOD MIDSTREAM PTNRS LP	CMLP	11.05	16.60	27.65
CROSSTEX ENERGY LP	XTEX			
DCP MIDSTREAM PARTNERS LP	DPM	7.33	12.52	19.85
EAGLE ROCK ENERGY PARTNRS LP	EROC	11.62	14.20	25.82
EL PASO PIPELINE PARTNERS LP	EPB	6.67	6.24	12.91
ENBRIDGE ENERGY MGMT LLC	EEQ		3.00	
ENBRIDGE ENERGY PRTNRS -LP	EEP	8.23	5.61	13.84
ENBRIDGE INC	ENB			
ENERGY TRANSFER EQUITY LP	ETE	6.50	18.30	24.80
ENERGY TRANSFER PARTNERS -LP	ETP	10.11	21.35	31.46
ENTERPRISE PRODS PRTNRS -LP	EPD	5.58	7.50	13.08
EQT MIDSTREAM PARTNERS LP	EQM			
FERRELLGAS PARTNERS -LP	FGP			
GENESIS ENERGY -LP	GEL	6.94	31.20	38.14
HOLLY ENERGY PARTNERS LP	HEP	5.94	5.55	11.49
INERGY LP	NRGY			
KINDER MORGAN ENERGY -LP	KMP	7.36	16.45	23.81
KINDER MORGAN INC	KMI	4.90	20.23	25.13
MAGELLAN MIDSTREAM PRTNRS LP	MMP	4.36		
MARKWEST ENERGY PARTNERS LP	MWE	6.92	9.00	15.92
ONEOK INC	OKE	3.51	13.75	17.26
ONEOK PARTNERS -LP	OKS	4.94		
PAA NATURAL GAS STORAGE LP	PNG	8.02	6.80	14.82
PEMBINA PIPELINE CORP	PBA	5.46		
PLAINS ALL AMER PIPELNE -LP	PAA	5.11	6.55	11.66
REGENCY ENERGY PARTNERS LP	RGP	9.92	16.85	26.77
SPECTRA ENERGY CORP	SE	4.68	5.00	9.68
SPECTRA ENERGY PARTNERS LP	SEP	6.35	1.22	7.57
SUBURBAN PROPANE PRTNRS -LP	SPH	9.00	2.55	11.55
SUNOCO LOGISTICS PARTNERS LP	SXL	4.52	8.65	13.17
TARGA RESOURCES PARTNERS LP	NGLS	7.88	11.10	18.98
TC PIPELINES LP	TCP			
TESORO LOGISTICS LP	TLLP	5.28	27.05	32.33
TRANSCANADA CORP	TRP	3.98	6.47	10.45
TRANSMONTAIGNE PARTNERS LP	TLP			
WESTERN GAS PARTNERS LP	WES	4.93	17.46	22.39
WILLIAMS COS INC	WMB	4.54	14.40	18.94
WILLIAMS PARTNERS LP	WPZ	6.67	0.50	7.17
	Average	6.73	12.00	18.85
	Median	6.61	11.10	17.26

Source: S&P Compustat, January 2013.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large  
DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATLAS ENERGY LP	ATLS	3.92	26.00	29.92
ATLAS PIPELINE PARTNER LP	APL	6.61	(8.45)	
BOARDWALK PIPELINE PRTRNS-LP	BWP	9.53	11.37	20.90
BUCKEYE PARTNERS LP	BPL	9.55	4.55	14.10
COPANO ENERGY LLC	CPNO	7.64	5.00	12.64
CROSSTEX ENERGY LP	XTEX			
DCP MIDSTREAM PARTNERS LP	DPM	7.33	12.52	19.85
EAGLE ROCK ENERGY PARTNRS LP	EROC	11.62	14.20	25.82
EL PASO PIPELINE PARTNERS LP	EPB	6.67	6.24	12.91
ENBRIDGE ENERGY PRTRNS -LP	EEP	8.23	5.61	13.84
ENBRIDGE INC	ENB			
ENERGY TRANSFER EQUITY LP	ETE	6.50	18.30	24.80
ENERGY TRANSFER PARTNERS -LP	ETP	10.11	21.35	31.46
ENTERPRISE PRODS PRTRNS -LP	EPD	5.58	7.50	13.08
FERRELLGAS PARTNERS -LP	FGP			
GENESIS ENERGY -LP	GEL	6.94	31.20	38.14
INERGY LP	NRGY			
KINDER MORGAN ENERGY -LP	KMP	7.36	16.45	23.81
KINDER MORGAN INC	KMI	4.90	20.23	25.13
MAGELLAN MIDSTREAM PRTRNS LP	MMP	4.36	(3.00)	
MARKWEST ENERGY PARTNERS LP	MWE	6.92	9.00	15.92
ONEOK INC	OKE	3.51	13.75	17.26
ONEOK PARTNERS -LP	OKS	4.94	(2.70)	
PEMBINA PIPELINE CORP	PBA	5.46	(3.90)	
PLAINS ALL AMER PIPELNE -LP	PAA	5.11	6.55	11.66
REGENCY ENERGY PARTNERS LP	RGP	9.92	16.85	26.77
SPECTRA ENERGY CORP	SE	4.68	5.00	9.68
SUBURBAN PROPANE PRTRNS -LP	SPH	9.00	2.55	11.55
SUNOCO LOGISTICS PARTNERS LP	SXL	4.52	8.65	13.17
TARGA RESOURCES PARTNERS LP	NGLS	7.88	11.10	18.98
TRANSCANADA CORP	TRP	3.98	6.47	10.45
WILLIAMS COS INC	WMB	4.54	14.40	18.94
WILLIAMS PARTNERS LP	WPZ	6.67	0.50	7.17
	Average	6.69	9.56	18.72
	Median	6.67	8.65	17.26

Source: S&P Compustat, January 2013.



**Value Line Pipeline MLPs**  
**DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ATLAS ENERGY LP	ATLS	3.92	26.00	29.92
ATLAS PIPELINE PARTNER LP	APL	6.61	(8.45)	
BOARDWALK PIPELINE PRTNRS-LP	BWP	9.53	11.37	20.90
BUCKEYE PARTNERS LP	BPL	9.55	4.55	14.10
CHENIERE ENERGY PARTNERS LP	CQP			
CRESTWOOD MIDSTREAM PTNRS LP	CMLP	11.05	16.60	27.65
CROSSTEX ENERGY LP	XTEX			
DCP MIDSTREAM PARTNERS LP	DPM	7.33	12.52	19.85
EAGLE ROCK ENERGY PARTNRS LP	EROC	11.62	14.20	25.82
EL PASO PIPELINE PARTNERS LP	EPB	6.67	6.24	12.91
ENBRIDGE ENERGY MGMT LLC	EEQ		3.00	3.00
ENBRIDGE ENERGY PRTNRS -LP	EEP	8.23	5.61	13.84
ENERGY TRANSFER EQUITY LP	ETE	6.50	18.30	24.80
ENERGY TRANSFER PARTNERS -LP	ETP	10.11	21.35	31.46
ENTERPRISE PRODS PRTNRS -LP	EPD	5.58	7.50	13.08
EQT MIDSTREAM PARTNERS LP	EQM			
FERRELLGAS PARTNERS -LP	FGP			
GENESIS ENERGY -LP	GEL	6.94	31.20	38.14
HOLLY ENERGY PARTNERS LP	HEP	5.94	5.55	11.49
INERGY LP	NRGY			
KINDER MORGAN ENERGY -LP	KMP	7.36	16.45	23.81
MAGELLAN MIDSTREAM PRTNRS LP	MMP	4.36	(3.00)	
MARKWEST ENERGY PARTNERS LP	MWE	6.92	9.00	15.92
ONEOK PARTNERS -LP	OKS	4.94	(2.70)	
PAA NATURAL GAS STORAGE LP	PNG	8.02	6.80	14.82
PLAINS ALL AMER PIPELNE -LP	PAA	5.11	6.55	11.66
REGENCY ENERGY PARTNERS LP	RGP	9.92	16.85	26.77
SPECTRA ENERGY PARTNERS LP	SEP	6.35	1.22	7.57
SUBURBAN PROPANE PRTNRS -LP	SPH	9.00	2.55	11.55
SUNOCO LOGISTICS PARTNERS LP	SXL	4.52	8.65	13.17
TARGA RESOURCES PARTNERS LP	NGLS	7.88	11.10	18.98
TC PIPELINES LP	TCP			
TESORO LOGISTICS LP	TLLP	5.28	27.05	32.33
TRANSMONTAIGNE PARTNERS LP	TLP			
WESTERN GAS PARTNERS LP	WES	4.93	17.46	22.39
WILLIAMS PARTNERS LP	WPZ	6.67	0.50	7.17
	Average	7.17	10.14	18.97
	Median	6.80	8.65	17.45

Source: S&P Compustat, January 2013.

**All Companies in S&P 500 with "BBB-" Rated Debt  
DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
ADT CORP (THE)	ADT	1.19	11.10	12.29
ALCOA INC	AA	1.55	11.84	13.39
ALLEGHENY TECHNOLOGIES INC	ATI	2.73	15.00	17.73
AMEREN CORP	AEE	4.94	(5.20)	
ANADARKO PETROLEUM CORP	APC	0.52	7.80	8.32
AUTONATION INC	AN		20.50	
AVON PRODUCTS	AVP	1.52	(8.85)	
BEAM INC	BEAM	1.51	12.15	13.66
BIG LOTS INC	BIG		9.60	
BOSTON SCIENTIFIC CORP	BSX		6.35	
CLIFFS NATURAL RESOURCES INC	CLF	6.90	6.50	13.40
CMS ENERGY CORP	CMS	4.17	6.00	10.17
CONAGRA FOODS INC	CAG	3.63	7.00	10.63
COVENTRY HEALTH CARE INC	CVH	1.22	9.65	10.87
DISCOVER FINANCIAL SVCS INC	DFS	1.60	10.00	11.60
DOLLAR GENERAL CORP	DG		16.70	
EDISON INTERNATIONAL	EIX	3.02	1.00	4.02
EXPEDIA INC	EXPE	0.97	15.10	16.07
FAMILY DOLLAR STORES	FDO	1.48	12.00	13.48
FIRST HORIZON NATIONAL CORP	FHN	0.44	8.00	8.44
FIRSTENERGY CORP	FE	5.48	4.00	9.48
FISERV INC	FISV		11.80	
FLIR SYSTEMS INC	FLIR	1.41	12.50	13.91
FLOWERVE CORP	FLS	1.13	15.00	16.13
GENWORTH FINANCIAL INC	GNW		5.00	
HARMAN INTERNATIONAL INDS	HAR	1.55	15.00	16.55
HEALTH CARE REIT INC	HCN	5.36	11.05	16.41
JABIL CIRCUIT INC	JBL	1.84	10.80	12.63
L-3 COMMUNICATIONS HLDGS INC	LLL	2.59	(0.95)	
LAM RESEARCH CORP	LRCX		16.60	
LORILLARD INC	LO	5.78	8.70	14.48
MASCO CORP	MAS	2.03	12.50	14.53
MOLSON COORS BREWING CO	TAP	3.13	4.75	7.88
MYLAN INC	MYL		8.40	
NEWELL RUBBERMAID INC	NWL	2.93	8.60	11.53
NEWFIELD EXPLORATION CO	NFX		15.00	
NISOURCE INC	NI	4.12	6.70	10.82
PIONEER NATURAL RESOURCES CO	PXD	0.09	16.25	16.34
PROLOGIS INC	PLD			
RED HAT INC	RHT		15.00	
REGIONS FINANCIAL CORP	RF	0.60	7.00	7.60
REYNOLDS AMERICAN INC	RAI	6.04	6.00	12.04
ROWAN COS PLC	RDC		42.70	
SLM CORP	SLM	3.25	11.50	14.75
SOUTHWEST AIRLINES	LUV	0.47	21.15	21.62
SOUTHWESTERN ENERGY CO	SWN		10.00	
TEXTRON INC	TXT	0.42	29.25	29.67
TYSON FOODS INC -CL A	TSN	1.12	8.50	9.62

**All Companies in S&P 500 with "BBB-" Rated Debt (cont.)**  
**DCF Indicator (S&P Data) - January 1, 2013**

Company Name	Ticker	% Cur Yld	EPS Gth	DCF
WEYERHAEUSER CO	WY	2.57	5.00	7.57
WHIRLPOOL CORP	WHR			
WHOLE FOODS MARKET INC	WFM	0.72	18.00	18.72
WYNDHAM WORLDWIDE CORP	WYN	2.05	18.60	20.65
XEROX CORP	XRX	2.59	4.10	6.69
ZIONS BANCORPORATION	ZION	0.21	10.00	10.21
	Average	2.37	10.78	13.08
	Median	1.72	10.00	12.63

Source: *S&P Compustat*, January 2013.

## 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 2013 *Valuation Edition of Stocks, Bonds, Bills and Inflation* (SBBI). The SBBI risk premium was cross-checked for reasonableness by information from *Value Line*.<sup>45</sup> 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

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<sup>45</sup> In an effort to check the long-term risk premium of 6.7% 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 12.93% and that the 5-year beta is 1.16 for this database (see statistics for database, *Value Line* CD ROM, January 2013). Further, we know the long-term treasury bond rate was 2.95% at January 1, 2013. 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 8.60%, which well supports the SBBI long-term government bond risk premium of 6.7%.

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

Figure A

Solve for  $R_p$

$$R_p = \frac{K_e - R_f}{\beta}$$
$$R_p = \frac{0.1293 - 0.0295}{1.16}$$
$$R_p = 0.0860$$

Figure B

of capital (weighted by market value) for the S&P 500, which was 12.75%. (*This figure was further checked for reasonableness using Value Line information for the S&P 500, which indicated the weighted average cost of equity capital to be 13.39%.*) We then subtracted the current long-term Treasury bond rate of 2.95% to obtain the expected equity risk premium of 9.80%. (*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.<sup>46</sup> The 'safe rates' (or base rates) used for each company within the company groupings were the average of the Reuters Utilities, Industrials, and Transportations long-term (30-year) yields for the bond rating for each company in *Standard & Poor's Compustat* database (January, 2013). The average 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 9.65% (ex post) and 12.75% (ex ante).

The range for all calculations of risk premium indicators using the indicators by specific company groups are between 10.18% and 11.88%. A reasonable view of these results would indicate a correlated risk premium indicator for the specific company groups to be approximately 10.75%.

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, 2013, is **11.00%**. 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) follows and the supporting data follows afterward.

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<sup>46</sup> Morningstar, *2013 SBBI & 2013 Ibbotson SBBI Risk Premia Over Time Report* and The Federal Reserve, Dec. 31, 2012.

## Risk Premium Indicators - January 1, 2013

### General Risk Premium Indicators

Indicators	Rates		Indicator
	Rf	Rp	
30-year Treasury Bonds (ex post)	2.95	6.70	9.65
30-year Treasury Bonds (ex ante)	2.95	9.80	12.75

### Risk Premium Indicators by Groups

Indicators	Median S&P Rating		Reuters Yields	Risk Prem Indicator
	Rating	Number		
Value Line Natural Gas (Diversified)	BBB	11	5.19	10.59
Value Line Oil/Gas Distribution Industry + MLPs	BBB-	12	5.62	11.02
VL Natural Gas Diversified & Oil/Gas Dist./MLP - Large	BBB-	12	5.62	11.02
Value Line Pipeline MLPs	BB+	13	6.49	11.89
Interstate Natural Gas Pipeline Forum (Pipes)	BBB+	10	4.87	10.27
Pipeline Screened Comparables Group	BBB	11	5.19	10.59
<b>Average</b>			<b>5.50</b>	<b>10.90</b>

\* Base Rate: Average YTM for Reuters Utilities, Industrials, Transportations, *BondsOnline*, Thompson Reuters. Risk Premium: 2013 Ibbotson Risk Premia Over Time Report.

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

2013 Ibbotson SBBI Valuation Yearbook: Table 2-1

From 1926 to 2012

Series	Geometric Mean (%)	Arithmetic Mean (%)	Standard Deviation (%)
<b>Large Company Stocks</b>			
Total Returns <sup>1</sup>	9.8	11.8	20.2
Income	4.1	4.1	1.6
Capital Appreciation	5.6	7.5	19.5
<b>Ibbotson Small Company Stocks</b>			
Total Returns	11.9	16.5	32.3
<b>Mid-Cap Stocks<sup>2,5</sup></b>			
Total Returns	10.9	13.7	24.6
Income	3.9	3.9	1.8
Capital Appreciation	6.9	9.6	23.9
<b>Low-Cap Stocks<sup>3,5</sup></b>			
Total Returns	11.4	15.2	29.0
Income	3.5	3.6	2.0
Capital Appreciation	7.7	11.5	28.3
<b>Micro-Cap Stocks<sup>4,5</sup></b>			
Total Returns	12.0	18.0	38.7
Income	2.5	2.5	1.7
Capital Appreciation	9.5	15.4	38.1
<b>Long-Term Corporate Bonds</b>			
Total Returns	6.1	6.4	8.3
<b>Long-Term Government Bonds</b>			
Total Returns	5.7	6.1	9.7
Income	5.1	5.1	2.6
Capital Appreciation	0.4	0.8	8.7
<b>Intermediate-Term Government Bonds</b>			
Total Returns	5.4	5.5	5.6
Income	4.5	4.6	2.9
Capital Appreciation	0.6	0.7	4.5
<b>Treasury Bills</b>			
Total Returns	3.5	3.6	3.1
<b>Inflation</b>			
	3.0	3.1	4.1

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

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

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

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

<sup>5</sup> Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2013 Center for Research in Security Price (CRSP®). The University of Chicago Booth School of Business. Used with permission.

**Value Line Natural Gas Diversified Industry  
Risk Premium Indicator - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>	<b>Risk Prem Indicator</b>
Cabot Oil & Gas 'A'	COG				
Callon Pete Co	CPE				
Chesapeake Energy	CHK	BB-	15	8.24	13.64
Cimarex Energy	XEC	BB+	13	6.49	11.89
Crosstex Energy	XTXI				
Devon Energy	DVN	BBB+	10	4.87	10.27
EOG Resources	EOG	A-	9	4.67	10.07
EQT Corp.	EQT	BBB	11	5.19	10.59
Encana Corp.	ECA	BBB	11	5.19	10.59
Energen Corp.	EGN	BBB	11	5.19	10.59
Linn Energy LLC	LINE	B+	16	9.11	14.51
MDU Resources	MDU	BBB+	10	4.87	10.27
National Fuel Gas	NFG	BBB	11	5.19	10.59
Newfield Exploration	NFX	BBB-	12	5.62	11.02
Pengrowth Energy	PGH				
Penn Virginia Corp.	PVA	B	17	9.99	15.39
Questar Corp.	STR	A	8	4.27	9.67
Quicksilver Res.	KWK	B-	18	10.86	16.26
Southwestern Energy	SWN	BBB-	12	5.62	11.02
	Average	BBB-	12	5.62	11.02
	Median	BBB	11	5.19	10.59

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.



**Value Line Oil/Gas Distribution Industry + MLPs  
Risk Premium Indicator - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>	<b>Risk Prem Indicator</b>
Atlas Energy LP	ATLS				
Atlas Pipeline Partners L.P.	APL	B+	16	9.11	14.51
Boardwalk Pipeline	BWP	BBB	11	5.19	10.59
Buckeye Partners L.P.	BPL	BBB	11	5.19	10.59
Cheniere Energy Partners L.P.	CQP	B+	16	9.11	14.51
Clean Energy Fuels	CLNE				
Copano Energy	CPNO	B+	16	9.11	14.51
Crestwood Midstream Partners	CMLP	B	17	9.99	15.39
Crosstex Energy LP	XTEX	B+	16	9.11	14.51
DCP Midstream Partners LP	DPM	BBB-	12	5.62	11.02
Eagle Rock Energy Partners Ltd	EROC	B	17	9.99	15.39
El Paso Pipeline	EPB	BBB-	12	5.62	11.02
Enbridge Energy Mgmt LLC	EEQ				
Enbridge Energy Partners LLP	EEP	BBB	11	5.19	10.59
Enbridge Inc.	ENB.TO	A-	9	4.67	10.07
Energy Transfer	ETP	BBB-	12	5.62	11.02
Energy Transfer Equity L.P.	ETE	BB	14	7.37	12.77
Enterprise Products	EPD	BBB	11	5.19	10.59
EQT Midstream Partners LP	EQM				
Ferrellgas Partners L P	FGP	B	17	9.99	15.39
Genesis Energy	GEL	BB-	15	8.24	13.64
Holly Energy Partners L.P.	HEP	BB	14	7.37	12.77
Inergy L.P.	NRGY				
Kinder Morgan Energy	KMP	BBB	11	5.19	10.59
Kinder Morgan Inc.	KMI	BB	14	7.37	12.77
Magellan Midstream	MMP	BBB	11	5.19	10.59
Markwest Energy Partners LP	MWE	BB	14	7.37	12.77
ONEOK Inc.	OKE	BBB	11	5.19	10.59
ONEOK Partners LP	OKS	BBB	11	5.19	10.59
PAA Natural Gas Storage L.P.	PNG				
Pembina Pipeline Corp.	PPL.TO	BBB	11	5.19	10.59
Plains All Amer. Pipe.	PAA	BBB	11	5.19	10.59
Regency Energy Partners LP	RGP	BB	14	7.37	12.77
Spectra Energy	SE	BBB+	10	4.87	10.27
Spectra Energy Partners LP	SEP	BBB	11	5.19	10.59
Suburban Propane	SPH	BB-	15	8.24	13.64
Sunoco Logistics Partners L.P.	SXL	BBB-	12	5.62	11.02
Targa Resources Partners LP	NGLS	BB	14	7.37	12.77
TC PipeLines LP	TCP	BBB	11	5.19	10.59
Tesoro Logistics LP	TLLP	BB-	15	8.24	13.64
TransCanada Corp.	TRP	A-	9	4.67	10.07
TransMontaigne Partners L.P.	TLP				
Western Gas Partners LP	WES	BB+	13	6.49	11.89
Williams Cos.	WMB	BBB	11	5.19	10.59
Williams Partners L.P.	WPZ	BBB	11	5.19	10.59
	Average	BB+	13	6.49	11.89
	Median	BBB-	12	5.62	11.02

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**VL Natural Gas Diversified & Oil/Gas Distribution/MLP - Large  
Risk Premium Indicator - January 1, 2013**

Company Name	Ticker	S&P Rating	Numerical Rating	Reuters Avg. Yields	Risk Prem Indicator
Atlas Energy LP	ATLS				
Atlas Pipeline Partners L.P.	APL	B+	16	9.11	14.51
Boardwalk Pipeline	BWP	BBB	11	5.19	10.59
Buckeye Partners L.P.	BPL	BBB	11	5.19	10.59
Copano Energy	CPNO	B+	16	9.11	14.51
Crosstex Energy LP	XTEX	B+	16	9.11	14.51
DCP Midstream Partners LP	DPM	BBB-	12	5.62	11.02
Eagle Rock Energy Partners Ltd	EROC	B	17	9.99	15.39
El Paso Pipeline	EPB	BBB-	12	5.62	11.02
Enbridge Energy Partners LLP	EET	BBB	11	5.19	10.59
Enbridge Inc.	ENB.TO	A-	9	4.67	10.07
Energy Transfer	ETP	BBB-	12	5.62	11.02
Energy Transfer Equity L.P.	ETE	BB	14	7.37	12.77
Enterprise Products	EPD	BBB	11	5.19	10.59
Ferrellgas Partners L P	FGP	B	17	9.99	15.39
Genesis Energy	GEL	BB-	15	8.24	13.64
Inergy L.P.	NRGY				
Kinder Morgan Energy	KMP	BBB	11	5.19	10.59
Kinder Morgan Inc.	KMI	BB	14	7.37	12.77
Magellan Midstream	MMP	BBB	11	5.19	10.59
Markwest Energy Partners LP	MWE	BB	14	7.37	12.77
ONEOK Inc.	OKE	BBB	11	5.19	10.59
ONEOK Partners LP	OKS	BBB	11	5.19	10.59
Pembina Pipeline Corp.	PPL.TO	BBB	11	5.19	10.59
Plains All Amer. Pipe.	PAA	BBB	11	5.19	10.59
Regency Energy Partners LP	RGP	BB	14	7.37	12.77
Spectra Energy	SE	BBB+	10	4.87	10.27
Suburban Propane	SPH	BB-	15	8.24	13.64
Sunoco Logistics Partners L.P.	SXL	BBB-	12	5.62	11.02
Targa Resources Partners LP	NGLS	BB	14	7.37	12.77
TransCanada Corp.	TRP	A-	9	4.67	10.07
Williams Cos.	WMB	BBB	11	5.19	10.59
Williams Partners L.P.	WPZ	BBB	11	5.19	10.59
	Average	BB+	13	6.49	11.89
	Median	BBB-	12	5.62	11.02

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**Value Line Pipeline MLPs**  
**Risk Premium Indicator - January 1, 2013**

Company Name	Ticker	S&P Rating	Numerical Rating	Reuters Avg. Yields	Risk Prem Indicator
Atlas Energy LP	ATLS				
Atlas Pipeline Partners L.P.	APL	B+	16	9.11	14.51
Boardwalk Pipeline	BWP	BBB	11	5.19	10.59
Buckeye Partners L.P.	BPL	BBB	11	5.19	10.59
Cheniere Energy Partners L.P.	CQP	B+	16	9.11	14.51
Crestwood Midstream Partners	CMLP	B	17	9.99	15.39
Crosstex Energy LP	XTEX	B+	16	9.11	14.51
DCP Midstream Partners LP	DPM	BBB-	12	5.62	11.02
EQT Midstream Partners LP	EQM				
Eagle Rock Energy Partners Ltd	EROC	B	17	9.99	15.39
El Paso Pipeline	EPB	BBB-	12	5.62	11.02
Enbridge Energy Mgmt LLC	EEQ				
Enbridge Energy Partners LLP	EET	BBB	11	5.19	10.59
Energy Transfer	ETP	BBB-			
Energy Transfer Equity L.P.	ETE	BB	14	7.37	12.77
Enterprise Products	EPD	BBB	11	5.19	10.59
Ferrellgas Partners L P	FGP	B	17	9.99	15.39
Genesis Energy	GEL	BB-	15	8.24	13.64
Holly Energy Partners L.P.	HEP	BB	14	7.37	12.77
Inergy L.P.	NRGY				
Kinder Morgan Energy	KMP	BBB	11	5.19	10.59
Magellan Midstream	MMP	BBB	11	5.19	10.59
Markwest Energy Partners LP	MWE	BB	14	7.37	12.77
ONEOK Partners LP	OKS	BBB	11	5.19	10.59
PAA Natural Gas Storage L.P.	PNG				
Plains All Amer. Pipe.	PAA	BBB	11	5.19	10.59
Regency Energy Partners LP	RGP	BB	14	7.37	12.77
Spectra Energy Partners LP	SEP	BBB	11	5.19	10.59
Suburban Propane	SPH	BB-	15	8.24	13.64
Sunoco Logistics Partners L.P.	SXL	BBB-	12	5.62	11.02
TC PipeLines LP	TCP	BBB	11	5.19	10.59
Targa Resources Partners LP	NGLS	BB	14	7.37	12.77
Tesoro Logistics LP	TLLP	BB-	15	8.24	13.64
TransMontaigne Partners L.P.	TLP				
Western Gas Partners LP	WES	BB+	13	6.49	11.89
Williams Partners L.P.	WPZ	BBB	11	5.19	10.59
	Average	BB+	13	6.49	11.89
	Median	BB+	13	6.49	11.89

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**Interstate Natural Gas Pipeline Forum (Pipelines)  
Risk Premium Indicator - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>	<b>Risk Prem Indicator</b>
Boardwalk Pipeline	BWP	BBB	11	5.19	10.59
CenterPoint Energy	CNP	BBB+	10	4.87	10.27
Dominion Resources	D	A-	9	4.67	10.07
Kinder Morgan Inc.	KMI	BB	14	7.37	12.77
MDU Resources	MDU	BBB+	10	4.87	10.27
National Fuel Gas	NFG	BBB	11	5.19	10.59
ONEOK Partners LP	OKS	BBB	11	5.19	10.59
Questar Corp.	STR	A	8	4.27	9.67
Spectra Energy	SE	BBB+	10	4.87	10.27
TransCanada Corp.	TRP	A-	9	4.67	10.07
Williams Cos.	WMB	BBB	11	5.19	10.59
	Average	BBB+	10	4.87	10.27
	Median	BBB+	10	4.87	10.27

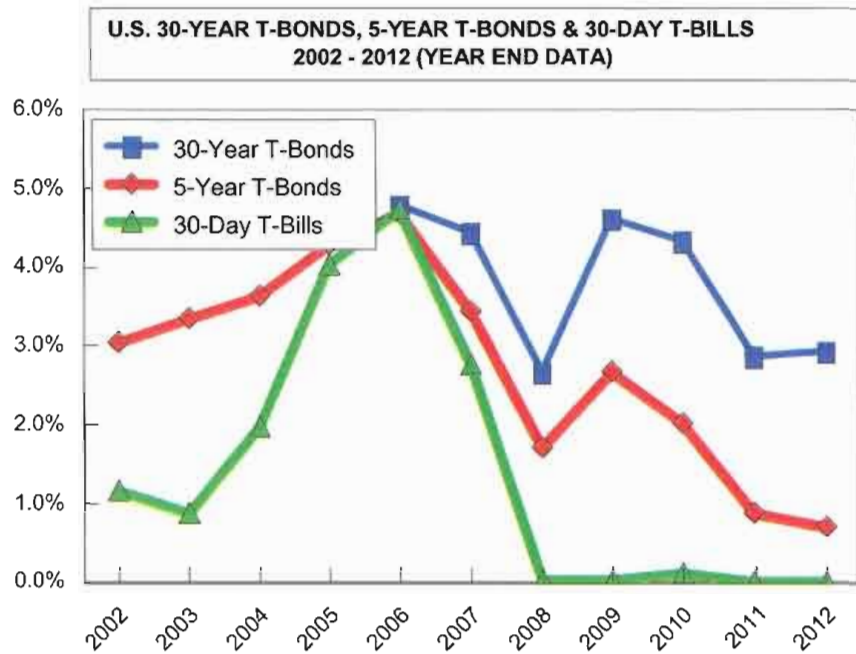
Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

**Pipeline Screened Comparables Group  
Risk Premium Indicator - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>S&amp;P Rating</b>	<b>Numerical Rating</b>	<b>Reuters Avg. Yields</b>	<b>Risk Prem Indicator</b>
EQT Corp.	EQT	BBB	11	5.19	10.59
G't Plains Energy	GXP	BBB	11	5.19	10.59
NiSource Inc.	NI	BBB-	12	5.62	11.02
PNM Resources	PNM	BBB-	12	5.62	11.02
Safeway Inc.	SWY	BBB	11	5.19	10.59
Selective Ins. Group	SIGI	BBB	11	5.19	10.59
U.S. Cellular	USM	BBB-	12	5.62	11.02
	Average	BBB	11	5.19	10.59
	Median	BBB	11	5.19	10.59

Source: S&P Compustat, Mergent, & BondsOnline Group, Thompson Reuters, January 2013.

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



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

Year End Date	30-Year T-Bonds	5-Year T-Bonds	30-DAY T-Bills
2002	N/A	3.05%	1.18%
2003	N/A	3.36%	0.88%
2004	N/A	3.64%	1.99%
2005	N/A	4.30%	4.05%
2006	4.81%	4.70%	4.75%
2007	4.45%	3.45%	2.76%
2008	2.69%	1.72%	0.04%
2009	4.63%	2.69%	0.04%
2010	4.34%	2.02%	0.11%
2011	2.89%	0.89%	0.01%
2012	2.95%	0.72%	0.02%

Source: Federal Reserve, Dec. 31, 2012

## 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 2012. The indicated cost of equity by this method was 9.32% at January 1, 2013. Our *ex ante* CAPM calculations were based upon the expected risk premium of 9.80% derived from the market-weighted average of the cost of equity capital less the current long-term Treasury bond rate. The indicated cost of equity by this method was 12.26% at January 1, 2013.

Our 'safe rates' for the CAPM calculations were derived as described in the risk premium method discussed earlier. Our beta estimate of 0.95 was based on observing the average and median *Value Line* 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

$$K_e = R_f + \beta R_p$$

where

$K_e$  = Cost of equity  
 $R_f$  = Risk free rate  
 $\beta$  = Beta  
 $R_p$  = Risk premium

Figure 4

Group of Companies	Avg.	Med.
<b>Value Line Betas</b>		
VL Nat Gas Diversified	1.31	1.20
VL Oil/Gas Dist. + MLPs	0.96	0.90
VL Nat Gas Diver & Oil Gas Dist. + MLPs (large)	0.98	0.90
VL Pipeline MLPs	0.97	0.88
Nat Gas PL Forum (pipes)	0.85	0.80
S&P Screened Comps.	0.90	0.90
S&P 500 BBB- rated debt	1.15	1.15

Figure 5 - Value Line Betas

deriving an expected risk premium from the S&P 500 companies. The *ex ante* CAPM indicator is a good check on the reliability of the standard CAPM because it is forward looking. All prospective investment in interstate natural gas pipeline companies is based on an expectation of future benefits. This is consistent 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.<sup>47</sup>

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

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 12.75%. 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 13.39%. (We gave the most weight to the S&P data arriving at an estimate for the market cost of capital.) We then subtracted the current long-term Treasury bond rate of 2.95% to obtain the expected equity risk premium of 9.80%. 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 **12.00%** of January 1, 2013. This conclusion gives weight and consideration to both indicators, with most emphasis on the ex ante indicator. A summary of the CAPM indicators and the supporting data begins below and on the following page.

### Summary of CAPM Indicators - January 1, 2013

Item	Rates			CAPM Indicator
	Rf	Rp	Beta	
<b>CAPM Indicator *</b>				
Long-Term Gov't Bonds (ex post)	2.95	6.70	0.95	9.32
Long-Term Gov't Bonds (ex ante)	2.95	9.80	0.95	12.26

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

\* CAPM Indicator is based upon a *Value Line* beta of 0.95. *2013 Ibbotson SBBI Risk Premia Over Time Report*; & Federal Reserve data December 31, 2012.

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<sup>47</sup> Pratt, Shannon P. *Cost of Capital, Estimation and Applications*, (NY: John Wiley & Sons, Inc. 1998) p. 178.



On the following tables are the *Value Line* betas for the various companies in the Natural Gas Diversified Industry, Oil/Gas Distribution Industry + 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* databases at January 1, 2013.

**Value Line Natural Gas Diversified Ind.  
Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
Cabot Oil & Gas 'A'	COG	1.25
Callon Pete Co	CPE	1.95
Chesapeake Energy	CHK	1.35
Cimarex Energy	XEC	1.35
Crosstex Energy	XTXI	2.25
Devon Energy	DVN	1.20
EOG Resources	EOG	1.20
EQT Corp.	EQT	1.20
Encana Corp.	ECA	1.20
Energen Corp.	EGN	1.20
Linn Energy LLC	LINE	0.85
MDU Resources	MDU	1.00
National Fuel Gas	NFG	1.00
Newfield Exploration	NFX	1.40
Pengrowth Energy	PGH	1.30
Penn Virginia Corp.	PVA	1.65
Questar Corp.	STR	0.75
Quicksilver Res.	KWK	1.65
Southwestern Energy	SWN	1.15
Average		1.31
Median		1.20

Source: *Value Line*, January 2013.

**Value Line Oil/Gas Distribution Industry + MLPs  
Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
Atlas Energy LP	ATLS	1.85
Atlas Pipeline Partners L.P.	APL	1.50
Boardwalk Pipeline	BWP	0.80
Buckeye Partners L.P.	BPL	0.80
Cheniere Energy Partners L.P.	CQP	1.10
Clean Energy Fuels	CLNE	1.40
Copano Energy	CPNO	1.15
Crestwood Midstream Partners	CMLP	0.85
Crosstex Energy LP	XTEX	1.65
DCP Midstream Partners LP	DPM	1.15
Eagle Rock Energy Partners Ltd	EROC	1.05
El Paso Pipeline	EPB	0.70
Enbridge Energy Mgmt LLC	EEQ	0.95
Enbridge Energy Partners LLP	EEP	0.90
Enbridge Inc.	ENB.TO	0.60
Energy Transfer	ETP	0.80
Energy Transfer Equity L.P.	ETE	1.00
Enterprise Products	EPD	0.85
EQT Midstream Partners LP	EQM	
Ferrellgas Partners L P	FGP	0.80
Genesis Energy	GEL	1.10
Holly Energy Partners L.P.	HEP	0.90
Inergy L.P.	NRGY	0.95
Kinder Morgan Energy	KMP	0.75
Kinder Morgan Inc.	KMI	
Magellan Midstream	MMP	0.85
Markwest Energy Partners LP	MWE	1.15
ONEOK Inc.	OKE	0.95
ONEOK Partners LP	OKS	0.80
PAA Natural Gas Storage L.P.	PNG	0.70
Pembina Pipeline Corp.	PPL.TO	0.60
Plains All Amer. Pipe.	PAA	0.80
Regency Energy Partners LP	RGP	1.10
Spectra Energy	SE	1.00
Spectra Energy Partners LP	SEP	0.70
Suburban Propane	SPH	0.70
Sunoco Logistics Partners L.P.	SXL	0.85
Targa Resources Partners LP	NGLS	1.25
TC Pipelines LP	TCP	0.75
Tesoro Logistics LP	TLLP	
TransCanada Corp.	TRP	0.85
TransMontaigne Partners L.P.	TLP	0.90
Western Gas Partners LP	WES	0.80
Williams Cos.	WMB	
Williams Partners L.P.	WPZ	1.05
	Average	0.96
	Median	0.90

Source: *Value Line*, January 2013.

**VL Nat. Gas Diversified & Oil/Gas Dist./MLP - Large  
Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
Atlas Energy LP	ATLS	1.85
Atlas Pipeline Partners L.P.	APL	1.50
Boardwalk Pipeline	BWP	0.80
Buckeye Partners L.P.	BPL	0.80
Copano Energy	CPNO	1.15
Crosstex Energy LP	XTEX	1.65
DCP Midstream Partners LP	DPM	1.15
Eagle Rock Energy Partners Ltd	EROC	1.05
El Paso Pipeline	EPB	0.70
Enbridge Energy Partners LLP	EEP	0.90
Enbridge Inc.	ENB.TO	0.60
Energy Transfer	ETP	0.80
Energy Transfer Equity L.P.	ETE	1.00
Enterprise Products	EPD	0.85
Ferrellgas Partners L P	FGP	0.80
Genesis Energy	GEL	1.10
Inergy L.P.	NRGY	0.95
Kinder Morgan Energy	KMP	0.75
Kinder Morgan Inc.	KMI	
Magellan Midstream	MMP	0.85
Markwest Energy Partners LP	MWE	1.15
ONEOK Inc.	OKE	0.95
ONEOK Partners LP	OKS	0.80
Pembina Pipeline Corp.	PPL.TO	0.60
Plains All Amer. Pipe.	PAA	0.80
Regency Energy Partners LP	RGP	1.10
Spectra Energy	SE	1.00
Suburban Propane	SPH	0.70
Sunoco Logistics Partners L.P.	SXL	0.85
Targa Resources Partners LP	NGLS	1.25
TransCanada Corp.	TRP	0.85
Williams Cos.	WMB	
Williams Partners L.P.	WPZ	1.05
	Average	0.98
	Median	0.90

Source: *Value Line*, January 2013.

**Value Line Pipeline MLPs**  
**Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
Atlas Energy LP	ATLS	1.85
Atlas Pipeline Partners L.P.	APL	1.50
Boardwalk Pipeline	BWP	0.80
Buckeye Partners L.P.	BPL	0.80
Cheniere Energy Partners L.P.	CQP	1.10
Crestwood Midstream Partners	CMLP	0.85
Crosstex Energy LP	XTEX	1.65
DCP Midstream Partners LP	DPM	1.15
EQT Midstream Partners LP	EQM	
Eagle Rock Energy Partners Ltd	EROC	1.05
El Paso Pipeline	EPB	0.70
Enbridge Energy Mgmt LLC	EEQ	0.95
Enbridge Energy Partners LLP	EEP	0.90
Energy Transfer	ETP	0.80
Energy Transfer Equity L.P.	ETE	1.00
Enterprise Products	EPD	0.85
Ferrellgas Partners L P	FGP	0.80
Genesis Energy	GEL	1.10
Holly Energy Partners L.P.	HEP	0.90
Inergy L.P.	NRGY	0.95
Kinder Morgan Energy	KMP	0.75
Magellan Midstream	MMP	0.85
Markwest Energy Partners LP	MWE	1.15
ONEOK Partners LP	OKS	0.80
PAA Natural Gas Storage L.P.	PNG	0.70
Plains All Amer. Pipe.	PAA	0.80
Regency Energy Partners LP	RGP	1.10
Spectra Energy Partners LP	SEP	0.70
Suburban Propane	SPH	0.70
Sunoco Logistics Partners L.P.	SXL	0.85
TC PipeLines LP	TCP	0.75
Targa Resources Partners LP	NGLS	1.25
Tesoro Logistics LP	TLLP	
TransMontaigne Partners L.P.	TLP	0.90
Western Gas Partners LP	WES	0.80
Williams Partners L.P.	WPZ	1.05
	Average	0.97
	Median	0.88

Source: *Value Line*, January 2013.

**Interstate Nat. Gas PL Forum (Pipelines)  
Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
Boardwalk Pipeline	BWP	0.80
CenterPoint Energy	CNP	0.75
Dominion Resources	D	0.70
Kinder Morgan Inc.	KMI	
MDU Resources	MDU	1.00
National Fuel Gas	NFG	1.00
ONEOK Partners LP	OKS	0.80
Questar Corp.	STR	0.75
Spectra Energy	SE	1.00
TransCanada Corp.	TRP	0.85
Williams Cos.	WMB	
	Average	0.85
	Median	0.80

Source: *Value Line*, January 2013.

**Pipeline Screened Comparables Group  
Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
EQT Corp.	EQT	1.20
G't Plains Energy	GXP	0.75
NiSource Inc.	NI	0.80
PNM Resources	PNM	0.90
Safeway Inc.	SWY	0.65
Selective Ins. Group	SIGI	0.90
U.S. Cellular	USM	1.10
	Average	0.90
	Median	0.90

Source: *Value Line*, January 2013.

**All Companies in S&P 500 with "BBB-" Rated Debt  
Beta (Value Line) - January 1, 2013**

Company Name	Ticker	Beta
ADT Corp. (The)	ADT	
Alcoa Inc.	AA	1.45
Allegheny Techn.	ATI	1.55
Ameren Corp.	AEE	0.80
Anadarko Petroleum	APC	1.30
AutoNation Inc.	AN	1.15
Avon Products	AVP	1.00
Beam Inc.	BEAM	
Big Lots Inc.	BIG	0.95
Boston Scientific	BSX	1.00
CMS Energy Corp.	CMS	0.75
Cliffs Natural Res.	CLF	1.95
ConAgra Foods	CAG	0.65
Coventry Health Care	CVH	1.25
Discover Fin'l Svcs.	DFS	1.30
Dollar General	DG	0.60
Edison Int'l	EIX	0.75
Expedia Inc.	EXPE	
FLIR Systems	FLIR	0.90
Family Dollar Stores	FDO	0.50
First Horizon National	FHN	1.20
FirstEnergy Corp.	FE	0.75
Fiserv Inc.	FISV	0.95
Flowserve Corp.	FLS	1.45
Genworth Fin'l	GNW	2.40
Harman Int'l	HAR	1.50
Health Care REIT	HCN	0.85
Jabil Circuit	JBL	1.35
L-3 Communic.	LLL	0.90
Lam Research	LRCX	1.20
Lorillard Inc.	LO	0.55
Masco Corp.	MAS	1.40
Molson Coors Brewing	TAP	0.60
Newell Rubbermaid	NWL	1.25
Newfield Exploration	NFX	1.40
NiSource Inc.	NI	0.80
Pioneer Natural Res.	PXD	1.50
Prologis	PLD	
Red Hat Inc.	RHT	1.15
Regions Financial	RF	1.35
Reynolds American	RAI	0.55
Rowan Cos. plc	RDC	1.50
SLM Corporation	SLM	1.55
Southwest Airlines	LUV	1.00
Southwestern Energy	SWN	1.15
Textron Inc.	TXT	1.60
Tyler Technologies Corp.	TYL	0.70
Tyson Foods 'A'	TSN	1.00
Weyerhaeuser Co.	WY	1.10

**All Cos. in S&P 500 with "BBB-" Rated Debt (cont.)**  
**Beta (Value Line) - January 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>Beta</b>
Whirlpool Corp.	WHR	1.30
Whole Foods Market	WFM	1.05
Wyndham Worldwide	WYN	1.80
Xerox Corp.	XRX	1.25
Zions Bancorp.	ZION	1.50
	Average	1.15
	Median	1.15

Source: Value Line, January 2013.

## Cost of Equity Indication Using Expected Risk Premium

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

**CAPM Calculations:**

S&P 500 Expected Equity Cost (Wt. Avg)	12.75					
Current Yield on L-T Gov't. Bonds	2.95					
Expected Equity Risk Premium	9.80					
Beta	0.95					
Adjusted Risk Premium	9.31	+	2.95	=	12.26	<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 2013).



**Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013**

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
3M CO	MMM	2.75	8.00	10.75	64,245.79
ABBOTT LABORATORIES	ABT	3.52	13.00	16.52	103,533.76
ABERCROMBIE & FITCH -CL A	ANF	1.72	18.00	19.72	3,816.64
ACCENTURE PLC	ACN	2.70	11.00	13.70	42,848.21
ACE LTD	ACE	2.64	7.50	10.14	27,116.68
ADT CORP (THE)	ADT	1.19	11.10	12.29	10,807.44
AES CORP	AES	1.61	8.00	9.61	7,960.38
AETNA INC	AET	1.67	10.50	12.17	15,494.82
AFLAC INC	AFL	2.84	7.80	10.64	24,908.34
AGILENT TECHNOLOGIES INC	A	1.07	9.10	10.17	14,244.46
AGL RESOURCES INC	GAS	4.79	4.05	8.84	4,707.75
AIR PRODUCTS & CHEMICALS INC	APD	3.32	9.00	12.32	17,537.58
AIRGAS INC	ARG	1.98	13.00	14.98	7,129.93
ALCOA INC	AA	1.55	11.84	13.39	9,263.31
ALLEGHENY TECHNOLOGIES INC	ATI	2.73	15.00	17.73	3,258.11
ALLERGAN INC	AGN	0.25	12.40	12.65	28,210.19
ALLSTATE CORP	ALL	2.41	10.00	12.41	19,353.02
ALTERA CORP	ALTR	1.29	10.50	11.79	11,024.51
ALTRIA GROUP INC	MO	6.02	7.50	13.52	63,669.33
AMERICAN ELECTRIC POWER CO	AEP	4.54	2.97	7.51	20,710.43
AMERICAN EXPRESS CO	AXP	1.56	12.15	13.71	64,323.68
AMERICAN TOWER CORP	AMT	1.53	22.95	24.48	30,548.93
AMERIPRISE FINANCIAL INC	AMP	3.22	12.05	15.27	12,890.26
AMERISOURCEBERGEN CORP	ABC	2.17	11.80	13.97	10,167.85
AMGEN INC	AMGN	1.84	10.00	11.84	66,146.00
AMPHENOL CORP	APH	0.74	13.57	14.31	10,374.13
ANADARKO PETROLEUM CORP	APC	0.52	7.80	8.32	37,137.09
ANALOG DEVICES	ADI	2.95	3.27	6.22	12,676.42
AON PLC	AON	1.23	8.15	9.38	17,721.07
APACHE CORP	APA	0.90	4.10	5.00	30,715.79
APARTMENT INVST & MGMT CO	AIV	3.10	5.00	8.10	3,938.45
APPLE INC	AAPL	2.39	20.00	22.39	499,614.03
APPLIED MATERIALS INC	AMAT	3.43	9.00	12.43	13,701.23
ASSURANT INC	AIZ	2.66	10.00	12.66	2,731.17
AT&T INC	T	5.57	6.70	12.27	191,472.80
AUTOMATIC DATA PROCESSING	ADP	3.33	9.00	12.33	27,638.04
AVALONBAY COMMUNITIES INC	AVB	3.09	8.00	11.09	15,214.28
AVERY DENNISON CORP	AVY	3.41	10.40	13.81	3,477.79
BAKER HUGHES INC	BHI	1.62	10.03	11.65	17,958.57
BALL CORP	BLL	0.99	10.70	11.69	6,884.88
BANK OF AMERICA CORP	BAC	0.39	12.00	12.39	125,124.07
BANK OF NEW YORK MELLON CORP	BK	2.28	12.50	14.78	30,033.20
BARD (C.R.) INC	BCR	0.88	7.65	8.53	8,045.17
BAXTER INTERNATIONAL INC	BAX	2.91	7.80	10.71	36,621.54
BB&T CORP	BBT	2.97	8.00	10.97	20,366.55
BEAM INC	BEAM	1.51	12.15	13.66	9,720.21
BECTON DICKINSON & CO	BDX	2.71	7.15	9.86	15,313.51
BEMIS CO INC	BMS	3.20	7.00	10.20	3,456.08
BLACKROCK INC	BLK	3.28	13.00	16.28	35,044.99

**Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013**

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
BLOCK H & R INC	HRB	4.82	12.00	16.82	5,037.91
BOEING CO	BA	2.62	12.00	14.62	56,827.24
BOSTON PROPERTIES INC	BXP	2.58	5.00	7.58	15,983.45
BRISTOL-MYERS SQUIBB CO	BMJ	4.30	3.00	7.30	53,795.95
BROADCOM CORP -CL A	BRCM	1.39	15.00	16.39	17,003.52
BROWN-FORMAN -CL B	BF.B	1.80	11.85	13.65	13,354.20
C H ROBINSON WORLDWIDE INC	CHRW	2.46	11.19	13.66	10,152.50
CA INC	CA	4.96	9.00	13.96	10,095.15
CABLEVISION SYS CORP -CL A	CVC	4.21	4.90	9.11	3,122.79
CABOT OIL & GAS CORP	COG	0.19	16.00	16.19	10,457.44
CAMPBELL SOUP CO	CPB	3.52	6.00	9.52	10,970.01
CAPITAL ONE FINANCIAL CORP	COF	0.37	8.00	8.37	33,696.95
CARDINAL HEALTH INC	CAH	2.94	10.00	12.94	13,992.06
CARNIVAL CORP/PLC (USA)	CCL	3.06	12.34	15.39	21,859.21
CATERPILLAR INC	CAT	2.65	14.00	16.65	58,598.04
CBS CORP	CBS	1.43	13.30	14.73	24,173.49
CENTERPOINT ENERGY INC	CNP	4.44	5.60	10.04	8,228.26
CENTURYLINK INC	CTL	7.60	2.55	10.15	24,421.21
CF INDUSTRIES HOLDINGS INC	CF	0.81	2.60	3.41	12,772.87
CHESAPEAKE ENERGY CORP	CHK	2.25	6.90	9.15	11,046.57
CHEVRON CORP	CVX	3.37	1.21	4.58	211,649.55
CHUBB CORP	CB	2.40	10.00	12.40	19,729.62
CIGNA CORP	CI	0.08	10.23	10.32	15,283.68
CINCINNATI FINANCIAL CORP	CINF	4.32	3.74	8.06	6,370.78
CINTAS CORP	CTAS	1.72	10.00	11.72	5,040.07
CISCO SYSTEMS INC	CSCO	3.13	10.00	13.13	104,323.54
CITIGROUP INC	C	0.11	10.76	10.87	116,010.53
CLIFFS NATURAL RESOURCES INC	CLF	6.90	6.50	13.40	5,496.07
CLOROX CO/DE	CLX	3.77	7.80	11.57	9,552.94
CME GROUP INC	CME	6.97	13.85	20.82	16,892.57
CMS ENERGY CORP	CMS	4.17	6.00	10.17	6,465.67
COACH INC	COH	2.47	14.25	16.72	15,747.63
COCA-COLA CO	KO	3.02	7.40	10.42	162,587.13
COCA-COLA ENTERPRISES INC	CCE	2.19	8.45	10.64	9,108.06
COLGATE-PALMOLIVE CO	CL	2.58	8.80	11.38	49,393.27
COMCAST CORP	CMCSA	2.05	17.65	19.70	98,160.88
COMERICA INC	CMA	2.12	7.00	9.12	5,775.04
COMPUTER SCIENCES CORP	CSC	2.16	8.00	10.16	6,222.53
CONAGRA FOODS INC	CAG	3.63	7.00	10.63	11,947.12
CONOCOPHILLIPS	COP	4.71	3.50	8.21	70,393.77
CONSOL ENERGY INC	CNX	1.74	12.00	13.74	7,311.77
CONSOLIDATED EDISON INC	ED	4.49	3.00	7.49	16,266.17
CORNING INC	GLW	3.19	12.00	15.19	18,650.35
COSTCO WHOLESALE CORP	COST	1.25	12.60	13.85	43,010.34
COVENTRY HEALTH CARE INC	CVH	1.22	9.65	10.87	6,029.77
COVIDIEN PLC	COV	1.95	7.99	9.94	27,333.48
CSX CORP	CSX	3.26	14.85	18.11	20,349.09
CUMMINS INC	CMI	2.03	10.00	12.03	20,593.65
CVS CAREMARK CORP	CVS	1.52	13.00	14.52	60,277.61

**Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013**

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
D R HORTON INC	DHI	0.80	5.00	5.80	6,352.86
DANAHER CORP	DHR	0.20	12.20	12.40	38,721.26
DARDEN RESTAURANTS INC	DRI	4.97	12.00	16.97	5,796.32
DEERE & CO	DE	2.34	10.00	12.34	33,519.73
DELL INC	DELL	3.31	5.00	8.31	17,615.94
DENTSPLY INTERNATL INC	XRAY	0.62	12.00	12.62	5,621.81
DEVON ENERGY CORP	DVN	1.59	3.40	4.99	21,076.20
DIAMOND OFFSHRE DRILLING INC	DO	5.97	16.00	21.97	9,448.48
DISCOVER FINANCIAL SVCS INC	DFS	1.60	10.00	11.60	19,459.12
DISNEY (WALT) CO	DIS	1.69	12.00	13.69	88,233.95
DOMINION RESOURCES INC	D	4.28	5.14	9.43	29,764.80
DOVER CORP	DOV	2.39	12.00	14.39	11,762.81
DOW CHEMICAL	DOW	4.20	6.00	10.20	38,770.45
DR PEPPER SNAPPLE GROUP INC	DPS	3.29	7.00	10.29	9,194.39
DTE ENERGY CO	DTE	4.34	5.00	9.34	10,332.98
DU PONT (E I) DE NEMOURS	DD	4.02	5.00	9.02	41,941.15
DUKE ENERGY CORP	DUK	4.94	3.05	7.99	44,930.77
DUN & BRADSTREET CORP	DNB	2.20	13.60	15.80	3,505.04
EASTMAN CHEMICAL CO	EMN	1.90	8.00	9.90	10,436.62
EATON CORP PLC	ETN	2.97	6.00	8.97	25,095.85
ECOLAB INC	ECL	1.50	17.10	18.60	21,060.09
EDISON INTERNATIONAL	EIX	3.02	1.00	4.02	14,723.40
EMERSON ELECTRIC CO	EMR	3.38	9.00	12.38	38,320.69
ENSCO PLC	ESV	3.39	33.79	37.18	13,766.95
EOG RESOURCES INC	EOG	0.67	18.60	19.27	32,719.72
EQT CORP	EQT	1.69	13.20	14.89	8,824.17
EQUIFAX INC	EFX	1.49	12.00	13.49	6,472.64
EXPEDIA INC	EXPE	0.97	15.10	16.07	7,499.86
EXPEDITORS INTL WASH INC	EXPD	1.63	15.00	16.63	8,265.24
EXXON MOBIL CORP	XOM	2.71	2.97	5.68	394,611.13
FAMILY DOLLAR STORES	FDO	1.48	12.00	13.48	7,336.73
FASTENAL CO	FAST	2.11	17.20	19.31	13,823.42
FEDEX CORP	FDX	0.69	12.50	13.19	28,842.46
FIDELITY NATIONAL INFO SVCS	FIS	2.57	12.00	14.57	10,206.22
FIFTH THIRD BANCORP	FITB	2.75	4.50	7.25	13,641.50
FIRST HORIZON NATIONAL CORP	FHN	0.44	8.00	8.44	2,449.10
FIRSTENERGY CORP	FE	5.48	4.00	9.48	17,464.70
FLIR SYSTEMS INC	FLIR	1.41	12.50	13.91	3,347.94
FLOWSERVE CORP	FLS	1.13	15.00	16.13	7,337.65
FLUOR CORP	FLR	1.23	12.50	13.73	9,780.74
FMC CORP	FMC	1.03	11.50	12.53	8,040.30
FORD MOTOR CO	F	1.69	9.20	10.89	48,456.44
FRANKLIN RESOURCES INC	BEN	3.66	10.50	14.16	26,685.36
FREEMONT-MCMORAN COP&GOLD	FCX	3.76	3.00	6.76	32,468.87
FRONTIER COMMUNICATIONS CORP	FTR	9.86	5.50	15.36	4,273.34
GAMESTOP CORP	GME	4.26	7.00	11.26	3,040.41
GANNETT CO	GCI	4.66	4.95	9.61	4,138.46
GAP INC	GPS	1.76	9.50	11.26	14,881.17
GARMIN LTD	GRMN	4.63	4.85	9.48	7,945.03

**Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>Yield %</b>	<b>Growth Rate %</b>	<b>Equity Cost %</b>	<b>Market Value</b>
GENERAL DYNAMICS CORP	GD	3.08	4.60	7.68	24,457.16
GENERAL ELECTRIC CO	GE	4.02	11.00	15.02	221,630.14
GENERAL MILLS INC	GIS	3.53	8.00	11.53	26,135.41
GENUINE PARTS CO	GPC	3.37	8.15	11.52	9,863.23
GOLDMAN SACHS GROUP INC	GS	2.25	43.51	45.76	59,946.05
GRAINGER (W W) INC	GWW	1.81	14.49	16.31	14,063.70
HALLIBURTON CO	HAL	1.17	12.74	13.91	32,191.87
HARLEY-DAVIDSON INC	HOG	1.46	15.00	16.46	11,048.18
HARMAN INTERNATIONAL INDS	HAR	1.55	15.00	16.55	3,028.02
HARRIS CORP	HRS	3.11	2.95	6.06	5,559.95
HARTFORD FINANCIAL SERVICES	HIG	2.00	12.00	14.00	9,790.75
HASBRO INC	HAS	4.30	7.25	11.55	4,664.38
HCP INC	HCP	4.69	6.00	10.69	20,454.54
HEALTH CARE REIT INC	HCN	5.36	11.05	16.41	15,915.91
HEINZ (H J) CO	HNZ	3.83	7.30	11.13	18,495.55
HELMERICH & PAYNE	HP	0.53	6.55	7.08	5,921.83
HERSHEY CO	HSY	2.56	10.00	12.56	11,740.95
HESS CORP	HES	0.80	6.55	7.36	18,088.33
HOME DEPOT INC	HD	2.18	16.40	18.58	92,476.82
HONEYWELL INTERNATIONAL INC	HON	2.86	10.50	13.36	49,720.62
HOST HOTELS & RESORTS INC	HST	2.53	10.00	12.53	11,356.83
HUMANA INC	HUM	1.67	10.00	11.67	10,858.91
HUNTINGTON BANCSHARES	HBAN	2.63	5.00	7.63	5,466.55
ILLINOIS TOOL WORKS	ITW	2.74	9.80	12.54	28,182.33
INGERSOLL-RAND PLC	IR	1.50	12.05	13.55	14,436.06
INTEGRYS ENERGY GROUP INC	TEG	5.50	5.50	11.00	4,088.20
INTEL CORP	INTC	4.80	10.00	14.80	102,337.06
INTERPUBLIC GROUP OF COS	IPG	2.32	6.33	8.65	4,753.90
INTL BUSINESS MACHINES CORP	IBM	1.95	10.00	11.95	216,438.47
INTL FLAVORS & FRAGRANCES	IFF	2.17	6.20	8.37	5,427.40
INTL GAME TECHNOLOGY	IGT	2.24	13.20	15.44	3,770.64
INTL PAPER CO	IP	3.16	5.00	8.16	17,495.54
INTUIT INC	INTU	1.31	14.50	15.81	17,607.93
INVESCO LTD	IVZ	2.98	12.70	15.68	11,585.06
IRON MOUNTAIN INC	IRM	3.90	12.00	15.90	5,885.68
JABIL CIRCUIT INC	JBL	1.84	10.80	12.63	3,914.33
JOHNSON & JOHNSON	JNJ	3.70	6.20	9.90	194,265.47
JOHNSON CONTROLS INC	JCI	2.78	12.00	14.78	20,975.89
JOY GLOBAL INC	JOY	1.15	4.40	5.55	6,760.30
JPMORGAN CHASE & CO	JPM	2.89	6.00	8.89	167,144.22
KELLOGG CO	K	3.38	7.10	10.48	20,017.70
KEYCORP	KEY	2.49	5.00	7.49	7,861.30
KIMBERLY-CLARK CORP	KMB	3.86	10.05	13.91	33,036.28
KINDER MORGAN INC	KMI	4.90	20.23	25.13	26,075.63
KLA-TENCOR CORP	KLAC	3.69	10.00	13.69	7,952.80
KOHL'S CORP	KSS	3.25	9.00	12.25	9,885.83
KRAFT FOODS GROUP INC	KRFT	1.14	3.35	4.49	26,942.88
KROGER CO	KR	2.54	10.00	12.54	13,489.65
LAUDER (ESTEE) COS INC -CL A	EL	1.35	12.65	14.00	14,211.84

## Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
LEGG MASON INC	LM	1.92	12.00	13.92	3,387.66
LEGGETT & PLATT INC	LEG	4.90	15.00	19.90	3,845.64
LENNAR CORP	LEN	0.44	6.00	6.44	7,126.99
LIMITED BRANDS INC	LTD	2.38	12.00	14.38	13,570.79
LINCOLN NATIONAL CORP	LNC	1.33	8.00	9.33	7,122.91
LINEAR TECHNOLOGY CORP	LLTC	3.34	10.00	13.34	7,936.78
LOCKHEED MARTIN CORP	LMT	5.28	6.00	11.28	29,863.84
LORILLARD INC	LO	5.78	8.70	14.48	15,102.35
LOWE'S COMPANIES INC	LOW	2.09	15.90	17.99	39,948.53
LYONDELLBASELL INDUSTRIES NV	LYB	8.15	7.00	15.15	32,837.31
M & T BANK CORP	MTB	3.09	8.65	11.74	12,613.71
MACY'S INC	M	2.34	14.20	16.54	15,423.67
MARATHON OIL CORP	MRO	2.26	2.00	4.26	21,658.75
MARATHON PETROLEUM CORP	MPC	2.47	11.20	13.68	21,368.53
MARRIOTT INTL INC	MAR	1.71	22.55	24.25	11,760.18
MARSH & MCLENNAN COS	MMC	2.96	11.00	13.96	18,765.02
MASCO CORP	MAS	2.03	12.50	14.53	5,949.29
MASTERCARD INC	MA	0.29	18.00	18.29	58,597.91
MATTEL INC	MAT	3.69	9.00	12.69	12,565.53
MCCORMICK & CO INC	MKC	2.32	8.55	10.87	8,414.79
MCDONALD'S CORP	MCD	3.79	8.50	12.29	88,560.81
MCGRAW-HILL COMPANIES	MHP	2.12	13.45	15.57	15,181.86
MCKESSON CORP	MCK	0.93	12.35	13.28	22,886.44
MEAD JOHNSON NUTRITION CO	MJN	2.03	11.60	13.63	13,377.19
MEADWESTVACO CORP	MWV	3.45	10.00	13.45	5,570.91
MEDTRONIC INC	MDT	2.69	6.00	8.69	41,485.91
MERCK & CO	MRK	4.29	2.00	6.29	124,460.55
METLIFE INC	MET	2.44	8.46	10.90	35,938.99
MICROCHIP TECHNOLOGY INC	MCHP	4.71	9.00	13.71	6,342.18
MICROSOFT CORP	MSFT	3.79	10.00	13.79	224,801.17
MOLEX INC	MOLX	3.54	10.00	13.54	4,430.22
MOLSON COORS BREWING CO	TAP	3.13	4.75	7.88	6,803.81
MONDELEZ INTERNATIONAL INC	MDLZ	2.25	9.90	12.15	45,232.58
MONSANTO CO	MON	1.75	10.20	11.95	50,633.96
MOODY'S CORP	MCO	1.46	14.50	15.96	11,216.33
MORGAN STANLEY	MS	1.15	10.00	11.15	37,749.00
MOSAIC CO	MOS	1.90	7.70	9.60	16,813.11
MURPHY OIL CORP	MUR	2.33	11.20	13.53	11,572.83
NASDAQ OMX GROUP INC	NDAQ	2.29	10.00	12.29	4,121.78
NATIONAL OILWELL VARCO INC	NOV	0.87	15.00	15.87	29,178.96
NEWELL RUBBERMAID INC	NWL	2.93	8.60	11.53	6,404.85
NEWS CORP	NWSA	0.78	16.31	17.09	60,139.20
NEXTERA ENERGY INC	NEE	3.68	6.17	9.85	29,281.62
NIKE INC -CL B	NKE	1.79	10.00	11.79	37,220.11
NISOURCE INC	NI	4.12	6.70	10.82	7,709.80
NOBLE CORP	NE	1.76	13.00	14.76	8,799.71
NOBLE ENERGY INC	NBL	1.05	7.00	8.05	18,098.63
NORDSTROM INC	JWN	2.26	12.00	14.26	10,705.03
NORFOLK SOUTHERN CORP	NSC	3.72	15.00	18.72	19,544.10

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Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
NORTHEAST UTILITIES	NU	3.72	6.00	9.72	12,268.89
NORTHERN TRUST CORP	NTRS	2.67	11.40	14.07	12,028.32
NRG ENERGY INC	NRG	2.01	28.20	30.21	7,409.38
NUCOR CORP	NUE	3.64	6.75	10.39	13,709.26
NVIDIA CORP	NVDA	2.73	11.50	14.23	7,660.67
NYSE EURONEXT	NYX	4.01	5.30	9.31	7,651.86
OCCIDENTAL PETROLEUM CORP	OXY	2.96	4.90	7.86	62,068.20
OMNICOM GROUP	OMC	2.62	8.95	11.57	13,198.48
ONEOK INC	OKE	3.51	13.75	17.26	8,747.21
ORACLE CORP	ORCL	0.79	10.00	10.79	157,746.78
PACCAR INC	PCAR	4.02	13.50	17.52	15,960.53
PALL CORP	PLL	1.89	14.10	15.99	6,694.34
PARKER-HANNIFIN CORP	PH	2.04	6.00	8.04	12,689.34
PATTERSON COMPANIES INC	PDCO	1.84	12.50	14.34	3,718.54
PAYCHEX INC	PAYX	4.67	10.00	14.67	11,311.57
PEABODY ENERGY CORP	BTU	1.31	2.50	3.81	7,141.75
PENTAIR LTD	PNR	2.06	15.00	17.06	10,335.85
PEOPLE'S UNITED FINL INC	PBCT	5.85	10.55	16.40	4,202.83
PEPCO HOLDINGS INC	POM	5.77	4.70	10.47	4,499.95
PEPSICO INC	PEP	3.26	3.90	7.16	105,851.22
PERKINELMER INC	PKI	0.99	12.00	12.99	3,643.12
PERRIGO CO	PRGO	0.38	10.20	10.58	9,766.44
PETSMART INC	PETM	1.14	17.60	18.74	7,344.84
PFIZER INC	PFE	3.58	2.00	5.58	184,648.20
PHILIP MORRIS INTERNATIONAL	PM	4.48	10.10	14.58	139,725.05
PHILLIPS 66	PSX	1.96	4.30	6.26	33,230.30
PINNACLE WEST CAPITAL CORP	PNW	4.55	6.30	10.85	5,592.51
PIONEER NATURAL RESOURCES CO	PXD	0.09	16.25	16.34	13,168.98
PLUM CREEK TIMBER CO INC	PCL	3.88	2.50	6.38	7,169.17
PNC FINANCIAL SVCS GROUP INC	PNC	2.88	4.90	7.78	30,838.00
PPG INDUSTRIES INC	PPG	1.90	9.00	10.90	20,778.80
PRAXAIR INC	PX	2.21	10.00	12.21	32,520.44
PRECISION CASTPARTS CORP	PCP	0.07	14.80	14.87	27,567.81
PRICE (T. ROWE) GROUP	TROW	2.36	13.00	15.36	16,596.07
PRINCIPAL FINANCIAL GRP INC	PFG	3.28	11.45	14.73	8,373.10
PROCTER & GAMBLE CO	PG	3.54	7.00	10.54	185,626.94
PROGRESSIVE CORP-OHIO	PGR	2.05	6.00	8.05	12,760.20
PRUDENTIAL FINANCIAL INC	PRU	3.39	13.00	16.39	24,638.46
PUBLIC STORAGE	PSA	3.32	9.50	12.82	24,882.82
QEP RESOURCES INC	QEP	0.30	11.91	12.21	5,391.60
QUALCOMM INC	QCOM	1.86	15.35	17.21	105,410.55
QUEST DIAGNOSTICS INC	DGX	1.31	12.00	13.31	9,263.07
RALPH LAUREN CORP	RL	1.22	13.95	15.17	9,093.25
RANGE RESOURCES CORP	RRC	0.28	9.36	9.64	10,217.98
RAYTHEON CO	RTN	3.74	7.50	11.24	18,987.14
REGIONS FINANCIAL CORP	RF	0.60	7.00	7.60	10,074.71
REPUBLIC SERVICES INC	RSG	3.44	7.30	10.74	10,696.74
REYNOLDS AMERICAN INC	RAI	6.04	6.00	12.04	23,157.21
ROBERT HALF INTL INC	RHI	2.23	18.00	20.23	4,478.31

**Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013**

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
ROCKWELL AUTOMATION	ROK	2.48	10.69	13.17	11,730.80
ROCKWELL COLLINS INC	COL	2.28	10.40	12.68	8,038.05
ROPER INDUSTRIES INC/DE	ROP	0.68	15.00	15.68	10,968.52
ROSS STORES INC	ROST	1.18	14.00	15.18	12,028.59
RYDER SYSTEM INC	R	2.73	9.95	12.68	2,552.02
SAFEWAY INC	SWY	4.28	10.50	14.78	4,334.36
SAIC INC	SAI	4.62	9.00	13.62	3,869.98
SCANA CORP	SCG	4.60	6.00	10.60	6,015.03
SCHLUMBERGER LTD	SLB	1.86	17.38	19.24	91,998.74
SCHWAB (CHARLES) CORP	SCHW	1.83	9.70	11.53	18,310.41
SCRIPPS NETWORKS INTERACTIVE	SNI	0.95	14.90	15.85	6,691.85
SEAGATE TECHNOLOGY PLC	STX	5.95	19.00	24.95	11,483.37
SEALED AIR CORP	SEE	3.27	10.00	13.27	3,405.94
SEMPRA ENERGY	SRE	3.62	7.00	10.62	17,156.98
SHERWIN-WILLIAMS CO	SHW	1.15	13.20	14.35	15,859.92
SIGMA-ALDRICH CORP	SIAL	1.16	6.70	7.86	8,853.59
SIMON PROPERTY GROUP INC	SPG	2.84	2.10	4.94	48,908.62
SLM CORP	SLM	3.25	11.50	14.75	7,916.78
SMUCKER (JM) CO	SJM	2.61	8.25	10.86	9,353.94
SNAP-ON INC	SNA	2.12	10.00	12.12	4,592.32
SOUTHERN CO	SO	4.81	4.98	9.79	37,420.48
SOUTHWEST AIRLINES	LUV	0.47	21.15	21.62	7,556.90
SPECTRA ENERGY CORP	SE	4.68	5.00	9.68	18,235.08
ST JUDE MEDICAL INC	STJ	2.76	8.60	11.36	11,137.52
STANLEY BLACK & DECKER INC	SWK	2.83	6.70	9.53	12,436.72
STAPLES INC	SPLS	4.09	5.95	10.04	7,682.25
STARBUCKS CORP	SBUX	1.86	18.78	20.65	39,879.27
STARWOOD HOTELS&RESORTS WRLD	HOT	2.51	15.30	17.81	11,241.24
STATE STREET CORP	STT	2.16	6.00	8.16	21,850.63
STRYKER CORP	SYK	2.11	9.00	11.11	20,842.62
SUNTRUST BANKS INC	STI	0.82	15.80	16.62	15,275.80
SYSCO CORP	SYI	3.67	7.45	11.12	18,609.84
TARGET CORP	TGT	2.72	11.90	14.62	38,507.48
TE CONNECTIVITY LTD	TEL	2.51	11.00	13.51	15,685.91
TECO ENERGY INC	TE	5.46	4.00	9.46	3,629.95
TESORO CORP	TSO	1.56	14.45	16.01	6,186.16
TEXAS INSTRUMENTS INC	TXN	2.99	10.00	12.99	34,621.61
TEXTRON INC	TXT	0.42	29.25	29.67	6,986.47
THERMO FISHER SCIENTIFIC INC	TMO	1.05	11.80	12.85	22,974.51
TIFFANY & CO	TIF	2.53	13.50	16.03	7,269.22
TIME WARNER CABLE INC	TWC	2.63	14.00	16.63	29,329.42
TIME WARNER INC	TWX	2.43	11.95	14.38	45,288.22
TJX COMPANIES INC	TJX	1.21	12.00	13.21	30,956.79
TORCHMARK CORP	TMK	1.27	9.50	10.77	4,905.03
TOTAL SYSTEM SERVICES INC	TSS	2.09	12.00	14.09	4,002.07
TRAVELERS COS INC	TRV	2.82	10.00	12.82	27,395.67
TYCO INTERNATIONAL LTD	TYC	2.49	21.60	24.09	13,622.22
TYSON FOODS INC -CL A	TSN	1.12	8.50	9.62	5,596.16
U S BANCORP	USB	2.66	9.00	11.66	60,059.05

**Standard & Poor's Compustat & I/B/E/S (S&P 500) - Jan. 1, 2013**

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
UNION PACIFIC CORP	UNP	2.53	15.20	17.73	59,138.31
UNITED PARCEL SERVICE INC	UPS	3.42	10.60	14.02	53,349.26
UNITED STATES STEEL CORP	X	0.89	6.50	7.39	3,441.10
UNITED TECHNOLOGIES CORP	UTX	2.88	10.55	13.43	75,165.86
UNITEDHEALTH GROUP INC	UNH	1.74	10.85	12.59	55,405.78
UNUM GROUP	UNM	2.71	8.50	11.21	5,728.06
VALERO ENERGY CORP	VLO	2.20	7.30	9.50	18,886.79
VERIZON COMMUNICATIONS INC	VZ	5.09	6.90	11.99	123,492.58
VF CORP	VFC	2.54	10.40	12.94	16,630.40
VIACOM INC	VIAB	2.37	13.55	15.92	26,563.08
VISA INC	V	1.04	19.00	20.04	80,510.05
VULCAN MATERIALS CO	VMC	0.09	12.00	12.09	6,745.47
WAL-MART STORES INC	WMT	2.54	9.00	11.54	228,245.59
WALGREEN CO	WAG	3.36	13.00	16.36	34,978.34
WASTE MANAGEMENT INC	WM	4.48	6.50	10.98	15,651.95
WELLPOINT INC	WLP	2.10	11.50	13.60	18,498.66
WELLS FARGO & CO	WFC	3.11	8.45	11.56	179,932.84
WESTERN DIGITAL CORP	WDC	2.55	8.30	10.85	10,350.65
WESTERN UNION CO	WU	4.04	10.00	14.04	8,119.44
WEYERHAEUSER CO	WY	2.57	5.00	7.57	15,065.42
WHOLE FOODS MARKET INC	WFM	0.72	18.00	18.72	16,912.46
WILLIAMS COS INC	WMB	4.54	14.40	18.94	22,068.92
WINDSTREAM CORP	WIN	12.26	1.50	13.76	4,869.69
WISCONSIN ENERGY CORP	WEC	3.42	5.00	8.42	8,478.08
WYNDHAM WORLDWIDE CORP	WYN	2.05	18.60	20.65	7,463.61
WYNN RESORTS LTD	WYNN	9.29	10.00	19.29	11,341.69
XCEL ENERGY INC	XEL	4.25	5.00	9.25	13,024.33
XEROX CORP	XRX	2.59	4.10	6.69	8,678.77
XILINX INC	XLNX	2.67	9.00	11.67	9,356.96
XL GROUP PLC	XL	1.93	10.00	11.93	7,533.16
XYLEM INC	XYL	1.54	3.00	4.54	5,035.02
YUM BRANDS INC	YUM	2.28	13.10	15.38	30,000.12
ZIMMER HOLDINGS INC	ZMH	1.18	9.00	10.18	11,565.64
ZIONS BANCORPORATION	ZION	0.21	10.00	10.21	3,941.49

Market Weighted Average = **12.75**



### Value Line Data for S&P 500 - Jan. 1, 2013

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
3M Company	MMM	2.49	9.50	11.99	65,989.46
Abercrombie & Fitch	ANF	1.48	24.00	25.48	3,771.80
Accenture Plc	ACN	2.35	12.00	14.35	44,353.77
ACE Limited	ACE	2.38	4.00	6.38	27,966.98
AES Corp.	AES	1.46	23.00	24.46	8,331.40
Aetna Inc.	AET	1.76	9.50	11.26	15,213.06
Aflac Inc.	AFL	2.69	12.00	14.69	24,392.40
Agilent Technologies	A	0.95	16.50	17.45	14,934.27
AGL Resources	GAS	4.54	6.00	10.54	4,842.77
Air Products & Chem.	APD	2.99	8.50	11.49	18,357.03
Airgas Inc.	ARG	1.89	16.00	17.89	7,312.25
Alcoa Inc.	AA	1.32			9,882.28
Allegheny Techn.	ATI	2.30	33.00	35.30	3,455.80
Allergan Inc.	AGN	0.20	10.50	10.70	29,398.29
Allstate Corp.	ALL	2.11	15.00	17.11	20,382.60
Altera Corp.	ALTR	1.13	9.50	10.63	11,264.58
Altria Group	MO	5.40	10.00	15.40	65,860.96
Amer. Elec. Power	AEP	4.30	3.00	7.30	21,121.75
Amer. Express	AXP	1.35	12.50	13.85	66,882.42
Amer. Tower 'A'	AMT	1.42	26.00	27.42	30,462.03
Ameriprise Fin'l	AMP	2.76	12.00	14.76	13,679.81
AmerisourceBergen	ABC	1.93	12.00	13.93	10,974.75
Amgen	AMGN	2.12	8.00	10.12	68,345.54
Amphenol Corp.	APH	0.62	10.50	11.12	10,844.28
Anadarko Petroleum	APC	0.47			39,116.14
Analog Devices	ADI	2.77	9.50	12.27	12,815.06
Aon plc	AON	1.10	12.50	13.60	18,205.45
Apache Corp.	APA	0.83	11.00	11.83	32,553.83
Apple Inc.	AAPL	1.95	22.50	24.45	494,962.63
Applied Materials	AMAT	3.04	9.50	12.54	14,136.57
Archer Daniels Mid'l'd	ADM	2.46	6.50	8.96	19,255.98
Assurant Inc.	AIZ	2.37	9.00	11.37	2,854.85
AT&T Inc.	T	5.14	7.00	12.14	201,059.75
Automatic Data Proc.	ADP	2.96	8.00	10.96	28,635.59
Avery Dennison	AVY	3.02	3.50	6.52	3,634.78
Avon Products	AVP	1.53	5.00	6.53	6,953.49
Baker Hughes	BHI	1.41	17.50	18.91	19,137.79
Ball Corp.	BLL	0.86	11.50	12.36	7,146.49
Bank of America	BAC	0.33			130,512.70
Bank of New York Mellon	BK	1.95	23.00	24.95	31,891.26
Bard (C.R.)	BCR	0.78	7.50	8.28	8,307.65
Baxter Int'l Inc.	BAX	2.65	8.50	11.15	37,541.24
BB&T Corp.	BBT	2.87	16.00	18.87	21,126.14
Beam Inc.	BEAM	1.34	9.00	10.34	9,707.20
Becton Dickinson	BDX	2.46	8.50	10.96	16,034.16
Bemis Co.	BMS	2.94	11.00	13.94	3,514.99
Best Buy Co.	BBY	5.67	0.50	6.17	4,092.27
BlackRock Inc.	BLK	2.81	12.00	14.81	37,509.23
Block (H&R)	HRB	4.18	8.50	12.68	5,222.37

### Value Line Data for S&P 500 - Jan. 1, 2013

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
Boeing	BA	2.50	12.00	14.50	58,557.13
Bristol-Myers Squibb	BMJ	4.21	8.50	12.71	55,050.44
Broadcom Corp. 'A'	BRCM	1.15	14.00	15.15	19,424.16
Brown-Forman 'B'	BF/B	1.63	9.00	10.63	13,389.15
C.H. Robinson	CHRW	2.24	10.50	12.74	10,162.80
CA Inc.	CA	4.41	8.00	12.41	10,462.58
Cablevision Sys. 'A'	CVC	3.99	5.00	8.99	4,028.15
Cabot Oil & Gas 'A'	COG	0.16	22.50	22.66	10,514.93
Campbell Soup	CPB	3.22	6.00	9.22	11,167.84
Capital One Fin'l	COF	0.33	8.50	8.83	35,831.46
Cardinal Health	CAH	2.63	11.00	13.63	14,433.00
Carnival Corp.	CCL	2.70	6.50	9.20	28,795.62
Caterpillar Inc.	CAT	2.20	20.00	22.20	62,071.32
CBS Corp. 'B'	CBS	1.22	21.00	22.22	24,620.05
CenterPoint Energy	CNP	4.21	5.00	9.21	8,471.88
CenturyLink Inc.	CTL	7.29	1.50	8.79	24,869.68
CF Industries	CF	0.87	15.00	15.87	13,257.60
Chesapeake Energy	CHK	2.08	2.00	4.08	11,247.66
Chevron Corp.	CVX	3.27	10.50	13.77	216,268.50
Chubb Corp.	CB	2.12	7.00	9.12	20,447.35
CIGNA Corp.	CI	0.07	14.00	14.07	15,689.16
Cincinnati Financial	CINF	4.08	14.50	18.58	6,575.42
Cintas Corp.	CTAS	1.51	12.50	14.01	5,328.73
Cisco Systems	CSCO	2.73	8.50	11.23	108,769.28
Citigroup Inc.	C	0.09			124,426.83
Cliffs Natural Res.	CLF	6.55	9.50	16.05	5,341.99
Clorox Co.	CLX	3.60	11.50	15.10	9,736.06
CME Group	CME	3.49	7.50	10.99	17,834.92
CMS Energy Corp.	CMS	4.09	7.00	11.09	6,623.89
Coach Inc.	COH	2.18	15.00	17.18	15,744.91
Coca-Cola	KO	2.87	9.00	11.87	168,942.77
Coca-Cola Enterprises	CCE	2.06			9,435.30
Colgate-Palmolive	CL	2.46	9.50	11.96	50,980.70
Comcast Corp.	CMCSA	1.70	14.50	16.20	101,161.96
Comerica Inc.	CMA	1.89	32.50	34.39	6,237.73
Computer Sciences	CSC	1.92	4.00	5.92	6,472.38
ConAgra Foods	CAG	3.33	9.00	12.33	12,206.32
ConocoPhillips	COP	4.46	5.50	9.96	72,627.28
CONSOL Energy	CNX	1.56	7.50	9.06	7,381.72
Consol. Edison	ED	4.31	4.00	8.31	16,664.36
Corning Inc.	GLW	2.81	3.50	6.31	18,814.94
Costco Wholesale	COST	1.07	12.50	13.57	44,421.62
Coventry Health Care	CVH	1.12	7.50	8.62	5,985.57
Covidien Plc	COV	1.83	8.50	10.33	28,141.97
CSX Corp.	CSX	2.75	14.00	16.75	21,597.03
Cummins Inc.	CMI	1.75	16.50	18.25	21,462.61
CVS Caremark Corp.	CVS	1.80	11.00	12.80	62,287.54
Danaher Corp.	DHR	0.17	15.00	15.17	40,238.19
Darden Restaurants	DRI	4.46	10.50	14.96	5,975.08

### Value Line Data for S&P 500 - Jan. 1, 2013

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
Deere & Co.	DE	2.09	13.00	15.09	34,729.11
Dell Inc.	DELL	2.92	5.00	7.92	19,043.92
Dentsply Int'l	XRAY	0.59	9.50	10.09	5,787.92
Devon Energy	DVN	1.49	8.00	9.49	22,104.90
Diamond Offshore	DO	4.97	3.00	7.97	9,942.04
Discover Fin'l Svcs.	DFS	1.42	18.50	19.92	20,319.70
Disney (Walt)	DIS	1.46	13.00	14.46	94,406.49
Dominion Resources	D	4.22	5.00	9.22	30,764.57
Donnelley (R.R.) & Sons	RRD	11.59	8.50	20.09	1,672.31
Dover Corp.	DOV	2.08	12.50	14.58	12,047.37
Dow Chemical	DOW	4.04	16.50	20.54	40,330.14
Dr Pepper Snapple	DPS	3.08	9.00	12.08	9,519.39
DTE Energy	DTE	4.10	5.00	9.10	10,606.58
Du Pont	DD	3.93	9.50	13.43	42,637.28
Duke Energy	DUK	4.76	4.50	9.26	45,802.24
Dun & Bradstreet	DNB	1.93	7.50	9.43	3,483.65
Eastman Chemical	EMN	1.74	17.00	18.74	10,760.23
Eaton Corp. plc	ETN	2.69	15.50	18.19	19,175.82
Ecolab Inc.	ECL	1.24	14.50	15.74	21,777.71
Edison Int'l	EIX	2.91			15,313.12
Emerson Electric	EMR	2.98	9.00	11.98	40,165.03
EnSCO plc	ESV	2.47	16.00	18.47	14,569.04
EOG Resources	EOG	0.56	26.50	27.06	34,072.80
EQT Corp.	EQT	0.20	14.50	14.70	9,039.62
Equifax Inc.	EFX	1.32	10.50	11.82	6,628.31
Expedia Inc.	EXPE	0.82	14.50	15.32	8,726.66
Expeditors Int'l	EXPD	1.36	8.50	9.86	8,738.29
Exxon Mobil Corp.	XOM	2.57	10.00	12.57	405,599.03
Family Dollar Stores	FDO	1.50	14.50	16.00	6,620.12
Fastenal Co.	FAST	1.75	18.00	19.75	14,234.59
Federated Investors	FII	4.46	8.50	12.96	2,343.15
FedEx Corp.	FDX	0.59	14.00	14.59	29,845.49
Fifth Third Bancorp	FITB	2.55	15.00	17.55	14,081.26
First Horizon National	FHN	0.39			2,585.01
FirstEnergy Corp.	FE	5.23	5.00	10.23	17,569.25
FLIR Systems	FLIR	1.34	7.00	8.34	3,544.49
Flowserve Corp.	FLS	0.94	8.50	9.44	7,681.61
Fluor Corp.	FLR	1.06	11.50	12.56	10,078.73
FMC Corp.	FMC	0.91	13.50	14.41	8,124.11
Ford Motor	F	1.48	14.00	15.48	51,737.81
Franklin Resources	BEN	0.89	12.50	13.39	27,949.47
Freep't-McMoRan C&G	FCX	4.04	8.50	12.54	33,691.30
Frontier Communic.	FTR	9.15	6.00	15.15	4,353.26
GameStop Corp.	GME	4.10	9.50	13.60	2,998.32
Gannett Co.	GCI	4.32	5.50	9.82	4,324.59
Gap (The) Inc.	GPS	1.65	11.00	12.65	15,408.00
Gen'l Dynamics	GD	2.85	3.00	5.85	25,092.61
Gen'l Electric	GE	3.60	13.50	17.10	222,309.56
Gen'l Mills	GIS	3.19	7.00	10.19	26,979.24

### Value Line Data for S&P 500 - Jan. 1, 2013

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
Genuine Parts	GPC	3.02	11.50	14.52	10,181.18
Goldman Sachs	GS	1.52	6.50	8.02	65,385.31
Grainger (W.W.)	GWW	1.66	15.50	17.16	14,483.94
Halliburton Co.	HAL	0.99	15.00	15.99	34,011.20
Harley-Davidson	HOG	1.26	26.00	27.26	11,004.91
Harman Int'l	HAR	1.30	18.00	19.30	3,135.00
Harris Corp.	HRS	2.99	5.50	8.49	5,634.00
Hartford Fin'l Svcs.	HIG	1.65	19.00	20.65	10,692.34
Hasbro Inc.	HAS	3.98	6.50	10.48	4,660.42
Heinz (H.J.)	HNZ	3.51	6.50	10.01	18,816.21
Helmerich & Payne	HP	1.05	18.50	19.55	6,093.80
Hershey Co.	HSY	2.28	12.50	14.78	16,636.36
Hess Corp.	HES	0.73	10.50	11.23	18,628.12
Home Depot	HD	1.83	13.50	15.33	94,517.28
Honeywell Int'l	HON	2.52	12.00	14.52	51,961.07
Hormel Foods	HRL	2.04	10.00	12.04	9,032.00
Horton D.R.	DHI	0.73	30.00	30.73	6,648.86
Hudson City Bancorp	HCBK	3.81	25.00	28.81	4,237.46
Humana Inc.	HUM	1.57	7.50	9.07	10,675.31
Huntington Bancshs.	HBAN	2.40			5,723.19
Illinois Tool Works	ITW	2.44	13.00	15.44	28,919.22
Ingersoll-Rand	IR	1.30	17.00	18.30	15,060.40
Int'l Business Mach.	IBM	1.81	9.50	11.31	219,195.52
Int'l Flavors & Frag.	IFF	1.99	8.50	10.49	5,564.70
Int'l Game Tech.	IGT	1.90	13.00	14.90	3,972.87
Int'l Paper	IP	2.97	12.50	15.47	17,916.81
Integrus Energy	TEG	5.05	6.00	11.05	4,229.57
Intel Corp.	INTC	4.22	12.00	16.22	105,419.12
Interpublic Group	IPG	2.02	18.50	20.52	5,073.12
Intuit Inc.	INTU	1.10	13.00	14.10	18,579.21
Invesco Ltd.	IVZ	2.70	17.50	20.20	12,237.80
Iron Mountain	IRM	3.30	12.00	15.30	6,222.28
Jabil Circuit	JBL	1.74	16.50	18.24	4,005.18
Johnson & Johnson	JNJ	3.44	6.00	9.44	197,661.05
Johnson Controls	JCI	2.39	13.00	15.39	21,467.90
Joy Global	JOY	1.07	10.50	11.57	6,971.01
JPMorgan Chase	JPM	3.02	9.00	12.02	172,309.39
Kellogg	K	3.11	7.50	10.61	20,277.12
KeyCorp	KEY	2.26			8,378.95
Kimberly-Clark	KMB	3.44	9.00	12.44	33,879.03
Kinder Morgan Inc.	KMI	3.92			38,073.15
KLA-Tencor	KLAC	3.25	17.50	20.75	8,155.90
Kohl's Corp.	KSS	3.23	11.00	14.23	9,755.13
Kraft Foods Group	KRFT	4.38			26,878.23
Kroger Co.	KR	2.27	10.00	12.27	13,600.44
L-3 Communic.	LLL	2.64	4.00	6.64	7,367.06
Lauder (Estee)	EL	1.15	18.50	19.65	24,274.13
Legg Mason	LM	1.68	14.00	15.68	3,466.53
Leggett & Platt	LEG	4.15	16.00	20.15	3,958.67

**Value Line Data for S&P 500 - Jan. 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>Yield %</b>	<b>Growth Rate %</b>	<b>Equity Cost %</b>	<b>Market Value</b>
Lennar Corp.	LEN	0.40			7,676.57
Limited Brands	LTD	2.23	10.50	12.73	12,925.44
Lincoln Nat'l Corp.	LNC	1.86	7.00	8.86	7,732.30
Linear Technology	LLTC	2.90	6.50	9.40	8,241.90
Lockheed Martin	LMT	5.02	3.00	8.02	30,384.82
Loews Corp.	L	0.59	10.50	11.09	16,553.89
Lorillard Inc.	LO	5.21	13.50	18.71	15,323.10
Lowe's Cos.	LOW	1.78	13.50	15.28	39,956.34
M&T Bank Corp.	MTB	2.76	10.50	13.26	13,102.89
Macy's Inc.	M	2.53	16.50	19.03	14,996.73
Marathon Oil Corp.	MRO	2.15			22,599.06
Marathon Petroleum	MPC	2.25			21,204.45
Marriott Int'l	MAR	1.33	17.00	18.33	12,318.22
Marsh & McLennan	MMC	2.59	15.00	17.59	19,252.16
Masco Corp.	MAS	1.73	54.00	55.73	6,095.28
MasterCard Inc.	MA	0.23	15.00	15.23	63,624.16
Mattel Inc.	MAT	3.37	9.50	12.87	12,495.06
McCormick & Co.	MKC	2.09	9.00	11.09	8,646.60
McDonald's Corp.	MCD	3.39	8.50	11.89	90,207.24
McGraw-Hill	MHP	1.84			15,301.27
McKesson Corp.	MCK	0.89	11.00	11.89	23,589.74
Mead Johnson Nutrition	MJN	1.71	12.50	14.21	14,221.97
MeadWestvaco	MWV	3.29	10.50	13.79	5,803.18
Medtronic Inc.	MDT	2.54	5.50	8.04	43,144.49
Merck & Co.	MRK	4.06	1.00	5.06	127,773.64
MetLife Inc.	MET	2.10	12.00	14.10	38,202.13
Microchip Technology	MCHP	4.22	11.00	15.22	6,459.21
Microsoft Corp.	MSFT	3.37	11.00	14.37	225,204.28
Molex Inc.	MOLX	3.07	7.00	10.07	5,069.49
Molson Coors Brewing	TAP	2.98	4.50	7.48	7,746.30
Mondelez Int'l	MDLZ	1.95	1.00	2.95	47,519.33
Monsanto Co.	MON	1.57	10.50	12.07	51,380.21
Moody's Corp.	MCO	1.53	10.50	12.03	11,762.43
Morgan Stanley	MS	1.02	23.50	24.52	39,876.06
Mosaic Company	MOS	1.76	15.00	16.76	24,951.07
Motorola Solutions	MSI	1.85			15,786.54
Murphy Oil Corp.	MUR	2.05	17.00	19.05	11,841.01
Nasdaq OMX Group	NDAQ	1.97	8.00	9.97	4,374.44
National Oilwell Varco	NOV	0.80	15.00	15.80	30,628.57
Newell Rubbermaid	NWL	2.67	14.00	16.67	6,485.38
News Corp.	NWS	0.63	13.50	14.13	63,620.92
NextEra Energy	NEE	3.61	4.00	7.61	29,996.84
NIKE Inc. 'B'	NKE	1.60	11.50	13.10	47,650.38
NiSource Inc.	NI	3.80	10.50	14.30	7,863.76
Noble Energy	NBL	0.96	17.00	17.96	18,672.20
Nordstrom Inc.	JWN	2.11	14.00	16.11	10,984.31
Norfolk Southern	NSC	3.15	11.50	14.65	20,659.73
Northeast Utilities	NU	3.58	8.00	11.58	12,443.12
Northern Trust Corp.	NTRS	2.31	6.50	8.81	12,810.06

**Value Line Data for S&P 500 - Jan. 1, 2013**

<b>Company Name</b>	<b>Ticker</b>	<b>Yield %</b>	<b>Growth Rate %</b>	<b>Equity Cost %</b>	<b>Market Value</b>
Northrop Grumman	NOC	3.35	4.00	7.35	16,893.71
NRG Energy	NRG	1.56			5,291.67
Nucor Corp.	NUE	3.35	45.00	48.35	14,382.65
NVIDIA Corp.	NVDA	2.35	12.50	14.85	8,216.78
NYSE Euronext	NYX	3.72	7.00	10.72	7,988.56
Occidental Petroleum	OXY	2.86	10.00	12.86	64,685.01
Omnicom Group	OMC	2.32	12.50	14.82	13,597.34
ONEOK Inc.	OKE	3.09	11.50	14.59	9,078.01
Oracle Corp.	ORCL	0.70	9.00	9.70	164,328.28
PACCAR Inc.	PCAR	1.72	24.00	25.72	16,520.40
Pall Corp.	PLL	1.59	8.00	9.59	6,959.85
Parker-Hannifin	PH	1.85	16.50	18.35	13,250.17
Patterson Cos.	PDCO	1.61	10.00	11.61	3,599.64
Paychex Inc.	PAYX	4.16	7.50	11.66	11,700.74
Peabody Energy	BTU	1.27	1.50	2.77	7,308.49
Pentair Ltd.	PNR	1.75	18.00	19.75	10,501.98
People's United Fin'l	PBCT	5.12	23.50	28.62	4,232.97
Peppo Holdings	POM	5.32	7.00	12.32	4,687.42
PepsiCo Inc.	PEP	3.18	8.00	11.18	107,732.46
PerkinElmer Inc.	PKI	0.87	12.50	13.37	3,801.12
Perrigo Co.	PRGO	0.33	15.50	15.83	10,179.76
PetSmart Inc.	PETM	0.99	15.50	16.49	7,483.34
Pfizer Inc.	PFE	3.71	12.00	15.71	191,132.39
PG&E Corp.	PCG	4.46	3.50	7.96	17,620.76
Philip Morris Int'l	PM	3.96	11.00	14.96	145,001.72
Phillips 66	PSX	1.88			33,255.33
Pinnacle West Capital	PNW	4.20	5.00	9.20	5,748.23
Pioneer Natural Res.	PXD	0.07	31.00	31.07	13,946.17
Plum Creek Timber	PCL	3.69	7.50	11.19	7,431.98
PNC Financial Serv.	PNC	2.67	7.50	10.17	31,993.92
PPG Inds.	PPG	1.71	12.50	14.21	21,387.72
PPL Corp.	PPL	5.03	6.50	11.53	16,970.13
Praxair Inc.	PX	2.20	13.00	15.20	33,676.26
Precision Castparts	PCP	0.06	12.00	12.06	27,873.25
Price (T. Rowe) Group	TROW	2.16	13.50	15.66	17,414.95
Principal Fin'l Group	PFG	2.91	8.00	10.91	8,611.29
Procter & Gamble	PG	3.26	9.50	12.76	188,907.94
Progressive (Ohio)	PGR	1.99	10.50	12.49	13,467.74
Prudential Fin'l	PRU	3.14	8.50	11.64	26,225.28
QEP Resources	QEP	0.35			5,587.50
Qualcomm Inc.	QCOM	1.55	12.00	13.55	108,331.00
Quest Diagnostics	DGX	2.05	7.00	9.05	9,205.59
Ralph Lauren	RL	1.01	11.50	12.51	14,584.18
Range Resources Corp.	RRC	0.25	28.50	28.75	10,365.66
Raytheon Co.	RTN	3.51	5.00	8.51	19,461.50
Regions Financial	RF	0.54			10,724.67
Republic Services	RSG	3.22	11.00	14.22	10,886.96
Reynolds American	RAI	5.52	9.00	14.52	23,917.38
Robert Half Int'l	RHI	1.94	28.00	29.94	4,607.84

### Value Line Data for S&P 500 - Jan. 1, 2013

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
Rockwell Automation	ROK	2.18	10.00	12.18	12,203.14
Rockwell Collins	COL	2.01	8.50	10.51	8,466.59
Roper Inds.	ROP	0.57	13.50	14.07	11,361.51
Ross Stores	ROST	0.95	17.00	17.95	12,886.92
Ryder System	R	2.38	18.00	20.38	2,654.25
Safeway Inc.	SWY	4.08	7.50	11.58	4,384.68
SAIC Inc.	SAI	4.14	6.00	10.14	4,042.44
SCANA Corp.	SCG	4.33	4.00	8.33	6,137.11
Schlumberger Ltd.	SLB	1.55	16.50	18.05	95,598.31
Schwab (Charles)	SCHW	1.59	10.00	11.59	19,711.31
Scripps Networks	SNI	0.80	14.50	15.30	8,733.61
Seagate Technology	STX	4.93	13.50	18.43	12,138.47
Sealed Air	SEE	2.88	11.50	14.38	3,520.98
Sempra Energy	SRE	3.44	4.50	7.94	17,401.61
Sherwin-Williams	SHW	1.23	16.50	17.73	16,122.17
Sigma-Aldrich	SIAL	1.06	7.50	8.56	9,056.86
Smucker (J.M.)	SJM	2.33	8.00	10.33	9,782.91
Snap-on Inc.	SNA	1.88	12.00	13.88	4,656.09
Southern Co.	SO	4.61	5.00	9.61	38,600.48
Southwest Airlines	LUV	0.37	20.00	20.37	8,029.21
Spectra Energy	SE	4.39	7.50	11.89	18,500.03
St. Jude Medical	STJ	2.50	10.50	13.00	11,697.59
Stanley Black & Decker	SWK	2.64	13.00	15.64	12,618.37
Staples Inc.	SPLS	3.74	11.00	14.74	7,928.33
Starbucks Corp.	SBUX	1.51	21.00	22.51	42,313.26
Starwood Hotels	HOT	2.09	19.00	21.09	11,830.80
State Street Corp.	STT	2.08	7.50	9.58	23,155.31
Stryker Corp.	SYK	1.88	7.50	9.38	21,568.75
SunTrust Banks	STI	1.22			15,725.17
Sysco Corp.	SYU	3.52	10.00	13.52	18,703.69
Target Corp.	TGT	2.44	10.50	12.94	39,649.61
TE Connectivity	TEL	2.22	11.50	13.72	16,101.38
TECO Energy	TE	5.17	5.50	10.67	3,721.19
Tesoro Corp.	TSO	1.37	40.00	41.37	5,938.58
Texas Instruments	TXN	2.63	4.50	7.13	35,663.92
Textron Inc.	TXT	0.31	25.00	25.31	7,389.83
Thermo Fisher Sci.	TMO	0.92	10.50	11.42	23,547.19
Tiffany & Co.	TIF	2.12	13.50	15.62	7,756.03
Time Warner	TWX	2.08	13.50	15.58	46,901.50
Time Warner Cable	TWC	2.28	17.00	19.28	29,647.57
TJX Companies	TJX	1.03	13.00	14.03	32,495.47
Torchmark Corp.	TMK	1.12	6.50	7.62	5,072.39
Total System Svcs.	TSS	1.78	8.00	9.78	4,160.88
Travelers Cos.	TRV	2.50	9.00	11.50	28,290.92
Tyson Foods 'A'	TSN	0.98	12.50	13.48	7,361.84
U.S. Bancorp	USB	2.64	13.50	16.14	62,453.60
U.S. Steel Corp.	X	0.78			3,708.00
Union Pacific	UNP	2.14	15.50	17.64	61,666.34

**Value Line Data for S&P 500 - Jan. 1, 2013**

Company Name	Ticker	Yield %	Growth Rate %	Equity Cost %	Market Value
United Parcel Serv.	UPS	2.98	11.50	14.48	73,047.78
United Technologies	UTX	2.53	10.00	12.53	77,887.91
UnitedHealth Group	UNH	1.63	12.50	14.13	52,715.08
Unum Group	UNM	2.40	6.00	8.40	6,021.61
V.F. Corp.	VFC	2.29	15.00	17.29	16,909.41
Valero Energy	VLO	2.01	26.00	28.01	19,542.88
Verizon Communic.	VZ	4.67	8.50	13.17	126,428.61
Viacom Inc. 'B'	VIAB	1.94	17.00	18.94	29,732.67
Visa Inc.	V	0.84	19.50	20.34	126,983.70
Vornado R'lty Trust	VNO	3.39	13.00	16.39	15,310.26
Vulcan Materials	VMC	0.07			6,978.74
Wal-Mart Stores	WMT	2.31	9.50	11.81	231,903.47
Walgreen Co.	WAG	2.91	8.50	11.41	35,138.97
Washington Post	WPO	2.62	6.50	9.12	2,772.58
Waste Management	WM	4.31	5.50	9.81	15,809.71
WellPoint Inc.	WLP	1.95	8.00	9.95	18,617.77
Wells Fargo	WFC	2.53	11.50	14.03	184,819.45
Western Digital	WDC	2.32	5.50	7.82	10,419.84
Western Union	WU	3.69	6.50	10.19	8,392.37
Weyerhaeuser Co.	WY	2.33			15,890.32
Whirlpool Corp.	WHR	1.87	6.00	7.87	8,267.22
Whole Foods Market	WFM	0.87	22.50	23.37	16,835.02
Williams Cos.	WMB	4.14	9.00	13.14	21,405.78
Windstream Corp.	WIN	11.26	9.50	20.76	5,481.09
Wisconsin Energy	WEC	3.62	6.50	10.12	8,671.34
Wyndham Worldwide	WYN	1.66	12.50	14.16	7,859.60
Wynn Resorts	WYNN	3.35	22.50	25.85	12,142.86
Xcel Energy Inc.	XEL	4.02	6.00	10.02	13,360.57
Xerox Corp.	XRX	2.36	9.50	11.86	9,047.80
Xilinx Inc.	XLNX	2.37	7.50	9.87	9,519.20
Yum! Brands	YUM	2.02	11.50	13.52	30,880.64
Zimmer Holdings	ZMH	1.16	9.50	10.66	11,974.97
Zions Bancorp.	ZION	0.18			4,171.13

Market Weighted Average = 13.39



## 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.<sup>48</sup>

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.<sup>49</sup>

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*).<sup>50</sup>

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<sup>48</sup> *The Appraisal of Real Estate*, 13<sup>th</sup> ed., (Chicago: Appraisal Institute, 2008) p. 154.

<sup>49</sup> *Property Assessment Valuation*, 3<sup>rd</sup> ed., (Kansas City: International Association of Assessing Officers, 2010), p. 305.

<sup>50</sup> 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.<sup>51</sup>

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.<sup>52</sup>

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.<sup>53</sup> [This

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<sup>51</sup> Pratt, Shannon P., *Cost of Capital, Estimation and Applications*, (NY: John Wiley & Sons, Inc. 1998) p. 176.

<sup>52</sup> Roger A. Morin, PhD, *Regulatory Finance: Utilities' Cost of Capital*, (Arlington, VA: Public Utilities Reports, Inc., 1994), p. 170-171. (emphasis added)

<sup>53</sup> Brigham, Eugene F. and Michael C. Ehrhardt, *Financial Management: Theory and Practice*, 10<sup>th</sup> ed. (Thomson Learning, Inc.: Stamford, CT, 2002), p. 452.

identical quote is also found in *Fundamentals of Financial Management*, 9<sup>th</sup> 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).<sup>54</sup>

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.<sup>55</sup>

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) 4<sup>th</sup> 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

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<sup>54</sup> *Stocks, Bonds, Bills and Inflation: 2010 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2010), p. 2

<sup>55</sup> Brealey, Richard & Stewart C. Myers, *Principles of Corporate Finance*, 7<sup>th</sup> 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.<sup>56</sup>

### Flotation Cost Measurement

WACC Adjustment Method		Cash Flow Adjustment Method			
Securities Issued	\$1,000	Securities Issued		\$1,000	
Cost of Capital	10%	Flotation Cost =		\$50	
Required Return	\$100	Assets Purchased		\$950	
Flotation Cost =	5.00%	Disc. Rate = Unadjusted WACC =		10.00%	
Flotation Cost =	50				
Assets Purchased	<b>950</b>				
		<b>First Year's Cash Flow:</b>			
Cost of Capital	10.00%	Beg. of Year	(\$50)	Pres. Value Factor 1.10	NCF (\$55)
1 - FC =	0.95			First Year's Income =	100
Adj'd. Cost of Cap.	10.5263%			First Year's Net Cash Flow =	45
<b>Market Value:</b>		End of Year	NCF	Pres. Value Factor (divisor)	Pres. Value
Required Return	100	1	45	1.10	40.91
Adj'd Cost of Cap.	10.5263%	2	100	1.21	82.64
		3	100	1.33	75.13
		4	100	1.46	68.30
		5	100	1.61	62.09
		6	100	1.77	56.45
		7	100	1.95	51.32
		8	100	2.14	46.65
		9	100	2.36	42.41
		10	100	2.59	38.55
		skip to			
		339	100	107,676,335,910,201.00	0.00
		340	100	118,443,969,501,221.00	0.00
		341	100	130,288,366,451,343.00	0.00
		342	100	143,317,203,096,477.00	0.00
		343	100	157,648,923,406,125.00	0.00
		344	100	173,413,815,746,737.00	0.00
		345	100	190,755,197,321,411.00	0.00
		346	100	209,830,717,053,552.00	0.00
		347	100	230,813,788,758,908.00	0.00
		348	100	253,895,167,634,798.00	0.00
		349	100	279,284,684,398,278.00	0.00
		350	100	307,213,152,838,106.00	0.00
					<b>\$950.00</b>

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

<sup>56</sup> 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.

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 the amount of debt and equity securities 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 1.04% 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 - 2013)**

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	96.868	3.23%
Michigan Con Gas Company	Gas	15-May-97	30,000	100.000	99.247	0.76%
Michigan Con Gas Company	Gas	15-May-97	40,000	100.000	99.361	0.64%
Seagull Energy Corp.	Gas	25-Sep-97	150,000	99.544	98.544	1.02%
SONAT Inc.	Gas	25-Sep-97	100,000	99.748	99.097	0.66%
Southern Natural Gas Co.	Gas	25-Sep-97	100,000	99.891	99.239	0.66%
Laclede Gas	Gas	16-Oct-97	25,000	98.682	98.352	0.34%
Kn Energy Inc.	Gas	22-Oct-97	150,000	100.000	99.374	0.63%
Northern Illinois Gas Co.	Gas	23-Oct-97	50,000	99.500	98.996	0.51%
Enron Oil & Gas Co.	Gas	25-Nov-97	100,000	99.709	99.058	0.66%
Consolidated Natural Gas Co.	Gas	09-Dec-97	300,000	99.190	98.314	0.89%
SONAT	Gas	27-Jan-98	100,000	99.531	98.879	0.66%
SONAT	Gas	29-Jan-98	100,000	99.787	98.912	0.89%
KN Energy, Inc.	Gas	04-Mar-98	500,000	99.784	98.908	0.89%
KN Energy, Inc.	Gas	04-Mar-98	150,000	99.496	98.370	1.14%
Coastal Corp.	Gas	02-Jun-98	200,000	99.882	99.231	0.66%
Coastal Corp.	Gas	02-Jun-98	200,000	99.661	98.785	0.89%
Wisconsin Gas Co.	Gas	19-Jan-99	50,000	99.252	98.602	0.66%
No. Illinois Gas Co.	Gas	02-Feb-99	50,000	100.000	99.350	0.65%
Providence Gas Co.	Gas	04-Feb-99	15,000	100.000	96.850	3.25%
Cascade Natural Gas Corp.	Gas	15-Mar-99	15,000	100.000	99.250	0.76%
Laclede Gas Co.	Gas	28-May-99	25,000	100.000	99.502	0.50%
Mich. Consolidated Gas Co.	Gas	04-Jun-99	55,000	100.000	96.850	3.25%
Williams Co.	Gas	21-Jul-99	700,000	99.075	98.200	0.89%
Williams Communication Grp.	Gas	30-Sep-99	1,500,000	99.249	96.749	2.58%
Indiana Gas Co.	Gas	04-Oct-99	30,000	100.000	99.375	0.63%
Northwest Natural Gas	Gas	09-Dec-99	20,000	100.000	99.250	0.76%
SEMCO Energy	Gas	12-Apr-00	30,000	100.000	97.250	2.83%
New Jersey Gas Co.	Gas	29-Jun-00	10,000	100.000	99.250	0.76%
New Jersey Gas Co.	Gas	05-Jul-00	10,000	100.000	96.850	3.25%
New Jersey Gas Co.	Gas	01-Jul-00	15,000	100.000	97.600	2.46%
Northwest Natural Gas	Gas	29-Aug-00	20,000	100.000	99.250	0.76%
Northwest Natural Gas	Gas	06-Sep-00	20,000	100.000	99.250	0.76%
Northwest Natural Gas	Gas	06-Sep-00	10,000	100.000	99.250	0.76%
Northwest Natural Gas	Gas	27-Nov-00	25,000	100.000	99.375	0.63%
AgI Capital Corp	Gas	23-Feb-01	300,000	99.578	98.928	0.66%
Oneok, Inc	Gas	03-Apr-01	400,000	99.912	99.262	0.65%
Atmos Energy Corp	Gas	15-May-01	350,000	99.940	99.290	0.65%
Semco Energy	Gas	18-Jun-01	60,000	100.000	97.500	2.56%
Questar Gas Co.	Gas	03-Oct-01	60,000	100.000	99.375	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%

**Debt Issuance Cost**  
**Natural Gas/Transmission Utilities (1997 - 2013)**

<b>Company</b>	<b>Type of Utility</b>	<b>Issue Date</b>	<b>Amount Offered (\$000)</b>	<b>Price to Public (\$/100)</b>	<b>Net Proceeds</b>	<b>Issue Cost</b>
Northwest Natural Gas	Gas	25-Feb-03	10,000	100.000	99.250	0.76%
Nisource Finance Corp	Gas	01-Mar-03	345,000	100.000	99.354	0.65%
Keyspan Corporation	Gas	01-Apr-03	150,000	99.763	98.888	0.88%
AGL Capital Corp.	Gas	15-Apr-03	225,000	99.927	99.277	0.65%
The Cincinnati G&E Co.	Gas	12-Jun-03	200,000	99.764	98.889	0.88%
The Cincinnati G&E Co.	Gas	12-Jun-03	200,000	99.396	98.521	0.89%
Baltimore G&E Co.	Gas	17-Jun-03	200,000	99.295	98.420	0.89%
Nisource Finance Corp	Gas	16-Jul-03	500,000	99.862	99.212	0.66%
Vectren Coproation	Gas	24-Jul-03	100,000	99.746	99.096	0.66%
Vectren Coproation	Gas	24-Jul-03	100,000	99.177	98.477	0.71%
UGI Utilities	Gas	14-Aug-03	20,000	100.000	99.250	0.76%
UGI Utilities	Gas	14-Aug-03	25,000	100.000	99.370	0.63%
Energy East Corporation	Gas	08-Sep-03	200,000	99.830	98.950	0.89%
Madison Gas & Electric Co	Gas	09-Sep-03	20,000	100.000	99.250	0.76%
Energen Corporation	Gas	30-Oct-03	50,000	99.557	98.907	0.66%
Northwest Natural Gas	Gas	21-Nov-03	40,000	100.000	99.250	0.76%
Piedmont Natural Gas Co Inc	Gas	16-Dec-03	100,000	99.859	98.984	0.88%
Piedmont Natural Gas Co Inc	Gas	16-Dec-03	100,000	100.000	99.350	0.65%
AGL Resources	Gas	14-Dec-04	200,000	99.870	99.220	0.66%
Aquila	Gas	18-Aug-04	300,000	25.000	25.000	0.00%
Atmos Energy	Gas	18-Oct-04	500,000	99.993	99.343	0.65%
Atmos Energy	Gas	18-Oct-04	200,000	99.392	98.517	0.89%
Laclede Gas Co.	Gas	21-Apr-04	50,000	99.585	98.835	0.76%
Laclede Gas Co.	Gas	21-Apr-04	100,000	99.434	98.559	0.89%
Michigan Consolidated Gas	Gas	27-Sep-04	120,000	99.594	98.844	0.76%
Consolidated Natural Gas Co	Gas	15-Nov-04	400,000	99.686	99.036	0.66%
Alabama Gas Corp	Gas	11-Jan-05	40,000	100.000	96.860	3.24%
Alabama Gas Corp	Gas	11-Jan-05	40,000	100.000	99.350	0.65%
Alabama Gas Corp	Gas	14-Nov-05	80,000	100.000	99.400	0.60%
Cascade Natural Gas	Gas	20-Jan-05	30,000	100.000	96.850	3.25%
Cascade Natural Gas	Gas	29-Aug-05	15,000	100.000	99.300	0.70%
Northwest Natural Gas Co.	Gas	02-Jun-05	40,000	100.000	99.375	0.63%
Northwest Natural Gas Co.	Gas	21-Jun-05	10,000	100.000	99.250	0.76%
Vectren Utility Holdings, Inc	Gas	16-Nov-05	75,000	99.799	99.149	0.66%
Vectren Utility Holdings, Inc	Gas	16-Nov-05	75,000	99.779	98.904	0.88%
Laclede Gas Co.	Gas	06-Jun-06	55,000	99.852	98.977	0.88%
Piedmont Natural Gas Co., 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	99.783	99.133	0.66%
Atmos Energy	Gas	23-Mar-09	450,000	99.813	99.163	0.66%

**Debt Issuance Cost**  
**Natural Gas/Transmission Utilities (1997 - 2013)**

<b>Company</b>	<b>Type of Utility</b>	<b>Issue Date</b>	<b>Amount Offered (\$000)</b>	<b>Price to Public (\$/100)</b>	<b>Net Proceeds</b>	<b>Issue Cost</b>
National Fuel Gas Co	Gas	01-Apr-09	250,000	99.762	99.112	0.66%
Northwest Natural Gas Co.	Gas	20-Mar-09	75,000	100.000	99.375	0.63%
Sempra Energy	Gas	05-Oct-09	750,000	99.159	98.284	0.89%
Central Hudson G&E Corp	Gas	02-Dec-10	44,150	100.000	99.375	0.63%
Central Hudson G&E 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%
San Diego Gas & Elec	Gas	19-Mar-12	250,000	99.481	98.606	0.89%
Pacific Gas & Elec	Gas	11-Apr-12	400,000	99.491	98.616	0.89%
Pacific Gas & Electric Co	Gas	13-Aug-12	350,000	99.911	99.035	0.88%
Pacific Gas & Electric Co	Gas	13-Aug-12	400,000	99.709	99.059	0.66%
Baltimore Gas & Electric Co.	Gas	14-Aug-12	250,000	99.620	99.314	0.31%
Sempra Energy	Gas	19-Sep-12	500,000	99.965	99.315	0.65%
					Average	1.04%
					Selected	1.00%

Source: *Public Utility Finance Tracker*, February 1997 - 2013.



**Common Stock Issuance Cost**  
**Natural Gas/Transmission Utilities (1990 - 2013)**

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. Mich. Gas Enterprises	Gas	19-Jan-94	650	20.50	19.62	4.49%
Connecticut Energy Corp.	Gas	03-Mar-94	900	20.13	19.22	4.71%
Mobile Gas Service Corp.	Gas	14-Sep-94	400	22.00	20.30	8.37%
Northwest Natural Gas	Gas	15-Feb-95	1,000	29.75	28.59	4.06%
MCN Corp.	Gas	14-Mar-95	5,000	17.88	17.21	3.86%
Piedmont Natural Gas	Gas	20-Mar-95	1,500	20.00	19.14	4.49%
Laclede Gas	Gas	15-May-95	1,550	19.00	18.12	4.86%
United Cities	Gas	08-Jun-95	1,200	14.50	13.88	4.47%
Atlanta Gas Light	Gas	12-Jun-95	1,300	33.63	32.51	3.43%
WICOR, INC.	Gas	05-Dec-95	1,100	31.88	30.63	4.06%
Connecticut Natural Gas	Gas	05-Jun-96	640	23.25	22.19	4.78%
Delta Natural Gas	Gas	15-Jul-96	350	16.00	15.07	6.17%
Tejas Gas	Gas	22-Jul-96	3,075	35.00	33.42	4.73%
KN Energy	Gas	31-Jul-96	3,100	32.25	31.01	4.00%
Cascade Natural Gas	Gas	13-Aug-96	1,350	15.25	14.45	5.54%
Energen	Gas	17-Jan-97	1,500	29.50	28.39	3.91%
KCS Energy	Gas	29-Jan-97	3,000	39.00	36.91	5.66%
Energen	Gas	18-Sep-97	1,200	35.50	34.16	3.92%
COHO Energy, Inc.	Gas	29-Sep-97	8,585	10.50	9.87	6.38%
Fall River Gas Co.	Gas	30-Oct-97	340	13.25	12.06	9.87%
Connecticut Energy Corp.	Gas	12-Nov-97	900	24.25	23.17	4.66%
Roanoke Gas Co.	Gas	22-Feb-98	166	20.00	18.67	7.12%
KN Energy	Gas	04-Mar-98	11,000	52.00	49.90	4.21%
Enron Corp.	Gas	05-May-98	15,000	50.00	48.47	3.16%
Laclede Gas Co.	Gas	05-May-99	1,100	50.00	49.34	1.35%
SEMCO	Gas	12-Jun-00	9,000	10.00	9.60	4.17%
WGL Holdings Co.	Gas	26-Jun-01	1,790	26.73	25.80	3.47%
Utilicorp	Gas	25-Jan-02	11,000	23.00	22.28	3.25%
Calpine Corporation	Gas	24-Apr-02	66,000	11.50	11.13	3.30%
MDU Resources Group	Gas	19-Nov-02	2,100	24.00	23.30	3.00%
MDU Resources Group	Gas	29-Nov-02	2,100	24.00	23.16	3.63%
Agl Resources, Inc	Gas	11-Feb-03	5,600	22.00	21.21	3.70%
Atmos Energy Corp.	Gas	18-Jun-03	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 - 2013)**

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%
JGI 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	12,500	44.00	42.24	4.17%
Average						4.30%
Selected						4.25%

Source: *Public Utility Finance Tracker*, February 1990- 2013.

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

<b>Cost of Capital Including Flotation Costs</b>			
<b>Capital</b>	<b>Portion</b>	<b>Cost</b>	<b>Product</b>
Debt	30.00%	5.56%	1.67%
Equity	70.00%	12.79%	8.95%
Totals	100.00%		10.62%

Including flotation cost in the cost of capital requires an adjustment to compensate for the expense of issuing debt and equity. This is in accordance with virtually all finance texts, as well as the practices of state and federal regulatory commissions, and the adjustment is necessary to properly match income and rate in the capitalization process for property tax appraisals. Including flotation cost adds 0.06% to the cost of debt, 0.54% to the cost of equity, and approximately 0.35% (35 basis points) to the overall cost of capital. The cost of capital to purchase the operating assets for the typical interstate natural gas pipeline after accounting for flotation costs is 10.62% (rounded to **10.60%**) at January 1, 2013.

## **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.<sup>57</sup>

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.<sup>58</sup>

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).<sup>59</sup>

## **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

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<sup>57</sup> *Stocks, Bonds, Bills and Inflation: 2010 Valuation Edition Yearbook*, (Chicago: Morningstar, Inc., 2010), p. 56.

<sup>58</sup> Morin, Roger A., *New Regulatory Finance* (Vienna, VA: Public Utilities Reports, Inc., 2006), p. 133.

<sup>59</sup> Richard A. Brealey, Stewart C. Myers, and Paul Allen, *Principles of Corporate Finance*, 8<sup>th</sup> ed., (Irwin McGraw-Hill, 2006), pp. 156-157.

equity risk premium because it represents the truly riskless portion of the return.<sup>60</sup>

## 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.<sup>61</sup>

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.<sup>62</sup>

## 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

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<sup>60</sup> *Stocks, Bonds, Bills and Inflation: 2012 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2012), p. 55.

<sup>61</sup> *Stocks, Bonds, Bills and Inflation: 2012 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2012), p. 62.

<sup>62</sup> Copeland, Tom, Tim Koller & Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, 3<sup>rd</sup> 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.<sup>63</sup>

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.<sup>64</sup>

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, 2013, and no adjustment is necessary.

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<sup>63</sup> *Stocks, Bonds, Bills and Inflation: 2012 Yearbook, Valuation Edition* (Chicago: Morningstar, Inc., 2012), p. 62.

<sup>64</sup> 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.<sup>65</sup>

Generally accepted appraisal literature indicates that it is improper 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**

<b>Securities (Debt or Equity Instruments)</b>	<b>Real Estate/Personal Property (Individually or as a Mass Assemblage)</b>
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	

<sup>65</sup> *The Appraisal of Real Estate*, 13<sup>th</sup> ed., (Chicago: Appraisal Institute, 2008), p. 501.

10. Portfolio limited to the particular combination of real estate and personal property that operate the subject business

As the table indicates, there are fundamental investment risk and return differences between (1) marketable, minority interests in debt and equity securities and (2) nonmarketable, controlling interests in operating real estate and tangible personal property. Due to these differences, and for other reasons, it is unlikely that an economic 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.<sup>66</sup>

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

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<sup>66</sup> Pratt, Reilly, & Schweih, *Valuing A Business*, 3<sup>rd</sup> edition, (Chicago: Irwin Professional Publishing, 1996), 708.

correctly from the earnings-to-price ratios of common stocks. Earnings-to-price ratios of common stocks can only be used in the appraisal of similar common stock, not for the appraisal of real personal property.<sup>67</sup>

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.<sup>68</sup>

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

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<sup>67</sup> *Property Assessment Valuation*, 3<sup>rd</sup> ed., (Kansas City: International Association of Assessing Officers, 2010), p. 362.

<sup>68</sup> *The Appraisal of Real Estate*, 13<sup>th</sup> 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.<sup>69</sup>

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.<sup>70</sup> 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,  $Value = Income \div Rate$ , 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.<sup>71</sup>

The Appraisal Institute goes on to state:

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<sup>69</sup> *Ibid.*, 560.

<sup>70</sup> *Ibid.*, 560.

<sup>71</sup> *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...<sup>72</sup>

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 117. 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 16, 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

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<sup>72</sup> *Ibid.*, 119. NOTE: This reference and the preceding reference can also be found in the 12<sup>th</sup> ed. at page 119, 11<sup>th</sup> ed. at pages 554-555, and 10<sup>th</sup> 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*, 13<sup>th</sup> 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.