

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

ANR Pipeline Company) Docket No. RP16 - ____-000

Summary of the Prepared Direct Testimony of Dr. Michael J. Vilbert

BACKGROUND

Dr. Michael J. Vilbert, an expert in financial and regulatory economics and a Principal at The Brattle Group, (“Brattle”), an economic, environmental and management consulting firm, has provided a written expert testimony on behalf of ANR Pipeline Company (“ANR” or “Company”). Dr. Vilbert’s testimony focuses on the estimation of return on equity (“ROE”) that the Federal Energy Regulatory Commission (the “FERC” or the “Commission”) should allow the Company the opportunity to earn on the equity-financed portion of its rate base for its natural gas transmission assets.

Dr. Vilbert’s assessment of the appropriate range of reasonable ROE estimates for ANR is entirely based on the Commission’s cost of capital methodology, but modified to allow for greater flexibility in the application of the Discounted Cash Flow (“DCF”) methodology. Dr. Vilbert explains that these modifications are necessary to control for volatility inherent in the DCF approach employed, as well as to recognize the differences in relative risks of the company and the reference sample companies. Dr. Vilbert has discussed the Commission’s cost of capital methodology, and his approach in detail in his testimony. His testimony further includes discussions about the principles relating to the estimation of the cost of capital for a business, the relationship between cost of capital and risk, details regarding the sample selection process employed in his analysis, and a description of input parameters and methodology of the Commission’s DCF calculation as applied to natural gas pipelines. Additionally, he has provided brief descriptions of the current economic conditions, fundamental characteristics of sample group of companies, and an analysis relating to the estimation of growth rates for the sample group of companies. A brief description of Dr. Vilbert’s approach to developing a recommended range of ROE estimates is provided below.

APPROACH

Dr. Vilbert first selected a comparable sample of companies that best reflected the current business risks of a natural gas pipeline company. For each company, he applied the Commission's DCF method, as articulated in Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity, 123 FERC ¶ 61,048 ("Policy Statement"). He then applied several adjustments to the Commission's cost of capital methodology to reflect the economic stress and uncertainty investors currently face. One of these adjustments included his recommendation of applying an appropriate range of 1st stage growth rates for sample companies rather than rigidly adhering to only the IBES 5-year EPS growth rate estimates. He recommends this change based on the findings from his analysis of historical IBES growth rate estimates, which reveal that IBES 5-year EPS growth rate estimates have been highly volatile for gas pipeline companies due to limited coverage and sporadic updates to forecasts by analysts. He recommends that to minimize potential distortions to the DCF estimates, one would need to employ a more stable forecast for growth projections.

Based on this approach, Dr. Vilbert arrived at a set of ROE estimates from the sample, which he describes as the "range of reasonableness" for ANR's cost of equity. He recommends that the commission allow ANR the opportunity to earn an ROE on its equity finance rate base within this range, noting that the Commission's procedure historically has relied on the median value of the range of reasonableness for ROEs.

RECOMMENDATION

The range of estimates for ROE for ANR based on Dr. Vilbert's recommended approach to determining 1st-stage growth rates is from 7.94 to 30.84 percent, with a median ROE of 13.19 percent. In this testimony, Dr. Vilbert does not recommend a specific ROE estimate within this range; instead he refers to ANR Witness Carpenter, who has analyzed ANR's business risk relative to that of the sample and concluded that ANR is of higher business risk than the natural gas pipelines in the sample.

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DIRECT TESTIMONY AND SUPPORTING EXHIBITS OF
MICHAEL J. VILBERT
ON BEHALF OF ANR PIPELINE COMPANY

January 29, 2016

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Exhibit No. ANR-028	RÉSUMÉ OF DR. MICHAEL J. VILBERT
Exhibit No. ANR-029	DCF ANALYSIS TABLES AND WORKPAPERS
Exhibit No. ANR-030	HISTORICAL GROWTH RATE CHARTS AND WORKPAPERS

Glossary of Terms

ANR	ANR Pipeline Company
<i>Brattle</i>	<i>The Brattle Group</i>
BWP	Boardwalk Pipeline Partners, LP
CPPL	Columbia Pipeline Partners LP
Commission	Federal Energy Regulatory Commission
Company	ANR Pipeline Company
CPG	Columbia Pipeline Group
DCF	Discounted cash flow
EBITDA	Earnings before Interest, tax, depreciation and amortization
ECB	European Central Bank
El Paso	El Paso Natural Gas Company
ENBL	Enable Midstream Partners, LP
Enbridge	Enbridge Pipelines (KPC)
EPS	Earnings per share
EQM	EQT Midstream Partners, LP

EU	European Union
Fed	U.S. Federal Reserve
FERC	Federal Energy Regulatory Commission
FFO	Funds from Operations
Fitch	Fitch Ratings
GDP	Gross Domestic Product
HIOS	High Island Offshore System, L.L.C.
IBES	Institutional Broker's Estimate System
LTM	Last twelve months
KMI	Kinder Morgan, Inc.
M&A	Merger and acquisition
MLP	Master limited partnership
Moody's	Moody's Investor Service
MRP	Market risk premium
NGL	Natural gas liquids
ROE	Return on equity

S&P	Standard & Poor's
SEC	Securities and Exchange Commission
SEP	Spectra Energy Partners LP
TCP	TC Pipelines, LP
TEP	Tallgrass Energy Partners, LP
Williston Basin	Williston Basin Interstate Pipeline Company
Yahoo	Yahoo! Finance

1 **I. INTRODUCTION AND SUMMARY**

2 **Q1. Please state your name and address for the record.**

3 A1. My name is Michael J. Vilbert. My business address is The Brattle Group, 201 Mission
4 Street, Suite 2800, San Francisco, CA 94105, USA.

5 **Q2. Please describe your position and your educational experience.**

6 A2. I am a Principal of *The Brattle Group*, (“*Brattle*”), an economic, environmental and
7 management consulting firm with offices in Cambridge, Washington, New York, San
8 Francisco, London, Rome, Madrid, and Toronto. My work concentrates on financial and
9 regulatory economics. I hold a B.S. from the U.S. Air Force Academy and a Ph.D. in
10 finance from the Wharton School of Business at the University of Pennsylvania.

11 **Q3. What is the purpose of your testimony in this proceeding?**

12 A3. I have been asked by ANR Pipeline Company (“ANR” or the “Company”) to estimate the
13 return on equity (“ROE”) that the Federal Energy Regulatory Commission (the “FERC” or
14 the “Commission”) should allow the Company an opportunity to earn on the equity-
15 financed portion of its rate base for its natural gas transmission assets.

16 **Q4. Please summarize how you approached this task.**

17 A4. To accomplish this task, I select a comparable sample of companies chosen to best reflect
18 the business risks of a natural gas pipeline at this time. For each company, I apply the
19 Commission’s discounted cash flow (“DCF”) method, as articulated in *Composition of*
20 *Proxy Groups for Determining Gas and Oil Pipeline Return on Equity*, 123 FERC
21 ¶61,048 (“*Policy Statement*”). I also recommend several adjustments to the
22 Commission’s cost of capital methodology to reflect the economic stress and uncertainty
23 investors are currently facing. The resulting set of estimates from the sample is used to
24 form a “range of reasonableness” for ANR’s cost of equity. I refer to the testimony of
25 ANR witness Carpenter for a more detailed analysis of ANR’s specific business and
26 financial risks and for a recommendation on the placement of ANR’s cost of equity within

1 the range of reasonableness, based on his determination of ANR's risk relative to the
2 sample group.

3 **Q5. Please summarize the parts of your background and experience that are particularly**
4 **relevant to your testimony on these matters.**

5 A5. *Brattle's* specialties include financial economics, regulatory economics, and the gas, water
6 and electric industries. I have worked in the areas of cost of capital, investment risk and
7 related matters for many industries, regulated and unregulated alike, in many forums. I
8 have testified or filed cost of capital testimony before the Arizona Corporation
9 Commission, the Pennsylvania Public Utility Commission, the Public Service
10 Commission of West Virginia, the Public Utilities Commission of Ohio, the Tennessee
11 Regulatory Authority, the Public Service Commission of Wisconsin, the South Dakota
12 Utilities Commission, the California Public Utilities Commission, the Michigan Public
13 Service Commission, the Canadian National Energy Board, the Alberta Energy and
14 Utilities Board, the Ontario Energy Board, and the Labrador & Newfoundland Board of
15 Commissioners of Public Utilities. I have also testified before this Commission. Exhibit
16 No. ANR-028 contains more information on my professional qualifications.

17 **Q6. Are you sponsoring any exhibits?**

18 A6. Yes. I am sponsoring Exhibit No. ANR-028, which contains my professional
19 qualifications. The sources indicated in the footnotes to the tables in my direct testimony
20 refer to material provided in Exhibit No. ANR-029. This exhibit contains the spreadsheets
21 and workpapers for my calculations of the cost of capital. I am also sponsoring Exhibit
22 No. ANR-030, containing materials supporting my analysis of recent historical growth
23 rate estimates for the proxy group companies.

24 **Q7. Do you believe that the FERC's standard DCF method is the best method to estimate**
25 **ANR's cost of equity for its gas transmission assets in this proceeding?**

26 A7. No. The cost of capital can be estimated in several ways, and I believe a risk positioning
27 method (such as the capital asset pricing model or "CAPM") is generally superior, in part
28 because the risk-positioning model estimates the cost of equity capital for individual

1 companies relative to the risk-return tradeoff for all investments in the market instead of
2 based only on company-specific parameters as does the DCF model. In addition, the
3 FERC's preferred DCF method does not directly consider differences in financial risk
4 among the sample companies when establishing the range of reasonableness.

5 **Q8. Are there other ways to estimate the cost of capital of a regulated natural gas**
6 **transmission company?**

7 A8. Certainly. There are many different approaches, and I have used other methods in other
8 proceedings. Each methodology has its own strengths and weaknesses, and they may
9 yield divergent results. The determination of the cost of capital therefore requires the
10 application of informed judgment as well as science.

11 **Q9. Why did you not implement these alternative approaches in this proceeding?**

12 A9. The Commission has consistently been skeptical of alternative estimation methods in the
13 past. While I believe that the Commission should not mechanically reject other methods
14 of estimating the cost of capital, I also believe that whatever method the Commission
15 ultimately chooses to use, it should be reasonably consistent from proceeding to
16 proceeding and from company to company. The FERC prescribes the DCF method and
17 has used it in many previous cases to establish the allowed return on equity for other
18 natural gas pipeline companies. It would increase regulatory uncertainty if the
19 Commission were to arbitrarily apply different models in different proceedings for
20 determining the cost of capital for similar natural gas pipeline companies. Therefore, in
21 recognition of the Commission's established precedents concerning its prescribed
22 implementation of the two-stage DCF model, I focus my analysis on that methodology
23 rather than employing multiple models as I might in a different jurisdiction.

24 This is not to suggest that there should be no flexibility in the DCF methodology to allow
25 for modifications or sensitivities that could, for example, dampen the volatility currently
26 inherent in the DCF approach as applied to gas pipelines. Likewise, I do not advocate a
27 rigid application of the Commission's DCF procedure in a manner that would prevent the
28 recognition of unusual economic circumstance, differences in relative risk, or other factors

1 that—analyzed on a case-by-case basis—may justifiably lead to somewhat different
2 results or conclusions about the range of reasonableness for allowed ROE. I am simply
3 suggesting that companies of similar risk be treated similarly.

4 Within this context, I implement the FERC DCF method as faithfully as possible. In this
5 proceeding, however, I make several adjustments, both to the historical guidelines for the
6 sample selection procedure and to the DCF calculation, which I believe improve the
7 accuracy and reliability of calculation of the range of reasonable, comparable cost of
8 capital estimates appropriate for consideration by the Commission in this period of
9 ongoing economic uncertainty.

10 **Q10. Considering all of the evidence, what is the recommended range of reasonableness**
11 **for the return on equity for ANR?**

12 A10. Based on my group of comparable companies, my analysis generates estimates ranging
13 from 7.84 to 30.84 percent for the required ROE. In this proceeding, I modify the FERC's
14 sample selection procedures and DCF methodology to improve the accuracy and
15 robustness of ROE measurements for risk-appropriate proxy group members. I believe
16 that my DCF analysis employing these modifications is the most reliable at this time and
17 results in a median ROE estimate of 13.19 percent. Applying the FERC's DCF method to
18 my proxy group with no adjustments to the traditional calculation or inputs yields a
19 comparative median ROE of 12.57 percent. The testimony of ANR witness Carpenter
20 provides a relative risk assessment of ANR and a recommendation on the corresponding
21 placement of its cost of equity relative to the estimates for the proxy group companies.

22 **Q11. How is your testimony organized?**

23 A11. *Section II* formally defines the cost of capital, touches on the principles relating to the
24 estimation of the cost of capital for a business, and describes its relationship to risk.
25 *Section III* discusses the Commission's cost of capital methodology. *Section III.A*
26 discusses the sample selection process, and *Section III.B* discusses the input parameters
27 and methodology of the Commission's DCF calculation as applied to natural gas pipelines.
28 *Section IV* discusses how I arrived at the cost of equity estimates, including brief

1 discussions of the (i) current economic conditions, (ii) growth rates, (iii) characteristics of
2 the proxy group, and (iv) recommended range of reasonableness for the cost of equity for
3 ANR's regulated gas transmission assets. *Section V* presents my conclusions.

4 **II. COST OF CAPITAL THEORY**

5 **Q12. Please formally define the "cost of capital".**

6 A12. The cost of capital can be defined as *the expected rate of return in capital markets on*
7 *alternative investments of equivalent risk*. In other words, it is the rate of return investors
8 require based on the risk-return alternatives available in competitive capital markets. The
9 cost of capital is a type of opportunity cost: it represents the rate of return that investors
10 could expect to earn elsewhere without bearing more risk. "Expected" is used in the
11 statistical sense: the mean of the distribution of possible outcomes. The terms "expect"
12 and "expected" in this testimony, as in the definition of the cost of capital itself, refer to
13 the probability-weighted-average over all possible outcomes.

14 The definition of the cost of capital recognizes a tradeoff between risk and return that is
15 known as the "security market risk-return line," or "security market line" for short. This
16 line is depicted in Figure 1. The higher the risk, the higher is the cost of capital. A
17 version of Figure 1 applies for all investments. However, for different types of securities,
18 the location (*i.e.*, the intercept and the slope) of the line may depend on corporate and
19 personal tax rates.

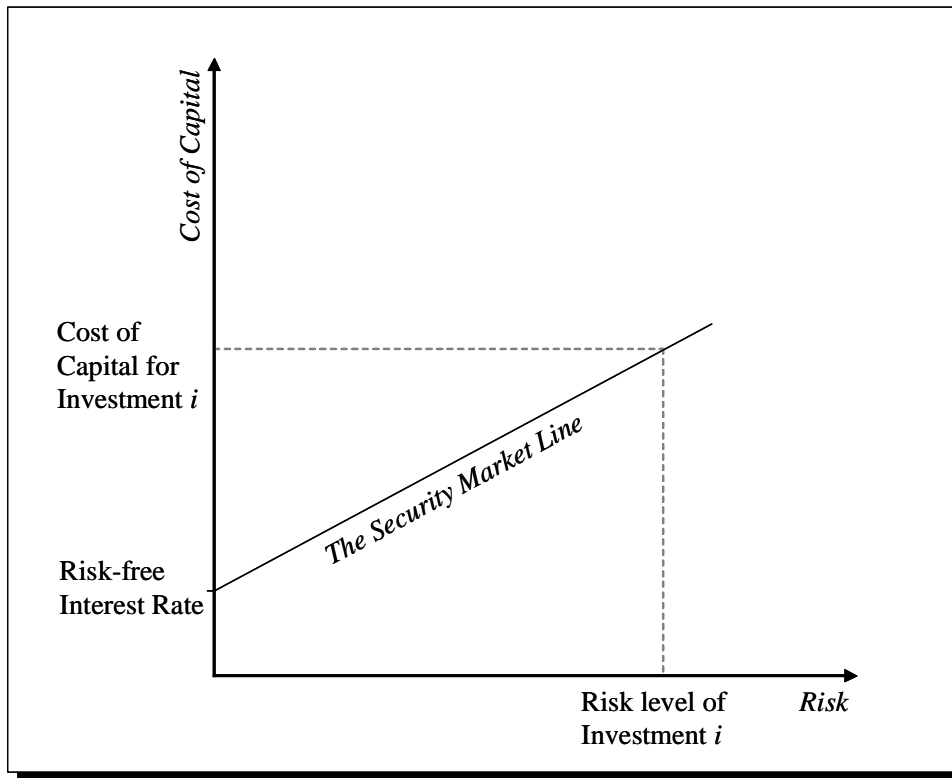


Figure 1: The Security Market Line

1 **Q13. Why is the cost of capital relevant in rate regulation?**

2 A13. It has become routine in U.S. rate regulation to accept the “cost of capital” as the right
 3 expected rate of return on utility investment.¹ That practice is normally viewed as
 4 consistent with the U.S. Supreme Court's opinions in *Bluefield Water Works &*
 5 *Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923),
 6 and *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

7 From an economic perspective, rate levels that give investors a fair opportunity to earn the
 8 cost of capital are the lowest levels that compensate investors for the risks they bear. Over
 9 the long run, an expected return above the cost of capital makes customers overpay for
 10 service. Regulatory commissions normally try to prevent such outcomes unless there are

¹ A formal link between the cost of capital as defined by financial economics and the right expected rate of return for utilities is established by Stewart C. Myers, *Application of Finance Theory to Public Utility Rate Cases*, *Bell Journal of Economics & Management Science* 3:58-97 (1972).

1 offsetting benefits (*e.g.*, from incentive regulation that reduces future costs). At the same
2 time, an expected return below the cost of capital does a disservice not just to investors but,
3 importantly, to customers as well. In the long run, such a return denies the company the
4 ability to attract capital, maintain its financial integrity, and expect a return commensurate
5 with that of other enterprises attended by corresponding risks and uncertainties.

6 More important for customers, however, are the economic issues an inadequate return
7 raises for them. In the short run, deviations of the expected rate of return on the rate base
8 from the cost of capital may seemingly create a “zero-sum game” -- investors gain if
9 customers are overcharged, and customers gain if investors are shortchanged. But in fact,
10 in the short run, such actions may adversely affect the utility’s ability to provide stable and
11 favorable rates because some potential investments improving efficiency may be delayed
12 or because the company is forced to file more frequent rate cases. In the long run,
13 inadequate returns are likely to cost customers -- and society generally -- far more than is
14 gained in the short run. Inadequate returns lead to inadequate investment, whether for
15 improvements in efficiencies or for new plant and equipment. The costs of an
16 undercapitalized industry can be far greater than the short-run gains from shortfalls in the
17 cost of capital. Thus, it is in the customers’ interest not only to make sure the return
18 investors expect does not exceed the cost of capital, but also to make sure that it does not
19 fall short of the cost of capital, either.

20 Of course, the cost of capital cannot be estimated with perfect certainty, and other aspects
21 of the way the revenue requirement is set may mean investors expect to earn more or less
22 than the cost of capital even if the allowed rate of return equals the cost of capital exactly.
23 However, a commission that sets rates so investors expect to earn the cost of capital on
24 average treats both customers and investors fairly, and acts in the long-run interests of
25 both groups.

1 **III. THE COMMISSION'S COST OF CAPITAL METHODOLOGY**

2 **A. SAMPLE SELECTION**

3 **1. Selection Criteria of the Proxy Group**

4 **Q14. Please describe the Commission's precedent for selecting a sample that accurately**
5 **reflects the business risk of natural gas transmission.**

6 A14. The Commission's *Policy Statement* regarding sample composition provides the most
7 important guidance in this regard.² Specifically, the *Policy Statement* addresses the
8 appropriateness of including master limited partnerships ("MLP") in a proxy group for
9 natural gas pipeline operations and the Commission's preferred way of implementing the
10 DCF model for a company organized as an MLP.

11 **Q15. What was the genesis of the *Policy Statement*?**

12 A15. Because of shrinking proxy group sample sizes, the Commission has had to revise its
13 criteria for sample selection. In *El Paso Natural Gas Co.*, 145 FERC ¶ 61,040 at P 595
14 (2013) ("*El Paso*"), FERC stated that it preferred to have at least five proxy group
15 companies in order to ensure statistical accuracy. The Commission's preference prior to
16 *Williston Basin Interstate Pipeline Co.*, 104 FERC ¶ 61,036 (2003) ("*Williston Basin*"),
17 was to select companies that satisfied the following criteria:

- 18 1. The selected company had to be publicly-owned with publicly-traded
19 stock;
- 20 2. The selected company had to be recognized by investors as reflective of
21 the risks of natural gas pipelines, own one or more FERC-regulated
22 interstate natural gas pipelines, and have stock tracked by an investment
23 information service (such as *Value Line*); and
- 24 3. Natural gas pipeline operations had to constitute a high proportion of
25 the company's business, where "high" means that pipeline operations
26 have accounted for at least 50 percent of the company's assets or 50

² 123 FERC ¶ 61,048 (2008). See also *Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity*, Proposed Policy Statement, 120 FERC ¶ 61,068 (2007).

1 percent of their operating income, or both, on average over the most
2 recent three-year period.

3 Application of these criteria, however, resulted in ever smaller proxy groups to the point
4 that any resulting proxy group would be of questionable reliability. At the time, MLPs
5 were not included in the proxy group based on concerns about the applicability of the DCF
6 model to the MLP organizational structure and cash distribution patterns. So by 2003 in
7 *Williston Basin*, the Commission began to encounter problems constructing a reliable
8 proxy group, because only three companies would have survived application of the criteria
9 laid out above.³ All parties agreed that sample size was an issue and proposed alternative
10 ways to expand the sample. In those proceedings, the Commission ultimately accepted the
11 proposal to expand the sample to nine companies based on the Diversified Natural Gas
12 industry group generated by *Value Line Investment Survey*, all of which owned FERC-
13 regulated natural gas pipelines.

14 Although the requirement to have at least 50 percent of operations concentrated in the
15 natural gas pipeline industry was relaxed in *Williston Basin*, it proved insufficient in
16 subsequent proceedings. Mergers and acquisitions in the industry, Enron's implosion, and
17 the growing trend of forming MLPs to invest in pipeline assets continued to result in
18 smaller samples even under the revised selection criteria. Subsequent decisions in *High*
19 *Island Offshore System, L.L.C.*, 110 FERC ¶ 61,043 (2005)⁴ ("*HIOS*"), and *Kern River*
20 *Transmission Co.*, 117 FERC ¶ 61, 077 (2006) ("*Kern River*") left the Commission with a
21 four-company proxy group even under the revised criteria.⁵ To remedy this problem,
22 HIOS and Kern River each proposed the inclusion of three MLP companies in the proxy
23 group.

³ These were El Paso Corporation, Enron Corporation, and the Williams Companies. Together with a fourth company, Coastal Corporation, these companies made up the historical proxy group that the Commission had used in the past. Coastal Corporation, however, merged with El Paso in January 2001, and Enron went bankrupt.

⁴ *Order on reh'g*, 112 FERC ¶ 61,050 (2005).

⁵ Six corporations satisfied the traditional criteria, but El Paso Corporation and the Williams Companies were removed from the sample at the time because they were facing financial distress that made them unrepresentative of a financially healthy natural gas pipeline.

1 To address the MLP issue, the Commission conducted a technical conference in July 2007
2 in order to establish a sufficient record on how to estimate correctly an MLP's cost of
3 equity and under what conditions MLPs could properly be included in a pipeline proxy
4 group. The ultimate result of this process was the *Policy Statement*, which called for
5 inclusion of MLPs in pipeline samples. With the inclusion of MLP pipeline companies, it
6 was then possible to form a reasonable-sized, though limited, sample that closely reflects
7 the business risks of a natural gas pipeline under the spirit of the more desirable pre-2003
8 criteria.

9 Now, however, the industry has again shifted and, as described in greater detail below, we
10 are again faced with a similar problem regarding the lack of an adequate sample size, even
11 with the inclusion of MLPs. So once again it is both necessary and appropriate to relax
12 the sample selection criteria for inclusion in the proxy group. In this proceeding, I
13 propose to relax the standard that requires 50 percent of the company's assets (measured
14 on a book value basis) to be invested in FERC-regulated natural gas transmission to 35
15 percent.⁶ I also propose to include companies lacking a credit rating *if* it can be
16 demonstrated that the company would likely have an investment grade credit rating if it
17 were rated.

18 2. Sample Characteristics

19 **Q16. Please explain how you select a sample that is consistent with the Commission's**
20 **precedent for estimating a gas pipeline's cost of capital.**

21 A16. Consistent with the Policy Statement, I consider MLP companies, and I use the following
22 additional and modified criteria:

⁶ Strict application of this admittedly arbitrary 35 percent cutoff would prevent Tallgrass Energy Partners from being included in the sample. However, since Tallgrass Energy Partners is very close to meeting the threshold at 29 percent of assets dedicated to FERC-regulated natural gas transmission, and has the vast majority (85 percent) of its assets made up of FERC-regulated pipelines, I include Tallgrass Energy Partners in my sample. I discuss my sample selection criteria in greater detail below (Section III.A.4).

- 1 1. The company's stock is publicly traded and has been for the most
2 recent six-month period;⁷
- 3 2. The company distributes dividends and has done so during the last six
4 months without any cuts;⁸
- 5 3. The company has a majority of its credit ratings at an investment-grade
6 level.^{9, 10}
- 7 4. The company has had no significant amount of merger and acquisition
8 ("M&A") activity over the last six months;¹¹
- 9 5. The company must have a market capitalization of at least \$500 million,
10 and
- 11 6. The company must have at least 35 percent of its assets comprised of
12 FERC-regulated natural gas pipeline assets.

13 The first two of these additional criteria simply articulate conditions that are demanded by
14 the Commission's precedent. Conditions 3, 4 and 5 are basic conditions that ensure
15 estimates will not be tainted by issues of financial distress or excessive speculation that

⁷ The most recent six months is necessary since this data is required for the Commission's preferred implementation of the DCF model.

⁸ The Commission's preferred DCF methodology requires only six months of historical data to compute the cost of equity for each comparable company. Furthermore, the cost of equity is a forward-looking measure and considers investors' expectations and risk assessment of the company's operations going forward, which is generally best represented by the most recent data available. Therefore, restricting the sample for events that happened more than six months ago is inconsistent with the forward looking characteristic of the DCF model.

⁹ Companies may be rated by one or more of the three major credit rating agencies: S&P, Moody's, and Fitch. I reviewed all the available ratings for each company; my criterion for inclusion is that if the company has ratings from multiple agencies, at least half of the ratings must be at an investment grade level. For example, if a company has an investment grade rating from one agency, but non-investment grade ratings from the other two, I would exclude that company. If a company is only rated by a single agency, I exclude it if that rating is non-investment grade.

¹⁰ As discussed further below, I do not automatically exclude companies that are unrated by all three credit ratings agencies. Rather, provided such companies meet my other inclusion criteria, I examine their financial metrics to determine whether they would likely receive an investment grade rating if they were rated by those agencies. I include or exclude these companies on the basis of this "synthetic credit rating".

¹¹ I define significant activity as any M&A transaction accounting for greater than 25 percent of the company's pre-merger market value. Large M&A activity can often lead to a decoupling of prices from fundamentals in the period leading up to and after the transaction. As a result, the inclusion of a company for which this is the case may lead to an unreliable ROE estimate.

1 often accompanies M&A activity. With regard to the third, in this proceeding I propose
2 an exception to my credit rating criterion for a company that has no credit rating. If there
3 is evidence that the company profile, on a stand-alone basis, is comparable to an
4 investment grade company (based on a comparison of its bond yields with yields on
5 corporate investment grade bonds or based upon comments in credit rating agency reports,
6 for example), then I conclude that its rating would be investment grade if it had a credit
7 rating. For condition 6, I first investigate the companies' business descriptions and
8 operations in any applicable categories and reportable segments, and analyze its financial
9 statements to estimate the percentage of its assets that are dedicated to FERC-regulated
10 natural gas transmission. For companies near the arbitrary 35 percent threshold, I then
11 evaluate the other remaining assets (*i.e.*, those that are not dedicated to the interstate
12 transmission of natural gas) to determine whether to include the company in the proxy
13 group. If the preponderance of the other assets are used for business operations that have
14 risk-profiles similar to that of FERC-regulated natural gas pipelines (*e.g.*, FERC-regulated
15 crude oil or natural gas liquids ("NGL") pipelines), then I consider the company
16 appropriate for inclusion in the sample, because I consider the relative risk of other FERC-
17 regulated pipelines to be comparable to natural gas pipeline operations.

18 **Q17. Are you saying that all categories of FERC-regulated pipelines have identical risk for**
19 **cost of capital purposes?**

20 A17. No. It is not even the case that all natural gas pipeline companies have identical risk, but I
21 do believe that the average risk among the various categories of FERC-regulated pipelines
22 is comparable. This allows a company that owns FERC-regulated natural gas pipelines to
23 be included in the sample even if its percentage of natural gas pipeline assets is less than
24 the Commission's traditional preferences provided its remaining assets are primarily other
25 FERC-regulated pipelines. This allows the proxy group to be expanded, thereby reducing
26 sampling error without sacrificing comparability in business risk across the sample.

3. Ensuring an Adequate Proxy Group for Interstate Gas Pipelines

Q18. Why did you expand your sample selection criteria for this proceeding?

A18. I relaxed the minimum of 50 percent FERC-regulated natural gas asset sample selection criteria relative to historical precedent and expanded consideration to include companies lacking credit ratings (provided their financial performance metrics are in line with those of companies that receive investment grade ratings) because without these modifications, the Commission's traditional criteria would result in a proxy group containing too few companies to produce a reliable and statistically meaningful measurement of the cost of capital for regulated natural gas pipelines.

The inadequacy of a small proxy group is especially salient in light of the current unstable economic conditions and heightened volatility in the U.S. capital markets, which are inherently likely to contribute to DCF estimates that vary widely across comparable risk companies. Recall that the DCF model is based upon the assumption of stable economic conditions, which in turn results in a constant growth rate for dividends, earnings, stock prices and book values. Current economic conditions fail to satisfy this assumption to a greater degree than in the period prior to the credit crisis. Economic uncertainty is likely to generate a higher degree of sampling error in the DCF estimates, which would be exacerbated further by having too restrictive or small a sample.

Q19. Why are modifications to the sample selection criteria necessary to obtain a proxy group of sufficient size to produce reliable and statistically meaningful results?

A19. The universe of potential sample companies is being affected by—among other factors—the “drop down” of pipeline assets from C-corporations into their MLP subsidiaries. This trend, together with continued consolidation in the industry, has the effect of limiting the number of publicly-traded companies (rated by the major credit rating agencies) that have the majority of their business dedicated to FERC-regulated natural gas transmission. However, there remain a reasonable number of companies that have a substantial portion of their assets dedicated to FERC-regulated natural gas transmission and most of their remaining assets involved in pipeline operations of comparable risk to FERC-regulated

1 gas transmission. These include companies that, despite not being rated by S&P, Moody's,
2 or Fitch, nevertheless have financial metrics that support a "synthetic credit rating" in the
3 investment grade range. (Put another way, these companies would likely receive an
4 investment grade rating based on the standards of the credit rating agencies.) Therefore,
5 these particular modifications to the Commission's traditional selection criteria allow for
6 an expanded proxy group without sacrificing comparability of business risk among the
7 sample companies.

8 **Q20. What other reasons support using an expanded sample?**

9 A20. In my experience, the sample selection process is always controversial because it relies
10 upon a certain amount of professional judgment about the relative risk of various asset
11 categories as well as judgment about the importance of various factors such as the credit
12 rating, percentage of pipeline assets, and length of time following a dividend cut or drop
13 down of assets into a MLP. Judgment is unavoidable because several potential proxy
14 companies have business segments that contain a mix of both regulated and non-regulated
15 natural gas assets, or are comprised of a combination of different operations such as
16 distribution, gathering, storage and transmission. However, there is usually no further
17 asset breakdown of the businesses that comprise each individual segment. Therefore, in
18 these cases, all analysts must make assumptions and informed judgments about whether
19 each company is comparable overall, based on the composition of its business segments
20 and the chosen sample selection criteria. For example, if a company segment contains a
21 mixture of regulated natural gas or NGL pipelines as well as intrastate gathering or
22 processing, with no further asset breakdown, this whole segment could be determined to
23 be comprised of comparable FERC-regulated natural gas operations (or not), based upon
24 the judgment of the analyst. This judgment will likely affect the decision as to whether
25 the company is included in the sample.

26 Unfortunately, the cost of capital estimates from the sample can, and do, vary dramatically
27 as a result of these judgments—particularly during a time of heightened economic
28 uncertainty, like we are facing today. I have therefore used sample selection criteria
29 designed to include more rather than fewer companies, because current cost of equity

1 estimates of individual companies are likely to be highly variable, and therefore having a
2 larger sample is likely to reduce sampling error and improve the cost of capital estimation.
3 The goal is to have a larger sample that better reflects the cost of capital for the industry at
4 this time. I believe that this is consistent with the Commission's recognition in *El Paso*
5 that having a larger proxy group composition promotes statistical accuracy, so long as the
6 companies chosen are comparable from a business risk standpoint to the company being
7 evaluated.

8 **4. Description of Sample Selection Process**

9 **Q21. Describe how you applied the criteria outlined above to select your sample**
10 **companies.**

11 A21. The specific criteria I used for sample selection is described in Q&A 16 above.
12 Specifically, I started with the universe of (i) "Gas or Oil Distribution" and (ii) "Pipeline
13 MLPs in the U.S.", totaling 82 companies, as reported by *Value Line*. I then eliminated all
14 companies that failed to meet any of the six sample selection criteria I have outlined above.

15 **Q22. Based on the selection criteria above, how many companies constitute the final**
16 **sample?**

17 A22. Based on the sample selection criteria outlined above, I selected eight companies that
18 constitute the final sample. To arrive at this final sample, I applied the selection criteria as
19 follows.

20 I first eliminated companies that have non-investment grade credit ratings. This criterion
21 alone eliminated 24 of the initial universe of 82 companies, leaving 58 companies in the
22 sample. I then eliminated companies that had either (i) a dividend cut in the last six
23 months, or (ii) significant M&A activities in the last six months. Seven of the 58
24 companies in the sample had cut dividends in the past six months, and therefore I
25 eliminated the seven and retained the remaining 51 in this step of the sample selection.
26 Further, five of the remaining 51 companies had engaged in significant M&A activities in
27 the last six months, so I eliminated these five companies, leaving a sample of 46
28 companies.

1 As the next step of the selection criteria, I reviewed market capitalization data for these 46
2 companies to eliminate all companies that had market capitalization lower than \$500
3 million at the time of this analysis. Based on my review I found that eight of the 46
4 companies had market capitalization of less than \$500 million, so I eliminated these eight
5 companies, leaving a sample of 38 companies after this step of the selection criteria.

6 As the final step of my selection criteria, I evaluated the asset composition of each of the
7 remaining 38 sample companies to eliminate those companies that had lower than 35
8 percent¹² of their assets comprised of FERC-regulated natural gas pipeline assets. I
9 retained eight of the 38 sample companies after this asset criteria test. These eight
10 companies, listed below, constitute my final sample:

1. Boardwalk Pipeline Partners, LP (BWP)
2. Columbia Pipeline Partners LP (CPPL)
3. Enable Midstream Partners, LP (ENBL)
4. EQT Midstream Partners, LP (EQM)
5. Tallgrass Energy Partners, LP (TEP)
6. TC Pipelines, LP (TCP)
7. Kinder Morgan, Inc. (KMI)
8. Spectra Energy Partners LP (SEP)¹³

11 In addition to selecting companies with at least 35 percent of assets in FERC-regulated
12 natural gas pipeline assets, I also reviewed the composition of remaining assets of each of
13 the selected eight final sample companies to ensure that the remaining assets of these
14 companies are not substantially different in risk from FERC-regulated natural gas pipeline
15 assets. Based on my review, with the exception of ENBL, the remaining assets of all
16 sample companies primarily comprise of other FERC-regulated pipeline assets, which
17 carry comparable risk to FERC-regulated natural gas pipeline assets. In contrast, per SEC

¹² Note that one of my final sample companies—TEP did not meet the asset composition threshold of 35%, however I retained it in my final sample for the reasons I delineate below.

¹³ I retained the pure-play natural gas pipeline company SEP and eliminated its parent company SE to avoid double counting the natural gas pipeline assets of SEP in the final sample.

1 filings, ENBL's asset base comprises 40 percent regulated natural gas pipelines, and 60
2 percent gathering assets. Gathering assets are not typically regulated, and reflect a slightly
3 different risk profile compared to natural gas pipelines. However, since 40 percent of
4 ENBL's assets are FERC-regulated natural gas pipeline, I retained ENBL in my final
5 sample. Moreover, eliminating ENBL would result in an even smaller sample—and the
6 smaller the sample, the harder it is to draw statistically meaningful conclusions. The
7 companies screened and the reasons for their elimination from the sample are illustrated in
8 Table 1 below.

Table 1: Illustration of Sample Selection Process

Company	Ticker	Include Based	Include Based	Include Based	Include Based	Meets Asset Criteria**	Final Sample
		on Bond Ratings	on Dividend Cuts	on M&A	on Market Capitalization > \$500 MM		
Boardwalk Pipeline	BWP	Yes	Yes	Yes	Yes	Yes	Yes
Columbia Pipeline Partners LP	CPPL	Yes*	Yes	Yes	Yes	Yes	Yes
Enable Midstream Partners LP	ENBL	Yes	Yes	Yes	Yes	Yes	Yes
EQT Midstream Partners LP	EQM	Yes	Yes	Yes	Yes	Yes	Yes
Spectra Energy Partners LP	SEP	Yes	Yes	Yes	Yes	Yes	Yes
Tallgrass Energy Partners LP	TEP	Yes*	Yes	Yes	Yes	Yes	Yes
TC PipeLines LP	TCP	Yes	Yes	Yes	Yes	Yes	Yes
Kinder Morgan Inc.	KMI	Yes	Yes	Yes	Yes	Yes	Yes
Spectra Energy	SE	Yes	Yes	Yes	Yes	Yes	No***
American Midstream Partners LP	AMID	Yes	Yes	No	No	-	No
Antero Midstream Partners LP	AM	Yes	Yes	Yes	Yes	No	No
Arc Logistics Partners LP	ARCX	Yes	Yes	Yes	No	-	No
Archrock Partners L.P.	APLP	No	Yes	Yes	Yes	-	No
Azure Midstream Partners LP	AZUR	Yes	Yes	No	No	-	No
Blueknight Energy Partners L.P.	BKEP	Yes	Yes	Yes	No	-	No
Buckeye Partners L.P.	BPL	Yes	Yes	Yes	Yes	No	No
Cheniere Energy Partners L.P.	CQP	No	Yes	Yes	Yes	-	No
Cheniere Energy Partners LP	CQH	Yes	Yes	Yes	No	-	No
Cone Midstream Partners LP	CNNX	Yes	Yes	Yes	Yes	No	No
Crestwood Equity Partners LP	CEQP	Yes	Yes	No	Yes	-	No
CrossAmerica Partners LP	CAPL	Yes	Yes	Yes	Yes	No	No
DCP Midstream Partners	DPM	Yes	Yes	Yes	Yes	No	No
Delek Logistics Partners LP	DKL	Yes	Yes	Yes	Yes	No	No
Dominion Midstream Partners LP	DM	Yes	Yes	Yes	Yes	No	No
Emerge Energy Service LP	EMES	Yes	No	Yes	No	-	No
Enbridge Energy Mgmt LLC	EEQ	Yes	No	Yes	Yes	-	No
Enbridge Energy Partners L.P.	EEP	Yes	Yes	Yes	Yes	No	No
Energy Transfer	ETP	Yes	Yes	Yes	Yes	No	No
Energy Transfer Equity L.P.	ETE	No	Yes	No	Yes	-	No
Enlink Midstream LLC	ENLC	Yes	Yes	Yes	Yes	No	No
EnLink Midstream Part.	ENLK	Yes	Yes	Yes	Yes	No	No
Enterprise Products	EPD	Yes	Yes	Yes	Yes	No	No
EQT GP Holdings LP	EQGP	Yes	Yes	Yes	Yes	No	No
Ferrellgas Partners L.P.	FGP	No	Yes	No	Yes	-	No
Genesis Energy	GEL	No	Yes	No	Yes	-	No
Global Partners LP	GLP	No	Yes	Yes	Yes	-	No
Green Plains Partners LP	GPP	Yes	No	Yes	No	-	No
Holly Energy Partners L.P.	HEP	No	Yes	Yes	Yes	-	No
JP Energy Partners LP	JPEP	Yes	Yes	Yes	No	-	No
Magellan Midstream	MMP	Yes	Yes	Yes	Yes	No	No

Note:

* Investment grade based on synthetic credit rating or financing entity credit rating.

** Only companies that met the first four criteria were tested for asset criteria.

*** Excluded from final sample to avoid double counting the pure-play natural gas pipeline assets of SEP.

Table 2: Illustration of Sample Selection Process (Continued)

Company	Ticker	Include Based on Bond Ratings	Include Based on Dividend Cuts	Include Based on M&A	Include Based on Market Capitalization > \$500 MM	Meets Asset Criteria**	Final Sample
MarkWest Energy Part.	MWE	No	Yes	No	Yes	-	No
Martin Midstream Ptnrs L.P.	MMLP	No	Yes	Yes	Yes	-	No
Midcoast Energy Partners LP	MEP	Yes	Yes	Yes	No	-	No
MPLX LP	MPLX	Yes	Yes	No	Yes	-	No
Navios Maritime Midstream Ptnr	NAP	No	Yes	Yes	No	-	No
NuStar Energy L.P.	NS	No	Yes	Yes	Yes	-	No
NuStar GP Holdings LLC	NSH	Yes	Yes	Yes	Yes	No	No
ONEOK Partners L.P.	OKS	Yes	Yes	Yes	Yes	No	No
PBF Logistics LP	PBFX	No	Yes	Yes	Yes	-	No
PennTex Midstream Partners LP	PTXP	Yes	Yes	Yes	Yes	No	No
Phillips 66 Partners L.P	PSXP	Yes	Yes	Yes	Yes	No	No
Plains All Amer. Pipe.	PAA	Yes	Yes	Yes	Yes	No	No
Plains GP Holdings LP	PAGP	Yes	Yes	Yes	Yes	No	No
Rice Midstream Partners LP	RMP	Yes	Yes	Yes	Yes	No	No
Rose Rock Midstream L.P.	RRMS	No	Yes	Yes	Yes	-	No
Shell Midstream Partners LP	SHLX	Yes	Yes	Yes	Yes	No	No
Southcross Energy Partners L.P	SXE	No	Yes	Yes	No	-	No
Sprague Resources LP	SRLP	Yes	Yes	Yes	No	-	No
Suburban Propane	SPH	No	Yes	Yes	Yes	-	No
Summit Midstream Partners LP	SMLP	No	Yes	No	Yes	-	No
Sunoco Logistics Part.	SXL	Yes	Yes	Yes	Yes	No	No
Sunoco LP	SUN	No	Yes	No	Yes	-	No
Tallgrass Energy GP LP	TEGP	Yes	Yes	Yes	Yes	No	No
Targa Resources Partners LP	NGLS	No	Yes	No	Yes	-	No
Tesoro Logistics LP	TLLP	No	Yes	Yes	Yes	-	No
TransMontaigne Partners L.P.	TLP	Yes	Yes	Yes	No	-	No
Valero Energy Partners LP.	VLP	Yes	Yes	Yes	Yes	No	No
Western Gas Equity Partners LP	WGP	Yes	Yes	Yes	Yes	No	No
Western Gas Partners LP	WES	Yes	Yes	Yes	Yes	No	No
Western Refining Logistics LP	WNRL	No	Yes	No	Yes	-	No
Williams Partners L.P.	WPZ	Yes	Yes	No	Yes	-	No
World Point Terminals LP	WPT	Yes	Yes	Yes	No	-	No
Adino Energy Corp	ADNY	Yes	No	Yes	No	-	No
Central Energy Partners LP	ENGY	Yes	No	No	No	-	No
Cheniere Energy	LNG	No	No	Yes	Yes	-	No
Clean Energy Fuels	CLNE	Yes	No	Yes	No	-	No
Memorial Resource Development	MRD	No	No	Yes	Yes	-	No
NGL Energy Partners LP	NGL	No	Yes	Yes	Yes	-	No
ONEOK Inc.	OKE	No	Yes	Yes	Yes	-	No
TransCanada Corp.	TRP	Yes	Yes	Yes	Yes	No	No
Williams Cos.	WMB	Yes	No	No	Yes	-	No
World Fuel Services	INT	Yes	Yes	Yes	Yes	No	No

1 **Q23. Do all companies selected in the final sample have an investment grade credit rating?**

2 A23. No. Two companies, Tallgrass Energy Partners, LP (TEP) and Columbia Pipeline Partners
3 LP (CPPL), do not have a credit rating. All the other sample companies have an
4 investment grade credit rating.

5 **Q24. Why are these two companies included in the sample?**

6 A24. These two companies are included in the final sample based on their existing financing
7 arrangement and their synthetic credit profiles, which I calculated.

8 I included CPPL based on the financing arrangement described in the company's U.S.
9 Securities and Exchange Commission ("SEC") filings. Per these filings (2014 Annual 10-
10 K), a separate entity – Columbia Partners Group Inc., or "CPG" – acts as the financing
11 arm for CPPL's existing debt. The SEC filings indicate that this arrangement, which has
12 been set up by the ultimate parent, NiSource, Inc., is expected to continue. According to
13 the SEC filings, CPPL's debt is rolled up to CPG's balance sheet under "Long-term debt –
14 affiliate".¹⁴ Going forward, CPG will be the primary entity that bears the debt obligations
15 of the prior financing arm of NiSource, Inc. As of the time of this analysis, CPG has an
16 investment grade credit rating of BBB-.

17 I included TEP based on the following: (i) TEP's total debt is approximately 22 percent of
18 its total capitalization structure, which is lower than the eight-sample median of 37
19 percent; (ii) The weighted average interest rate on TEP's total outstanding debt, which
20 primarily consists revolving credit facility with maturity of May 2018, was 1.97 percent as
21 of September 2015. The yield of a three-year BBB rated U.S. utilities bond as of
22 September 2015 was 2.4 percent¹⁵, which is higher than that of TEP's weighted average

14 2014 10-K Columbia Pipeline Partners LP, pg.85 & CPG 10Q pg. 6. Previously, CPPL's debt was
financed under a financing arm of the ultimate parent company, NiSource Inc. However, according to the
latest 2014 10-K, the proceeds from CPG senior notes offering allowed NiSource to pay off its \$2.6bn debt.
Going forward, CPG will be the primary entity that bears the debt obligations.

15 Source: Bloomberg; The yield is as of September 31, 2015 for the Bloomberg composite index for senior
unsecured fixed rate bonds issued by U.S. utility companies with a rating of BBB.

1 interest rate. The lower interest rate for TEP's outstanding borrowings under its revolving
2 credit facility compared to the interest rate for the three-year BBB rated U.S. utilities bond
3 supports my assumption that TEP's credit rating would be investment grade if it were
4 rated.

5 Based on these factors, TEP does not appear to have significant credit risk, and therefore,
6 it is included in my final sample. Further, my estimation of TEP's synthetic credit profile
7 shows that based on its existing level of indebtedness, interest expense, and cash flows,
8 TEP would have an investment grade synthetic credit rating.

9 **Q25. Please explain the synthetic credit rating for TEP in greater detail.**

10 A25. My estimation of synthetic credit rating for TEP is based on the following financial ratios:
11 (i) Debt / Funds from Operations (FFO); (ii) Debt / Earnings before Interest, tax,
12 depreciation and amortization (EBITDA); and (iii) EBITDA / Interest Expense.¹⁶

13 Debt / FFO ratio is a payback ratio that approximates the length of time (in years) it takes
14 for the company to pay back its outstanding debt. All else equal, a lower debt / FFO ratio
15 indicates lower leverage, and therefore, a higher credit rating. A lower debt / FFO ratio
16 implies the company is in a stronger position to pay off its debt using its operating income.
17 TEP's Debt / FFO ratio during the last twelve months (LTM) as of September 30, 2015
18 was approximately 3.0x, which is lower than a typical ratio of 4.5x for BBB rated U.S.
19 pipelines, midstream and MLPs per Fitch Ratings.

20 Debt / EBITDA ratio measures a company's ability to pay off its debt. This ratio
21 approximates the number of years that the company would need to pay off all debt using
22 pre-tax net operating cash flows, excluding non-cash expenses such as depreciation and

16 For this analysis, I reviewed (i) S&P's General Corporate Ratings Methodology, updated in November 2013; (ii) S&P's Ratings Service to NARUC Staff Subcommittee on Accounting and Finance in Spring 2014; (iii) Moody's Rating Methodology for Natural Gas Pipelines; and (iv) Fitch Ratings for Pipelines, Midstream and MLPs. I primarily used the rating criteria provided by Fitch as it provides the most explicit quantitative guidelines for the purposes of our analysis. Both S&P's and Moody's guidelines contained significant qualitative factors that are difficult to measure without going beyond the scope of this analysis. Lastly, the financial metrics employed by Fitch primarily use ratios related to leverage and cash flow, which are similar to those proposed by S&P's and Moody's.

1 amortization. All else equal, a high debt / EBITDA ratio suggests it could take a firm
2 longer to pay off its debt and therefore, can result in a lower credit rating. Conversely, a
3 low ratio suggests that a firm may quickly pay off its debt and potentially take on
4 additional debt as needed, and corresponds to a higher credit rating. TEP's debt / EBITDA
5 ratio for the LTM as of September 30, 2015 was approximately 2.9x, which is lower than
6 a typical ratio of 4.0x for BBB rated U.S. pipelines, midstream and MLPs per Fitch
7 Ratings.

8 EBITDA / interest ratio is used to assess the company's ability to use its operating cash
9 flows to service its interest payments. A higher EBITDA / interest ratio indicates the
10 company generates more than sufficient operating cash flow to provide interest coverage,
11 resulting in a higher credit rating. TEP's EBITDA / interest ratio for the LTM as of
12 September 30, 2015 was approximately 15.8x, which is higher than a typical ratio of 4.5x
13 for BBB rated U.S. pipelines, midstream and MLPs per Fitch Ratings.

14 Based on all three ratios calculated above, I estimate TEP to achieve an investment grade
15 synthetic credit rating.

16 **Q26. What other considerations have you used in your credit rating analysis of CPPL and**
17 **TEP?**

18 A26. I reviewed the S&P ratings criteria guideline to NARUC Staff Subcommittee on
19 Accounting and Finance in Spring 2014. The guideline contained some additional criteria
20 such as certain qualitative and quantitative adjustments one should consider when
21 analyzing credit ratings. One such adjustment relates to volatility. The guideline
22 recommends that companies with a high volatility in the cash flow to leverage ratio should
23 have a downward modification to its rating. On the other hand, no upward modification is
24 made if companies exhibit low volatility in cash flow to leverage ratio. Companies
25 considered low-volatility display the following characteristics:

- 26 i. A vast majority of operating cash flows from regulated operations at the
27 low end of the utility risk spectrum (*e.g.*, networks);
- 28 ii. A "strong" regulatory advantage score;

- 1 iii. An established track record (and expected to continue) of stable credit
2 measures;
- 3 iv. Demonstrated long-term track record (and expected to continue) of low
4 funding costs; and
- 5 v. Non-utility activities that are low risk, nonstrategic, and in a separate part
6 of the group

7 Currently, the majority of the assets of CPPL and TEP are comprised of regulated assets.
8 Furthermore, historically, CPPL and TEP both had access to capital with low funding
9 costs and such access is expected to continue going forward.¹⁷ TEP, CPPL and CPPL's
10 debt financing arm, CPG, are in the business of operating pipelines and midstream assets,
11 and therefore their cash flows are not of high risk. Based on these criteria, CPPL and TEP
12 are not considered to be companies with volatile operating cash flows.

13 **Q27. Please explain the process you used to calculate the asset composition of sample**
14 **companies.**

15 A27. The asset composition calculation is the last step of the selection process I have outlined
16 above. I performed asset composition calculations on 38 companies retained after
17 screening for (i) sub-investment grade credit rating; (ii) dividend cuts; and (iii) significant
18 M&A activities. I began the asset composition analysis by first reviewing the business
19 descriptions of each company in their respective annual reports filed with the SEC. I
20 eliminated companies whose business descriptions indicated largely non-natural gas
21 pipeline business activities. For the remaining companies, I reviewed details on property,
22 plant and equipment, total assets, operating revenues and profits to calculate asset
23 compositions.

¹⁷ According to SEC filings, historically, CPPL had access to a pool of debt bearing interest rate of less than 1 percent.

1 **Q28. What are the results of the asset composition calculation?**

2 A28. All companies from my final sample, with the exception of TEP, had substantial (*i.e.*, 35
3 percent or more) FERC-regulated natural gas pipeline assets as of 2014.

4 **Q29. Why was TEP included even though it did not meet the asset composition threshold?**

5 A29. TEP, which acquired a stake in the FERC-regulated Pony Express crude oil pipeline in
6 September 2014, had approximately 29 percent natural gas pipeline assets in 2014. Prior
7 to this acquisition, in 2013, TEP's FERC-regulated natural gas pipeline assets constituted
8 65 percent of its total asset base, but the Pony Express acquisition diluted TEP's natural
9 gas pipeline share as a percent of its total asset base. Notwithstanding this dilution, I
10 included TEP in my final sample because the Pony Express crude oil pipeline is FERC-
11 regulated,¹⁸ and therefore carries risk comparable to the FERC-regulated natural gas asset
12 base of TEP. Furthermore, even after this acquisition, about 86 percent of TEP's assets
13 continue to be used for regulated transmission operations, indicating that TEP's business
14 operations and the associated risks are comparable to those of the other selected sample
15 companies.

16 **B. ISSUES RELATING TO INPUT PARAMETERS AND METHODOLOGY OF THE**
17 **COMMISSION'S DCF CALCULATION**

18 **1. The Commission's DCF Model**

19 **Q30. Please describe the Commission's estimation methodology.**

20 A30. The *Policy Statement* essentially re-affirms the Commission's DCF methodology as
21 articulated in prior decisions such as *Williston Basin*, *Kern River*, and *HIOS*, but outlines a
22 modification in the case of MLPs, which are now permitted to be included in the sample.
23 The one modification suggested for MLPs is to reduce the estimated terminal growth rate
24 to one-half of the long-term U.S. Gross Domestic Product ("GDP") growth forecast

¹⁸ Tallgrass Energy Partners, LP, Form 10- K/A Amendment No. 1 for the Fiscal Year ended December 31, 2014, pg. 6, 21.

1 instead of the full amount of the GDP growth rate forecast used for the C-corporations in
2 the sample.¹⁹

3 **Q31. Please describe the details of the DCF model traditionally used by the Commission to**
4 **establish the “range of reasonableness”.**

5 A31. As noted earlier, the Commission’s DCF model is a modification of the standard constant-
6 growth DCF model, where the dividend growth rate is a weighted-average of the
7 company’s 5-year analyst growth rate estimates (2/3rd weight), such as those provided by
8 Institutional Broker’s Estimate System (“IBES”) or Bloomberg (“BEst”), plus a common
9 long-term growth rate estimate (1/3rd weight). Details of the approach are articulated in
10 *Transco* and *Kern River*, as well as in *Williston Basin* and *Enbridge Pipelines (KPC)*
11 (*“Enbridge”*). As the Commission stated in *Enbridge*:

12 The Commission uses the Discounted Cash-Flow (DCF) methodology
13 when calculating a range of reasonable rates of return on equity for natural
14 gas pipelines. Under that methodology, the rate of return equals the
15 dividend yield (stock price divided by dividends), plus the projected growth
16 in dividends.²⁰

17 For natural gas pipelines, the Commission uses a two-step procedure to
18 determine the projected growth in dividends of the proxy group companies,
19 averaging short-term and long-term growth estimates. The Commission
20 uses five-year Institutional Broker's Estimate System (I/B/E/S) growth
21 projections for each proxy group company for the short-term growth
22 projection. The Commission uses the growth rate of the Gross Domestic
23 Product (GDP) as its long-term growth rate, since the Commission has
24 found that pipeline specific projections of long-term growth cannot
25 reasonably be developed based on available data sources. The Commission
26 averages these growth projections, giving two-thirds weight to the short-
27 term growth projection and one-third weight to the long-term growth
28 projection.²¹

¹⁹ This is one way to recognize the Commission’s finding that long-term earnings growth of MLP limited partner shares is diminished relative to the C-corporation, since a MLP often distributes more than its earnings to its equity holders.

²⁰ 100 FERC ¶ 61,260 at P 214.

²¹ *Id.* at P 215.

1 In formulating the DCF model, the Commission further adds an adjustment to the
2 dividend yield term resulting in the Commission's DCF cost of capital equation:²²

$$k = \frac{D_0 \times (1 + 0.5g)}{P} + g \quad (1)$$

3 **Q32. Is the dividend yield simply the current dividend divided by current price in the**
4 **Commission's approach?**

5 A32. No. The Commission has established a very specific procedure for calculating the
6 dividend yield to use in the DCF formula. Specifically, the "current" dividend yield is to
7 be computed using the prior six months of dividend and price data. One first records the
8 highest and lowest trading price during the month for each of the prior six months. The
9 current dividend for each month is annualized (*i.e.*, multiplied by 4) and then divided by
10 the average of these two prices for each month to produce six monthly dividend yields.
11 Averaging these six dividend yields produces an unadjusted dividend yield for each
12 company. This is then further adjusted by a factor of $(1 + 0.5g)$, where g is the
13 company's average growth rate, and becomes the adjusted dividend yield that appears in
14 equation (1).

15 **Q33. Why is only one half of the growth rate used to set the dividend yield in the**
16 **Commission's preferred methodology as opposed to the full growth rate as shown in**
17 **Equation (1)?**

18 A33. The Commission has chosen this implementation as an adjustment for the timing in how
19 dividends are paid and the fact that they are paid quarterly. However, I disagree with the
20 use of the 0.5 multiplier for the initial growth rate as a matter of economic principle
21 because it violates the basic assumptions of the DCF model. The DCF model is derived
22 under the assumption that dividends grow at the full growth rate for the period. However,

²² *Southwest Gas Storage Co.*, Docket No. RP07-34-000, Prepared Direct Testimony of Commission Trial Staff Witness Randolph A. Barlow, Exhibit S-7 at 25.

1 because it is the Commission's method, my results follow the Commission's precedent
2 and use this version of the dividend yield in the DCF model.

3 **Q34. The Commission's methodology as outlined in the orders referenced and the *Policy***
4 ***Statement* also requires an estimated long-term growth rate for each of the**
5 **companies. Please explain how this is computed.**

6 A34. Although companies can experience very high rates of growth from time to time (*i.e.*,
7 greater than the growth of the economy as a whole), these high rates cannot generally be
8 expected to last indefinitely. Conversely, very low rates of growth can generally be
9 expected to improve over time. The longest analyst earnings growth forecasts publicly
10 available are for about five years. This lack of information requires that dividend and
11 earnings growth beyond five years be estimated in some way. A standard assumption
12 often used is that a company will grow at the same rate as the economy in the long term.
13 If it were expected to grow more rapidly, it would become an ever-increasing portion of
14 the economy. Similarly, a company expected to grow more slowly than GDP would play
15 a shrinking role in the economy. For purposes of the DCF model, neither outcome seems
16 reasonable.

17 The Commission's DCF approach prescribes a terminal growth rate equal to the forecast
18 of long-run GDP growth (in nominal terms). Specifically, the growth rate in the
19 Commission's DCF model is the weighted-average of the current IBES estimate of the
20 company's short-term earnings growth and the GDP growth rate forecast, with $\frac{2}{3}$ weight
21 on the short-term growth forecast and $\frac{1}{3}$ weight on the GDP forecast.²³ For MLPs, the
22 recent policy statement prescribes the use of $\frac{1}{2}$ of the GDP growth rate forecast instead of
23 the full amount as the terminal growth rate.

²³ The GDP forecast is taken to be the average of the long-term GDP forecasts produced by the Social Security Administration (50-year horizon), the Energy Information Administration, and Global Insight (see the *Policy Statement*).

2. IBES Growth Rate Inputs

Q35. How do you obtain the IBES growth rates?

A35. I downloaded them from Thomson ONE—a third-party data platform provided by Thomson Reuters—using the Thomson Reuters Spreadsheet Link (“TRSL”) plug-in for Microsoft Excel.

Q36. How does Thomson Reuters update IBES growth rates over time?

A36. Thomson Reuters tracks 3- to 5-year earnings growth rate estimates submitted by equity analysts who cover a specific company, and calculates a consensus earnings per share (“EPS”) growth rate estimate as the average of the growth rates reported by the individual analysts. IBES communicates with the analysts and curates their submissions to maintain a as up-to-date a value for the consensus growth rate as possible at any point in time.

Q37. How have growth rates for the sample companies changed over time?

A37. The IBES 5-year growth rates forecasts for the companies in the natural gas pipeline proxy group have been highly volatile. There are two primary drivers of the observed volatility. First, there are only a few analysts—often no more than one or two—tracking each sample company. Second, individual analyst’s forecasts often appear to be updated only infrequently. When only a few analysts (fewer than 3 in most cases for the sample companies selected) forecast a company’s growth rate, even a change in a single analyst’s forecast can alter the consensus growth rate estimate substantially. To better understand the volatility in the consensus forecasts, I reviewed the monthly consensus growth rate estimates and the changes in number of active analysts for a period beginning in January 2011. Figure 2 below for Boardwalk Pipeline Partners LP and Figure 3 for Spectra Energy Partners, L.P. (two of my sample companies) illustrate significant movement in the monthly consensus growth rate estimates as the number of active analysts tracking the company changes.

The graphs show that the consensus growth rate estimates can swing dramatically from month to month, based solely on the entry or exit of a single analyst. For example, the

1 IBES consensus estimate for BWP went from 7.1 percent in January 2014—based on the
 2 estimate of a single analyst—to -4.9 percent in March of that year based on the initiation
 3 of coverage by a second analyst. This example reveals the IBES growth rate fluctuations
 4 premised in part on the fact that there are so few current estimates upon which those
 5 forecasts are based.

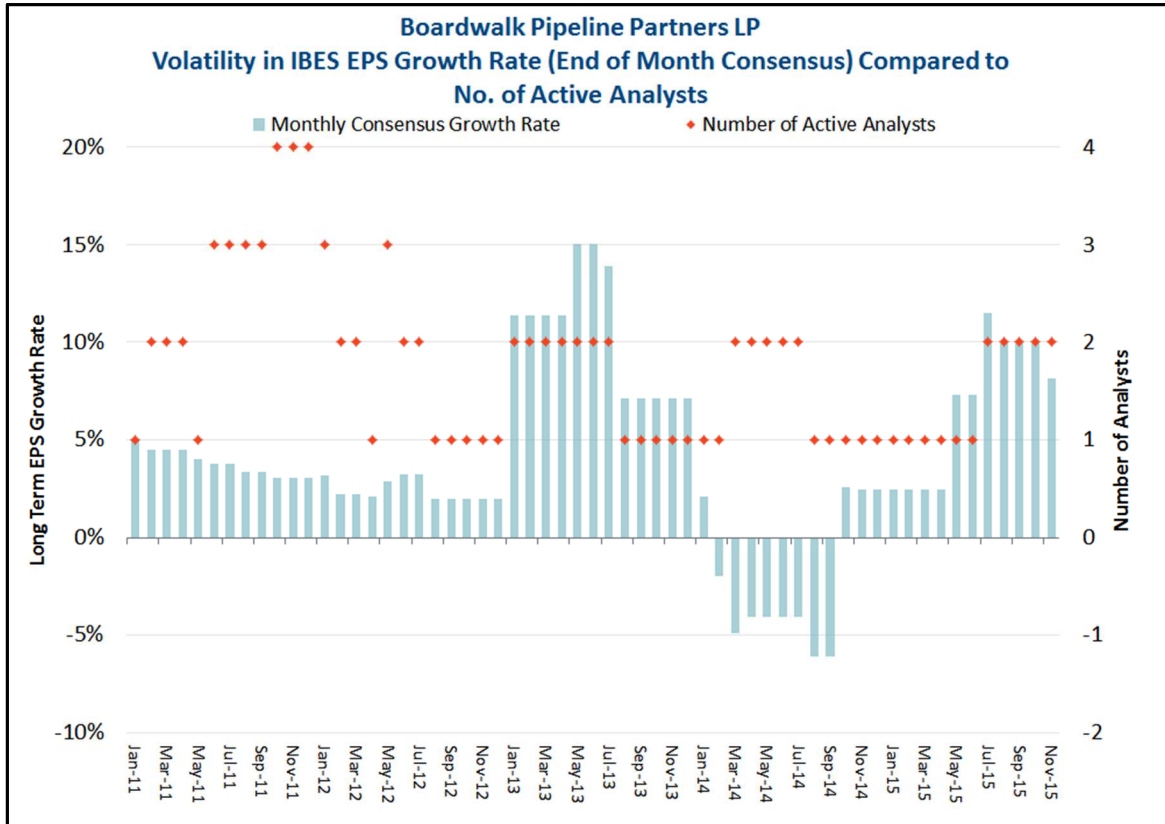


Figure 2

6 Even more dramatic changes are evident for SEP. As shown in Figure 3 below, the
 7 reported IBES consensus growth rate estimate dropped from 6.6 percent in October 2014
 8 to -9.4 percent the next month, coincident with a new estimate contributing to the
 9 consensus. Over the course of the year between February 2014 and February 2015, the
 10 consensus growth rate for SEP went from approximately 10 percent based on two
 11 contributing analysts to approximately -25 percent based on only a single estimate. Graphs

1 of historical consensus estimates for the other sample companies show similarly volatile
 2 patterns.²⁴

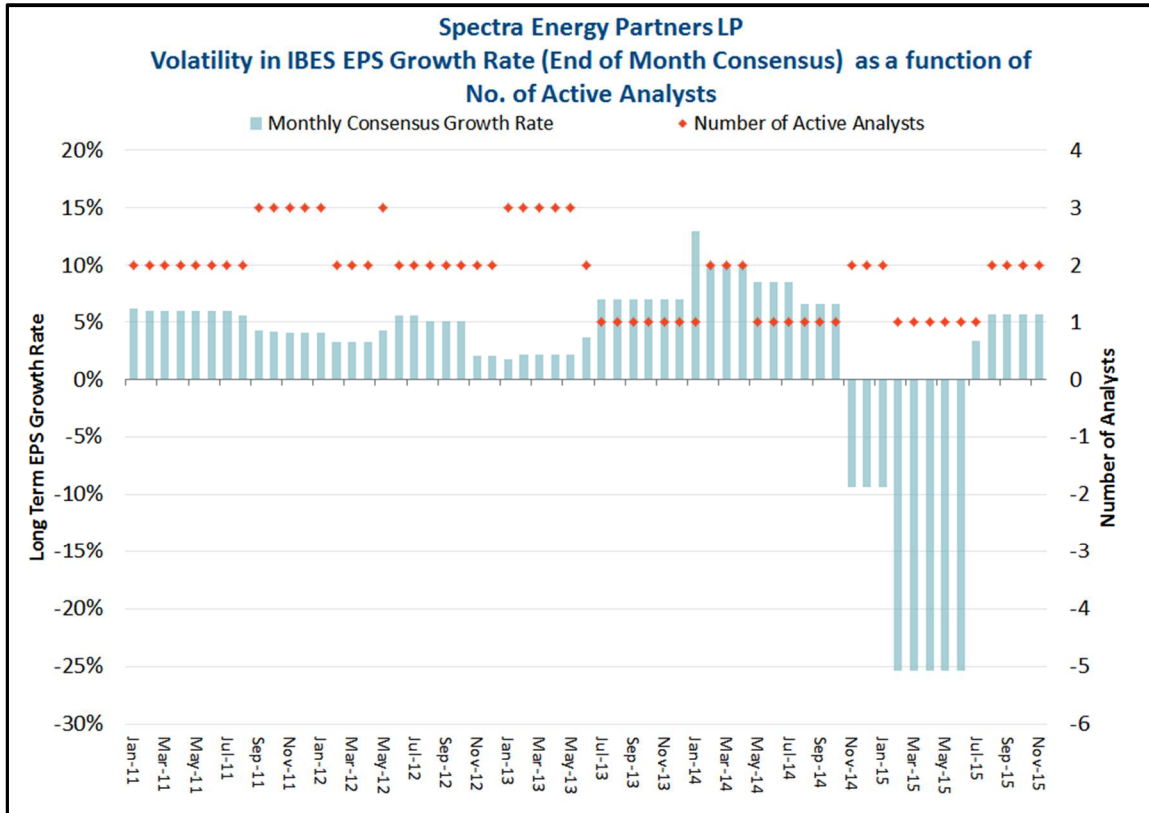


Figure 3

3 **Q38. Do you have any other observations about the volatility of the IBES consensus**
 4 **growth rate estimates?**

5 A38. Yes. The composition of the consensus estimates often change in ways that are opaque to
 6 a consumer of the numbers. For example, Figure 4 shows how individual estimates
 7 contributed to the consensus mean IBES growth rate for SEP in late 2014 and early 2015.
 8 Through the end of October 2014, a single analyst made up the mean with a growth rate of
 9 6.6 percent. In November, a new contributor submitted an estimate of -25.3 percent, which
 10 was averaged with the original estimate to produce a mean of -9.4 percent until the 6.6

²⁴ I have included plots for all sample companies in Exhibit No. ANR-030 to this testimony.

1 percent estimate was removed from consensus in February of 2015, at which point it was
 2 more than 180 days old. The -25 percent growth rate then remained the lone estimate
 3 contributing to the consensus mean until July 2015, when it was replaced by a new single
 4 contributor estimating growth of 3.4 percent. It is worth noting that by May 2015, the -25
 5 percent estimate was more than 180 days old, and (as indicated by the “open” symbols in
 6 Figure 4) had been marked as “excluded” in the ThomsonOne database. It appears that for
 7 the time between the exclusion of that estimate and the establishment of the 3.4 percent
 8 estimate in July 2015, the reported consensus mean was reflecting the “excluded” -25
 9 percent estimate, rather than indicating that no consensus growth rate estimate was
 10 available.

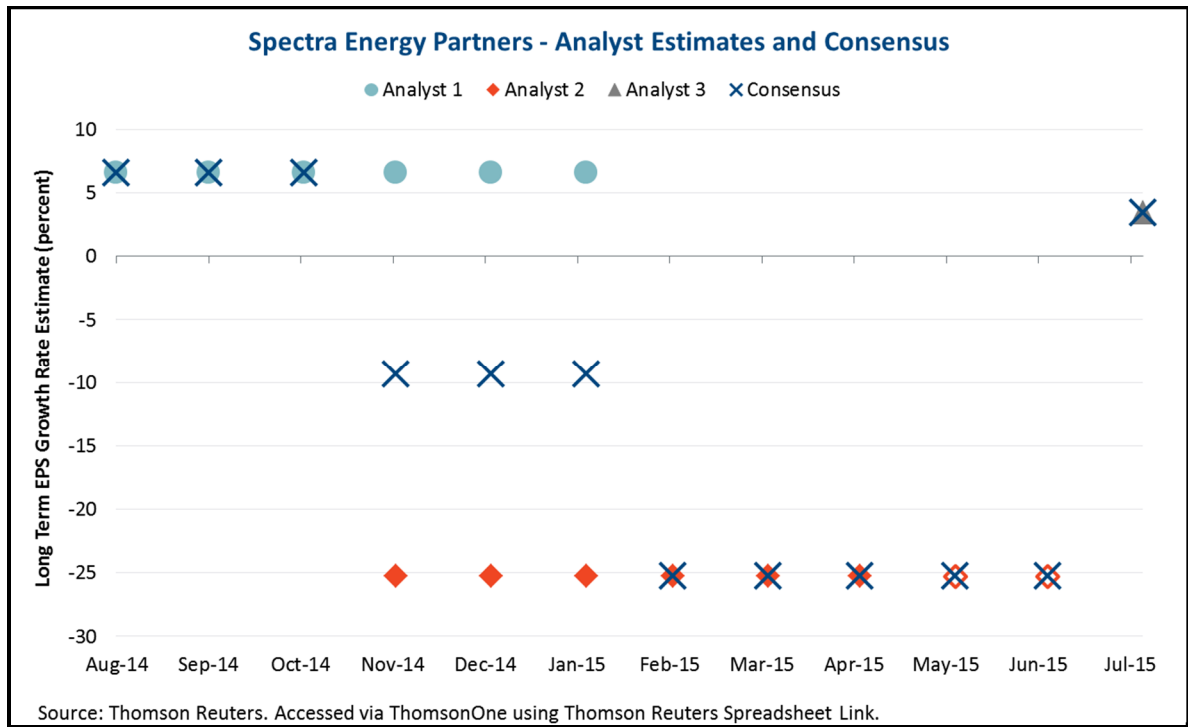


Figure 4

11 Figure 5 below illustrates a more complex set of changes occurred for the estimates
 12 contributing to the IBES consensus mean growth rate for BWP between July 2012 to June
 13 2013. At the start of this period, estimates of 2 and 4.5 percent were averaged to form the
 14 consensus. However, the 4.5 percent estimate was removed in August, leaving the 2
 15 percent estimate—which been marked as “excluded” in the ThomsonOne database starting

1 in October—as the lone contributor through December 2012. In fact, this older estimate
 2 seems to have persisted in contributing to the consensus mean even after a new estimate of
 3 20.7 percent was introduced in January of 2013. This means that the reported consensus
 4 was 11.4 percent (*i.e.*, the average of 20.7 and 2) rather than 20.7 percent from January
 5 until April 2013, when the 2 percent estimate was replaced with a new estimate of 9.3
 6 percent, raising the reported consensus to 15.0 percent.

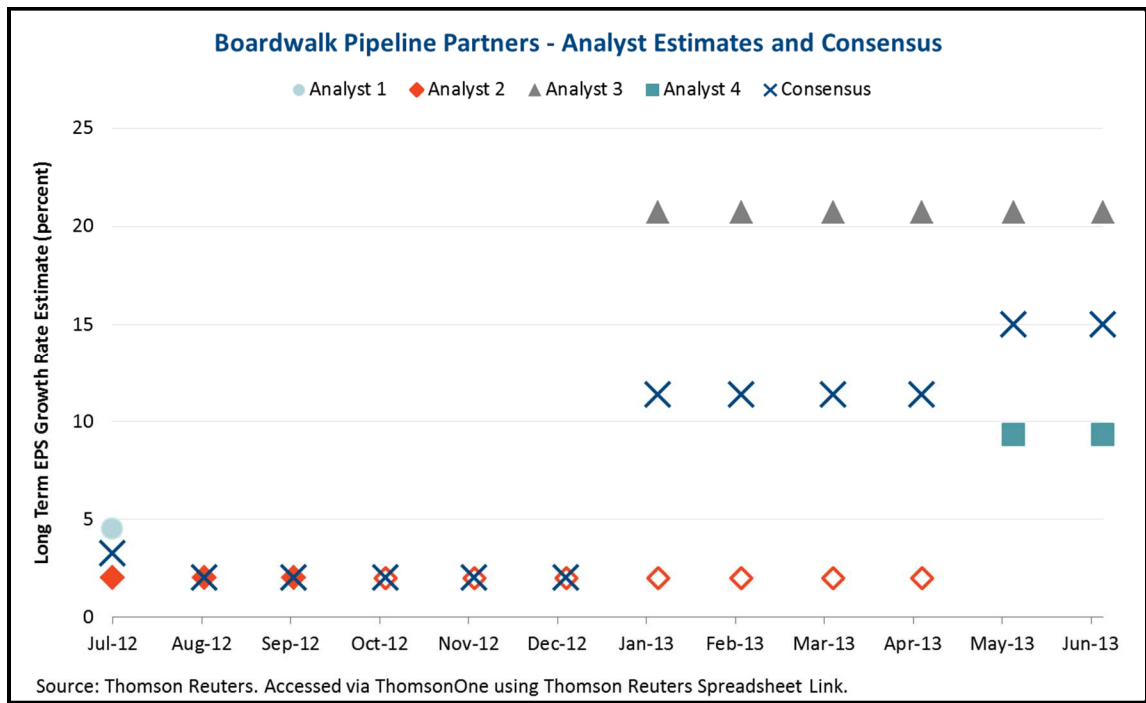


Figure 5

7 **Q39. Is it your opinion that the IBES growth rate forecasts are unreliable?**

8 A39. No. The brokers and equity analysts who contribute estimates to IBES are in general very
 9 knowledgeable about the companies they cover, and highly influential in the investment
 10 community. Furthermore, IBES has a long history of curating the contributed estimates
 11 and a reputation for doing so according to consistent standards. I therefore believe that the
 12 EPS growth rate estimates aggregated and reported by IBES provide useful information
 13 about market expectation regarding the growth prospects of these companies.

14 However, the IBES consensus growth rate forecasts for the companies in the natural gas
 15 pipeline proxy group are determined by averaging estimates from small and variable

1 group of contributing analysts. As explained and illustrated above, changes in the
2 composition of contributed estimates—changes that would be “invisible” to a cost of
3 capital analyst who merely downloads the consensus means—can move the reported
4 consensus dramatically in a short period of time. Therefore, I believe that if IBES growth
5 rate forecasts are to be retained as an input to the Commission’s DCF for natural gas
6 pipelines, certain adjustments should be made to mitigate the volatility of the reported
7 consensus values.

8 **Q40. Given your observations about IBES growth rate forecasts, what adjustment do you**
9 **propose to the FERC DCF model’s growth rates in your analysis?**

10 A40. In the context of preserving the structure of FERC’s traditional implementation the two-
11 stage DCF model, I propose two modifications to the 1st-stage growth rate input.²⁵ First, I
12 propose to increase the number of analysts by including EPS growth rate forecasts from
13 *Value Line* analysts. Analysts for *Value Line* only provide their information to subscribers
14 of *Value Line* so their forecasts are independent of those reported in IBES. As with IBES
15 forecasts, investors rely on *Value Line* in making their investment decisions. Thus, adding
16 *Value Line* to the number of forecasts can only be beneficial. Second, I propose to use a
17 6-month average of the IBES forecasts rather than the current month’s estimate.

18 **Q41. Why do you believe incorporating growth rate estimates from *Value Line* improves**
19 **the calculation of the growth rate in the FERC DCF model?**

20 A41. A key issue related to the volatility of the IBES consensus 5-year EPS growth rate forecast
21 is the small number of analysts contributing to that consensus estimate. The limited and
22 variable coverage (*i.e.*, a small population of contributing analysts that fluctuates
23 substantially over time) of the companies in the natural gas pipeline proxy group for
24 purposes of providing EPS growth rate forecasts contributes to two of the issues identified
25 above: (1) the instability of IBES consensus estimates for any given company, and (2) the

²⁵ The 1st-stage growth rate in the FERC DCF model is the growth rate forecast—traditionally sourced from IBES—that receives a 2/3rd weight in the combined growth rate.

1 potential sensitivity of IBES consensus growth rates to “stale” estimates that may not have
2 not been reviewed for periods of 6 months or longer.

3 The number of independent analysts can easily be increased by incorporating the forecast
4 from the *Value Line* analyst covering each company. These analysts report their forecasts
5 exclusively to *Value Line*, and so they provide an additional independent perspective when
6 included alongside IBES estimates. Additionally, the *Value Line* analysts update their
7 reports on a strict 13-week schedule so the forecast will never be older than 13 weeks.
8 The reliability of *Value Line*’s quarterly review schedule is a key benefit of using *Value*
9 *Line* EPS growth forecasts alongside the IBES estimates, given that (as mentioned above)
10 the Thomson Reuters IBES consensus growth rates can include estimates that may not
11 been updated for 6 months or more.

12 **Q42. Can you provide any further evidence of the benefits of incorporating *Value Line***
13 **estimates?**

14 A42. Yes. The improvement in stability and reliability from using the *Value Line* estimates is
15 evident when comparing them to IBES consensus estimates over a recent historical period.
16 Figure 6 below compares the *Value Line* estimates for BWP to its IBES estimates over the
17 past two years. While both sources show the same general pattern (a decline in mid-2014
18 followed by a progressive increase) and give similar estimates currently, the IBES
19 estimates vary dramatically and at times erratically compared to the more consistent *Value*
20 *Line* estimate, which varies more modestly over time. This is a virtue of the *Value Line*
21 estimates, particularly since—as demonstrated above—the large swings of the IBES 5-
22 year consensus estimate for BWP are driven in part by abrupt changes in the number of
23 analysts covering that security. In my opinion, these changes are more an artifact of how
24 IBES reports the consensus based on the available submitted estimates than a meaningful
25 reflection of investors’ expectations surrounding the company’s growth prospects.

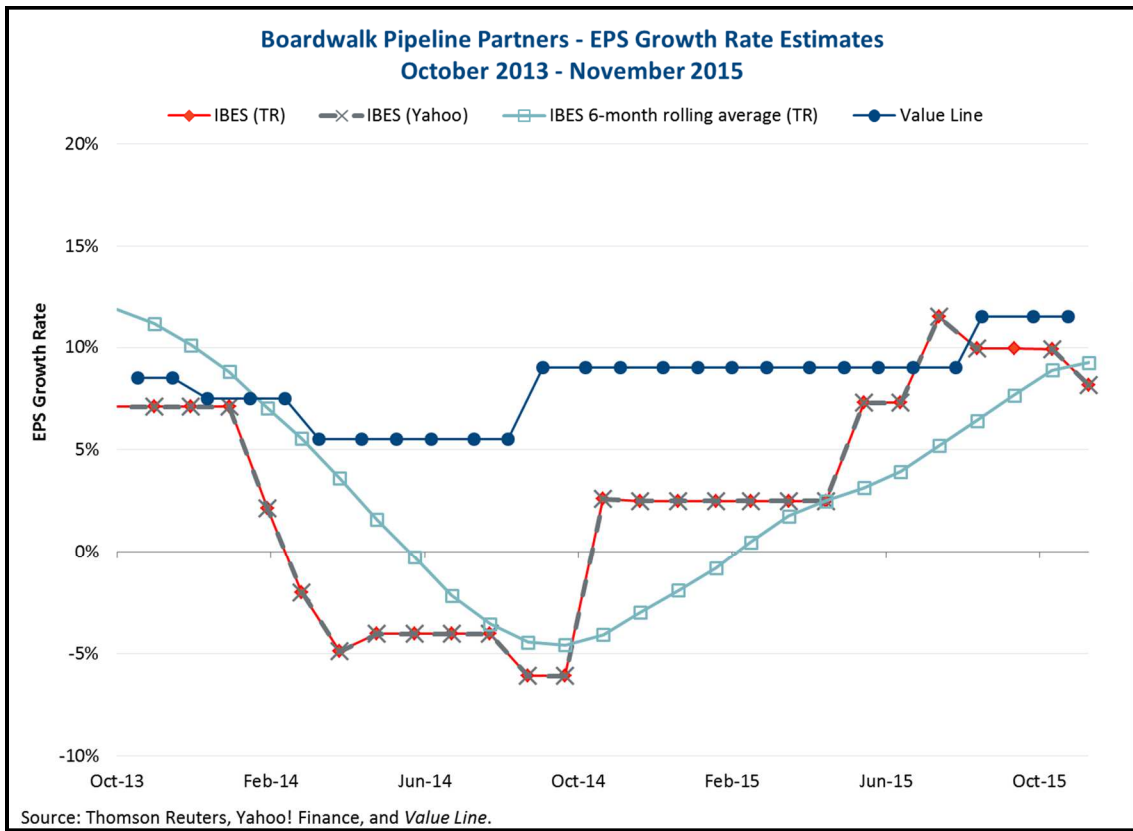


Figure 6

1 A similar comparison of growth rates for SEP further demonstrates the advantages of
 2 incorporating the *Value Line* estimates for the companies in the gas pipeline proxy group.
 3 As discussed above (and illustrated in Figure 3 and Figure 4), the reported IBES
 4 consensus EPS growth rate swung from positive to very negative to positive again over
 5 the course of the last year, being determined by one or two contributing estimates at any
 6 moment. Also as discussed above, the -25 percent consensus during May and June 2015
 7 was set by a single estimate that was more than 6 months old and had in fact been marked
 8 as “excluded” in the Thomson One database. By contrast, the quarterly-updated *Value*
 9 *Line* estimates remained relatively stable during that time. (See Figure 7 below.)

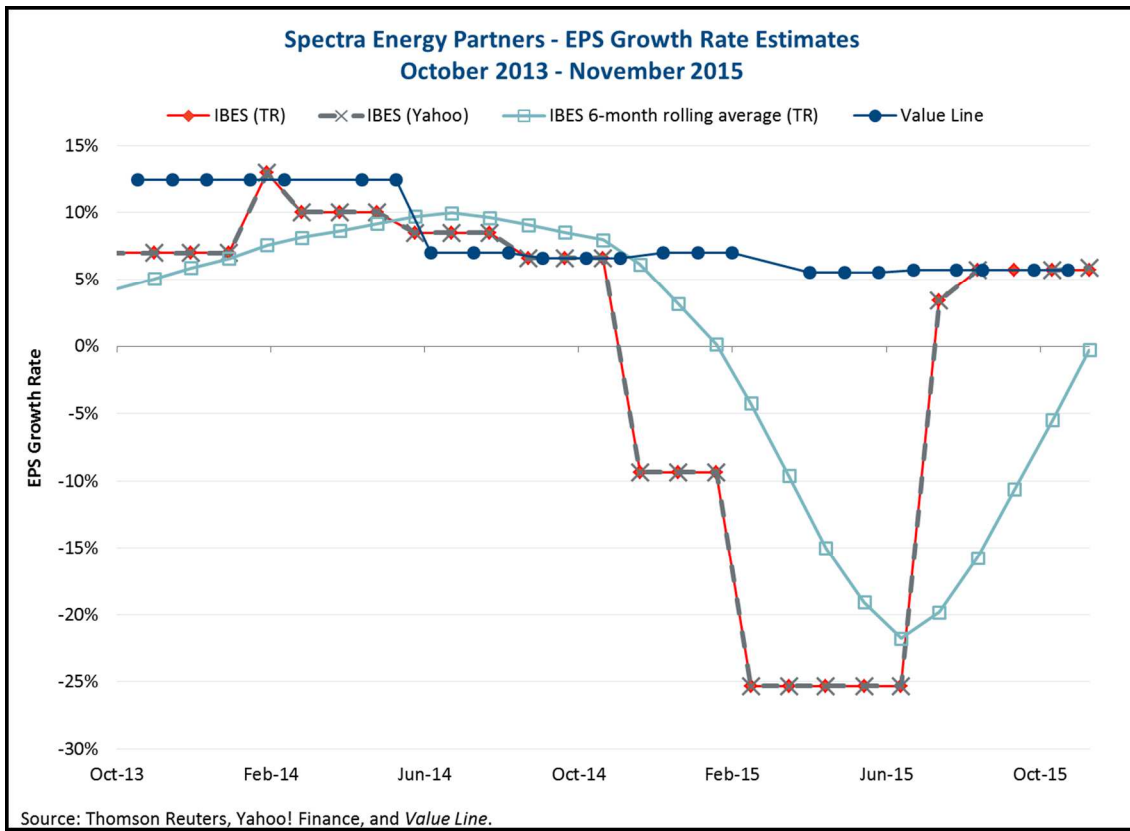


Figure 7

1 The data variability displayed by the IBES 5-year consensus estimates has negative
 2 implications for the FERC’s implementation of the DCF model. For example, suppose a
 3 gas pipeline were to receive an ROE based on a FERC DCF analysis conducted in October
 4 2014. If the cost of capital witnesses in the case relied on the IBES consensus growth
 5 rates, they would calculate an ROE estimate for SEP using a 6.6 percent 1st-stage growth
 6 rate.

7 Now imagine that a second pipeline were to file for an allowed ROE based on a DCF
 8 analysis conducted just 4 months later—in February 2015. That analysis would employ a
 9 -25 percent IBES consensus growth rate for SEP. Finally, suppose this second pipeline
 10 were to delay its filing until June, at which point a standard FERC DCF analysis would
 11 still be using the -25 percent IBES estimate—at this point more than 6-months old. If the
 12 pipeline were to source its IBES consensus growth rates from Yahoo! Finance (“Yahoo”)
 13 (as participants in FERC proceedings often do), they would not know that the forecast for
 14 SEP was based on a single *stale* estimate, since Yahoo does not report the number of

1 contributing analysts or their individual growth rate forecasts. (Nor, of course, could the
2 second pipeline know that if it waited one more month, the IBES consensus for SEP
3 would be positive 3.4 percent, based on a *different* single estimate.)

4 In my opinion, relying solely on a source (IBES) that can produce such discrepant inputs
5 over a relatively short period of time—displaying volatility that may be unrepresentative
6 of real changes in market conditions—is detrimental to the Commission’s goal of creating
7 a consistent regulatory environment. It is for this reason that I recommend incorporating
8 *Value Line*’s more stable and potentially more current estimate into the DCF analysis for
9 natural gas pipelines. To see this, note that both companies in my hypothetical could
10 include SEP in their DCF analysis—with a 1st-stage growth rate of 5 percent—if they
11 relied on *Value Line* estimates in addition to IBES.

12 **Q43. Why do you believe that a 6-month average IBES 5-year EPS estimate is preferable**
13 **to the current estimate?**

14 A43. The *theory* underlying the DCF method is that it is forward looking because stock prices
15 react to current information and (frequently updated) analysts’ forecasts adjust rapidly as
16 new information on company prospects is considered. Unfortunately, the *reality* is
17 different. The investigation of IBES growth rates shows that estimates from individual
18 contributing analysts are updated infrequently for most of the natural gas proxy group
19 companies. Moreover, when the monthly consensus estimates change, it is as often due to
20 the expiration of an old forecast as it is to the arrival of an updated estimate. As displayed
21 in Figure 2 and Figure 3 above (as well as similar plots included in Exhibit No. ANR-030),
22 the IBES consensus EPS estimates are highly volatile. As a result, companies and
23 intervenors are faced with highly volatile ROE estimates from the standard
24 implementation of the FERC DCF model. This means that ROE estimates are overly
25 dependent upon *when* the data for the model is extracted. It is not credible for the cost of
26 capital estimate from the model to vary as much as it does simply based upon the time
27 period of the data.

28 One way to mitigate this volatility is to rely upon a day-weighted average of the consensus
29 IBES estimates over some longer period of time. I recommend using the same 6-month

1 period used for establishing the dividend yield for the model. As illustrated in Figure 6
2 and Figure 7, employing a 6-month average of the daily reported consensus values does
3 serve to somewhat “smooth out” the volatility of the end of month reported values.

4 As an added benefit, I believe using 6-month day-weighted average growth rate estimates
5 may actually improve the internal consistency of the Commission’s DCF implementation,
6 since the prices over the 6-month period implicitly reflect investors’ knowledge about
7 impending dividends *and* contemporaneous growth expectations throughout that period.

8 **IV. COST OF EQUITY ESTIMATES**

9 **A. DISCUSSION OF ALTERNATIVE METHODOLOGY FOR DETERMINING GROWTH** 10 **RATE ESTIMATES**

11 **Q44. What alternative methodology are you applying in determining growth rate**
12 **estimates?**

13 A44. Since my analysis of historical IBES growth rate estimates reveals that they have been
14 highly volatile for natural gas pipeline companies—varying abruptly and dramatically at
15 times, driven by changes in the participation or very small number of analysts, and at other
16 times reflecting stale or even discontinued estimates—I recommend not rigidly adhering
17 to IBES 5-year EPS growth rate estimates alone. Rather I recommend applying an
18 appropriate range of growth rates to minimize potential distortions to the DCF estimates as
19 a result of relying on erratic growth rate inputs.

20 **Q45. What EPS growth rates do you use in your analysis?**

21 A45. I report the FERC DCF model results using four different estimates of the EPS growth rate.
22 All of my estimates use 1/3rd weight on the forecast of long-term GDP growth, but they
23 differ in the 5-year forecast. The four 5-year forecasts I use are:

- 1 1. The current IBES forecast (*i.e.*, the standard FERC approach);
- 2 2. The 6-month average IBES forecast;
- 3 3. The most recent *Value Line* EPS forecast; and
- 4 4. The average of the 6-month average IBES and the most recent *Value Line*
- 5 forecasts.

6 **Q46. Which of the four growth rates is your recommended approach?**

7 A46. I recommend the use of the fourth approach, *i.e.*, the average of the 6-month average IBES
8 and the *Value Line* forecasts, because this provides a larger number of independent
9 analysts²⁶ and recognizes that—unlike the *Value Line* estimates—the forecasts of
10 individual contributors to the IBES consensus may change infrequently while the
11 composition of the contributors themselves may change often. I believe that this growth
12 rate is the best available estimate to use because it will substantially reduce the volatility
13 of the ROE estimates. In my opinion, increasing the number of independent estimates by
14 incorporating *Value Line* is appropriate, even when using a 6-month average can further
15 mitigate the erratic nature of IBES consensus growth rates.

16 **B. CURRENT ECONOMIC CONDITIONS**

17 **Q47. Is it important to assess current economic conditions in the U.S. and abroad as part**
18 **of any FERC DCF analysis?**

19 A47. Yes. The FERC's DCF model is just that—a model, and as such relies on certain
20 assumptions about how its inputs—prices and dividends, as well as short- and long-term
21 growth rate estimates—jointly reflect the behavior and expectations of investors in the
22 market. These assumptions are never strictly “true”, but rather form an approximation of
23 reality that can be informative about the cost of equity capital for industries and
24 companies regulated by the Commission. The prevailing conditions in the global economy

²⁶ *Value Line*'s analysts report their forecasts exclusively to the *Value Line Investment Survey*. Therefore, there is no concern that averaging these forecasts with those obtained from IBES would double-count the estimate of any particular analyst. In this way, *Value Line* and IBES forecasts can complement one another and improve the robustness of the growth rate inputs by including more estimates, reducing the potential for the viewpoint of any one analyst to unduly sway the consensus.

1 affect how well those assumptions capture the behavior of capital markets, and therefore
2 how well the DCF results reflect the cost of equity. Therefore it is important to place any
3 DCF analysis in context of those conditions.

4 **Q48. How would you describe current global economic conditions as they relate to U.S.
5 capital markets?**

6 A48. Although the turmoil in the financial markets has lessened substantially in the past few
7 years, the current economic situation in the U.S., as well as in much of the world
8 continues to remain more uncertain for investors than before the global financial crisis that
9 started in 2008.

10 Despite the sustained recovery in the U.S., there is substantial market turmoil abroad,
11 especially in Europe and China. As recently as in the June to September time period, the
12 Chinese market experienced unprecedented volatility, and continues to cast doubt on the
13 sustainability of China's economic growth. China's central bank has pledged to "be
14 flexible in putting to use various monetary policy tools to maintain liquidity at reasonable
15 level"²⁷ by cutting interest rates and allowing banks to lend more of their deposits.
16 Meanwhile, the European Central Bank ("ECB") has cut its own target interest rate to an
17 unprecedented negative 0.3 percent, while continuing its asset purchase program to prop
18 up consumption and to tackle continued deflationary pressures. These actions reflect
19 increased uncertainty about the long-term outlook for Eurozone economies.

20 Further, the accommodative stance by the ECB and China's central bank represent a
21 divergent approach from that of the U.S. Federal Reserve ("Fed"), which has halted its
22 asset purchases and is contemplating increasing interest rates, albeit modestly. The low
23 interest rate outlook for European and Chinese markets—coupled with the volatility and
24 uncertainty that investors face in global capital markets—are driving bond investors to
25 seek potential upside in the U.S. debt market, pushing yields down.

²⁷ China's Central Bank statement on July 28th 2015; <http://www.nytimes.com/2015/07/29/business/chinese-markets-uneasy-after-huge-sell-off.html>.

1 While the direct effect of these global economic events on the U.S. economy is difficult to
2 foresee, it is likely that uncertainty in global capital markets has served to increase risk
3 aversion among U.S. investors. When investors become more wary of making risky
4 investments during times of economic uncertainty, they demand greater compensation (in
5 the form of higher required returns) to take on such investments.

6 The increased risk premium demanded by U.S. investors is apparent from changes yield
7 spreads between “risk-free” government bonds and riskier corporate bonds. Figure 8
8 shows the change in the yield spread between 20-year BBB-rated utility debt and 20-year
9 Treasury bonds. Yield spreads increased dramatically during the credit crisis and its
10 immediate aftermath. While spreads have declined from their 2008-2009 peak, they
11 remain well above their pre-crisis levels. Nor is the current trend in yield spreads a
12 declining one; after dipping in late 2013 and early 2014, the premium demanded by
13 investors to hold BBB utility debt in place of government bonds has been increasing over
14 the past year and a half. It is currently at its highest level since 2011.

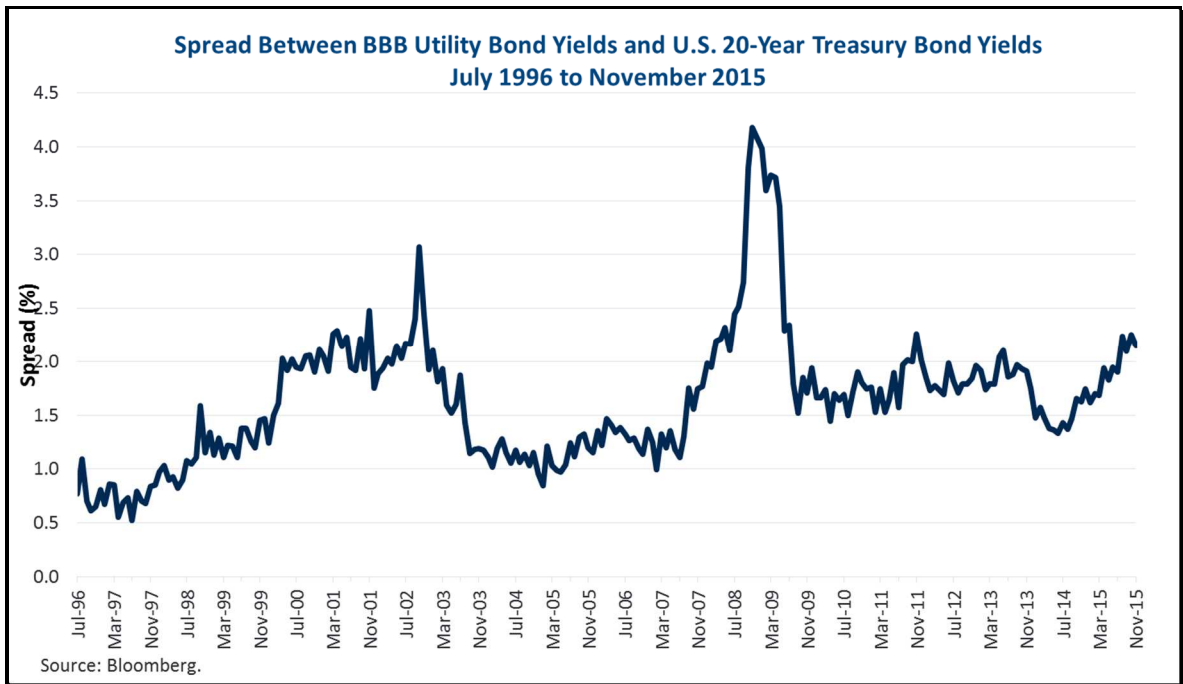


Figure 8

1 **Q49. What are the major remaining uncertainties?**

2 A49. Most recent US labor data shows that unemployment rate has fallen to 5.0 percent, which
3 is close to pre-crisis levels. However, the labor participation rate²⁸ remains near a multi-
4 decades low at just 62.5 percent, indicating that the real unemployment rate might well be
5 much higher.²⁹ This low level of labor force participation has not been observed since
6 1978, and may reflect the fact that many people who would otherwise be counted as
7 unemployed have become discouraged and given up looking for work. Moreover, the
8 current US economy has 2.8 million³⁰ fewer jobs compared to pre-recession levels, further
9 indicating that the economy has not recovered fully compared to the pre-crisis period.

10 Additionally, the Fed has acquired a massive inventory of Treasury bonds and agency
11 mortgage backed securities through its asset purchasing program that ended in October
12 2014. While the Fed has halted its purchases, it must still reduce this inventory, which it
13 accumulated in an effort to stimulate capital markets and keep interest rates low.³¹
14 Unwinding this position is a gradual process, and there will likely have substantial effects
15 on capital markets and interest rates, although the effects will not materialize overnight.

16 Another monetary policy issue closely observed by the Fed relates to price inflation.
17 Headline price inflation continues to run below the Fed's longer-run objective of 2
18 percent. Core inflation—which excludes energy and food prices—was also well below the
19 2 percent target at 1.25 percent over the 12 months ending in October.³² Per the Fed
20 chair's recent testimony to the U.S. Congress, even after taking into account a stronger
21 U.S. dollar (which pushes prices of imported goods down, and thus inflation), core

²⁸ Labor force participation is the percentage of the working age population with a job or seeking one.

²⁹ See Bureau of Labor Statistics, Labor Force Statistics from Current Population Survey, available at <http://data.bls.gov/timeseries/LNS11300000>, accessed July 27, 2015.

³⁰ Estimate from the Hamilton Project – Brookings Institute of Washington. See <http://www.nytimes.com/2015/12/05/business/economy/jobs-report-hiring-unemployment-november.html>.

³¹ The Fed's inventory of bonds increased from less than \$869 billion in August 2007 to over \$4.5 trillion as of July 2015. See www.federalreserve.gov under Total Assets of the Federal Reserve.

³² Fed Chair Janet Yellen's December 03, 2015 testimony to the Joint Economic Committee of U.S. Congress. See <http://www.federalreserve.gov/newsevents/testimony/yellen20151203a.htm>.

1 inflation has been running below the Fed's long-run objective.³³ The fact that inflation is
2 lower than normal indicates that some uncertainty still remains, even though the economy
3 has improved substantially.

4 Finally, recent actions by the ECB to tackle increasing deflationary pressures in the
5 European Union ("EU") are in divergence with the Fed's monetary policy. While the
6 continued economic recovery in U.S. has led the Fed to indicate a likely increase in the
7 federal funds target rate,³⁴ the ECB has cut its own target interest rate to an unprecedented
8 negative 0.3 percent, while continuing its asset purchase program to prop up
9 consumption.³⁵ This divergence between the US and EU monetary policies and the
10 underlying economic activities across the continents is unprecedented, and adds to the
11 significant uncertainty lingering in the global economy.

12 **Q50. Describe briefly the purpose and the effects of the Fed's asset purchase program.**

13 A50. Starting in November 2008, and until October 2014, the Fed purchased bonds and other
14 financial assets to stimulate a recessed US economy, reassure the capital markets, and
15 keep interest rates low. The primary purpose of the asset purchase program was to drive
16 down long-term interest rates, and in this regard it was remarkably successful. The
17 effectiveness of this policy is evidenced by the fact that U.S. Treasury Bond yields were
18 driven to historic lows.³⁶ Long-term and short-term interest rates have remained low by
19 historical standards.

20 The low interest rate outlook promulgated by the Fed's asset purchases between 2008 and
21 2014 and its ongoing accommodative monetary policy have somewhat mitigated the
22 "flight to safety" exhibited in capital markets as a result of investors' increased risk

³³ *Ibid.*

³⁴ Los Angeles Times – Business. <http://www.latimes.com/business/la-fi-yellen-congress-20151203-story.html>. Accessed December 8, 2015.

³⁵ Bloomberg QuickTake. <http://www.bloombergtake.com/quicktake/negative-interest-rates>. Accessed December 8, 2015.

³⁶ See for example, the "long term stock, bond, interest rate and consumption data" provided at Professor Robert Shiller's website: <http://www.econ.yale.edu/~shiller/data.htm>.

1 aversion. Investors were effectively driven back into equities by the extremely low bond
2 yields resulting from the Fed's policies. Utility stocks in particular benefited from this
3 phenomenon because of their relatively high dividend yields. Emerging market countries
4 benefited too, as investors sought higher returns.

5 Low interest rates also led to improved consumer spending on real estate and durable
6 goods: sales of houses improved because of record low mortgage rates, and automobile
7 sales reached high levels as well. In June 2013, after having stabilized systemically
8 important financial institutions as well as the US economy through its monetary policy,
9 the Fed indicated that it would begin tapering its asset purchases. Interest rates increased
10 in the following months, but later trended downward throughout 2014. Despite the end of
11 the asset purchase program, interest rates remain well below their pre-crisis and long-term
12 average levels. Recent indications from the Fed point to a gradual increase in federal funds
13 target rate and is expected to push U.S. Treasury yields higher from prevailing lows.

14 **Q51. Why do you think U.S. Treasury yields remained so low, even after the Fed**
15 **completed its asset purchasing program?**

16 A51. As explained above, I believe the lasting effects of the Fed's unprecedented asset
17 purchasing program and continued accommodative monetary policy put downward
18 pressure on the risk-free rate.

19 Also, U.S. Treasury bonds have been especially appealing recently when compared to
20 European sovereign debt, for which yields are being driven down by slow economic
21 growth and resulting monetary stimulus from the ECB to revive Eurozone economic
22 recovery and price inflation. In June of 2014, the ECB made history by establishing a
23 negative bank deposit rate—effectively charging banks money for depositing their money
24 in the central bank rather than lending it to consumers and businesses. This economic
25 stimulus sent the euro to historic lows against the dollar, pushing government bond yields
26 into negative territory. In March 2015, to revive euro-area inflation, ECB embarked on
27 asset purchases, buying 1.2 trillion dollars of government bonds. In December, it cut
28 prevailing negative interest rates by an additional 10 basis points to set the rate at negative

1 0.3 percent. The Eurozone's inflation rate is currently at 0.10 percent compared to the long
2 term average rate of 1.81 percent.³⁷

3 In addition, the significant volatility in the Chinese stock market between June and
4 September 2015 cast doubt on the sustainability of China's economic growth. China's
5 central bank pledged to "be flexible in putting to use various monetary policy tools to
6 maintain liquidity at a reasonable level"³⁸ by cutting interest rates and allowed banks to
7 lend more of their deposits. While the Chinese stock market is up 24 percent from its
8 trough in August 2015, it remains 30 percent down from its peak in June 2015, indicating
9 continued volatility. The accommodative stance by the ECB and China's central bank
10 reflect a low interest rate outlook for European and Chinese markets, coupled with the
11 volatility and uncertainty that investors face outside the Eurozone, driving bond investors
12 to seek potential upside in the U.S. debt market.

13 **Q52. Why is it important to consider the stock market's volatility?**

14 A52. Academic research finds that investors expect a higher risk premium during more volatile
15 periods. The higher the risk premium, the higher the required return on equity. For
16 example, French, Schwert, and Stambaugh (1987) find a positive relationship between the
17 expected market risk premium ("MRP") and volatility:

18 We find evidence that the expected market risk premium (the expected
19 return on a stock portfolio minus the Treasury bill yield) is positively
20 related to the predictable volatility of stock returns. There is also evidence
21 that unexpected stock returns are negatively related to the unexpected
22 change in the volatility of stock returns. This negative relation provides
23 indirect evidence of a positive relation between expected risk premiums
24 and volatility.³⁹

25

³⁷ Eurozone Inflation Rate from Eurostat data. https://ycharts.com/indicators/eurozone_inflation_rate. Accessed December 8, 2015.

³⁸ China's Central Bank statement on July 28th 2015; <http://www.nytimes.com/2015/07/29/business/chinese-markets-uneasy-after-huge-sell-off.html>.

³⁹ K. French, W. Schwert and R. Stambaugh (1987), "Expected Stock Returns and Volatility," *Journal of Financial Economics*, Vol. 19, p. 3.

1 One implication of this finding is that the MRP tends to increase when market volatility is
 2 up, even when investors' level of risk aversion remains unchanged. For parts of 2014 and
 3 2015, market expectations for the volatility of the S&P 500 index have been lower than
 4 their long-term average of approximately 20 percent.⁴⁰ However, as can be seen in Figure
 5 9, implied market volatility spiked as high as over 40 percent in August 2015, and
 6 remained over 20 percent in September, indicating continued market uncertainty and a
 7 resulting increase in MRP. It has since declined from its recent high but is again
 8 increasing in early December.

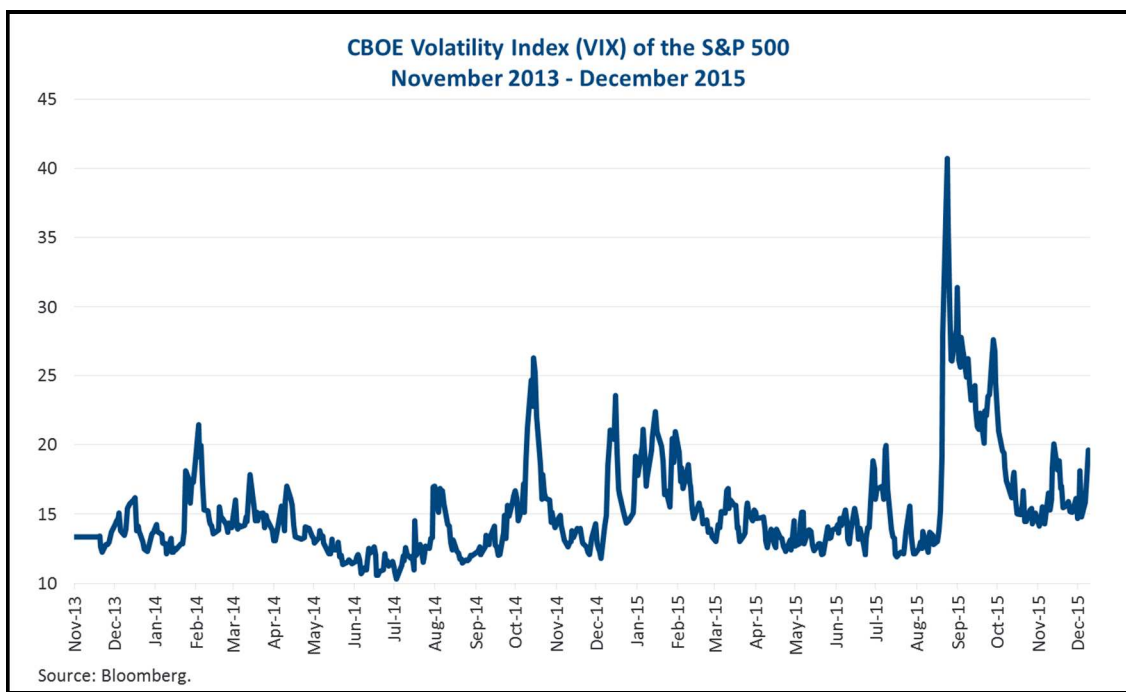


Figure 9

9 **Q53. What do you mean by the term “risk aversion”?**

10 A53. Risk aversion is the recognition that investors dislike risk, which means that for any given
 11 level of risk, investors must expect to earn a higher return to be induced to invest. An

⁴⁰ As measured by the CBOE Volatility Index (VIX), which measures market expectations for (annualized) 30-day volatility of the S&P 500 stock index based on implied volatility of options on the S&P 500. For example, the closing index value for the VIX as of November 30, 2015 was 16.13.

See <http://www.cboe.com/micro/vix/historical.aspx>.

1 increase in risk aversion means that investors require an even greater return for a given
2 level of risk.

3 **Q54. Do you believe that the increase in the market risk premium is a short-term or a**
4 **long-term phenomenon?**

5 A54. I believe that it is a long-term phenomenon. Even when market conditions return to
6 normal, investors' risk aversion is likely to remain higher until their confidence fully
7 returns, which is likely to be well into the recovery period. While the market conditions in
8 the U.S. have begun to return to normal, there are significant uncertainties in the global
9 economy, as I have discussed above. Therefore, it would take more time (years) before
10 investors regain the level of confidence that prevailed prior to the crisis. For a sizable
11 group of investors, the stock market collapse of 2008-2009 has had a much more
12 fundamental impact than wiping out a large part of their savings. In fact, it changed their
13 perception of risk and their appetites for taking on risk again. For many investors, it
14 changed their lifestyle. Some cannot retire as soon as expected, and others have had to
15 sell their homes in a down market, or have lost their homes. This negative shock to
16 investors' confidence and risk preferences is likely to have a sustained impact on their
17 portfolio allocation choices and may persist for some time. If investors have
18 fundamentally changed their attitude towards risk as the evidence suggests, then the
19 required reward for investing in the stock market, *i.e.*, the MRP, must have gone up and is
20 likely to stay at a higher-than-normal level for the foreseeable future. An increase in the
21 MRP results in an increase in the cost of capital for all risky investments, including
22 regulated utilities.

23 **Q55. What does the current unemployment rate suggest about the status of the recovery?**

24 A55. Unemployment is an important issue for the health of the overall economy since it affects
25 consumer spending and consumer confidence. Unemployment has declined materially
26 from its peak (around 10 percent) during the crisis, reverting close to pre-crisis levels.

1 The unemployment rate since October 2015 has stayed flat at 5 percent.⁴¹ As I have
2 explained above, even though the national unemployment rate had declined, the labor
3 participation rate continues to decline and is at multi-decades low of 62.5 percent.
4 Furthermore, even though the number of jobs created in the private sector has grown most
5 recently to 211,000,⁴² the economy is still 2.8 million jobs short compared to pre-crisis
6 levels. Unemployment rate adjusted for part-time workers who have been unable to find
7 full-time jobs is considerably higher at 6.1 percent.⁴³ Overall, the U.S. labor market is
8 stronger than during the crisis, but does not suggest consumer and investor confidence are
9 truly “back to normal.”

10 **Q56. What are your thoughts on the possible effect of the budget deficit on the economy?**

11 A56. In dollar terms, the federal budget deficit was \$483 billion in fiscal year 2014,⁴⁴ down
12 substantially from more than \$1 trillion in fiscal year 2012. However, the 2014 fiscal year
13 deficit was still approximately 50 percent higher than that of 2008 and well above the
14 average level in the years leading up to the crisis. The U.S. Congressional Budget Office
15 estimates that the budget deficit will grow faster than the economy over the next 10 years,
16 reaching nearly 4 percent of GDP by 2025.⁴⁵

17 Maintaining such a high deficit is unsustainable, especially if buyers of U.S. debt lose
18 confidence in the U.S. economy and demand higher interest rates in return. This suggests
19 that going forward, the U.S. will have to be more fiscally conservative, and limit the
20 stimulus funds it provides to the economy. Although inflation is not currently an issue, it
21 is also quite likely that the magnitude of the federal budget deficit will affect U.S. inflation
22 going forward. Compounding this potential issue is the fact that Fed now holds

⁴¹ Bureau of Labor Statistics; <http://data.bls.gov/timeseries/LNS14000000>

⁴² “US private sector adds 169,000 jobs in April: ADP,” *CNBC*, May 6, 2015

⁴³ New York Times - Economy. <http://www.nytimes.com/2015/12/05/business/economy/jobs-report-hiring-unemployment-november.html>, Accessed December 8, 2015.

⁴⁴ U.S. Department of the Treasury: <http://www.treasury.gov/>.

⁴⁵ Congressional Budget Office: <http://www.cbo.gov/>.

1 approximately \$1,748 billion in mortgage-backed securities.⁴⁶ It is unclear how the
2 unwinding of these positions will affect financial markets, which creates additional
3 uncertainty.

4 **Q57. Can you summarize how the economic developments discussed above have affected**
5 **the return on equity and debt that investors require?**

6 A57. Gas pipelines rely on investors in capital markets to support efficient business operations.
7 These investors have been dramatically affected by the credit crisis, and while there have
8 been material improvements in capital markets and the macro-economy since the height of
9 the financial crisis, there is evidence that investors' confidence remains low and their risk
10 aversion remains elevated relative to pre-crisis periods.

11 Many lost their jobs, their homes or their savings in the crisis; many cannot retire as early
12 as hoped or planned. Even though the economy is improving, the speed and duration of
13 that recovery remains highly uncertain. Likewise, the effects of the federal budget deficit
14 and the Fed's unwinding of its involvement in providing credit may have substantial but
15 uncertain effects on the economy and financial markets. Finally, due to increased risk-
16 aversion on the part of investors, as well as lingering effects of the bond-purchase
17 programs initiated by the Fed, long-term U.S. government bond yields have been pushed
18 down to extremely low levels by historical standards. As a result, yield spreads on utility
19 debt, including top-rated instruments, have remained elevated.

20 The evidence presented above demonstrates that the risk free interest rate remains
21 historically low, while the equity risk premium remains higher today than it was prior to
22 the financial crisis.

⁴⁶ Federal Reserve Statistical Release as of November 10, 2015, available at
<http://www.federalreserve.gov/releases/h41/Current/>

1 **Q58. Does the Commission's DCF method reflect the effects of the increased equity risk**
2 **premium and artificially depressed level of yields on risk-free government bonds that**
3 **prevail under current economic conditions?**

4 A58. No. The key inputs to the Commission's DCF model are stock prices, dividend yields and
5 company-specific analyst growth rate forecasts. While stock prices adjust immediately to
6 changes in fundamentals and market expectations, and thus capture both short- and long-
7 term growth forecasts, analyst growth rate forecasts, by definition, span shorter time
8 horizons (5 years). Therefore, it is more likely that analyst growth forecasts react to shifts
9 in economic conditions with a lag, with analysts only raising their growth estimates when
10 they catch up with an improvement in economic conditions, and vice versa.

11 Furthermore, the Commission's DCF model is premised on the assumption that analyst
12 growth rate forecasts (for individual companies in the 1st stage) reflect investors'
13 expectation that growth will be stable for some time before tapering toward the growth
14 rate of the broader economy. Even in a two-stage model, the assumed stability is less
15 likely to be present in times of economic uncertainty such as the present moment.

16 Additionally, to the extent that yields on government bonds persist at artificially low
17 levels, stocks will become more attractive to investors than they otherwise would be, even
18 when investors are more risk averse than usual. If stock prices are elevated due to this
19 effect, the dividend yields used in the DCF model may be lower than they would be under
20 normal circumstances. This could artificially lower the DCF results.

21 **Q59. Do your adjustments to the Commission's DCF Method capture the increased equity**
22 **risk premium prevailing under current economic conditions?**

23 A59. No. While my adjustments to the Commission's standard implementation of the DCF
24 seek to improve the stability and reliability of the 1st-stage growth rate inputs, nothing
25 about my adjustments takes account of the elevated market risk premium or historically
26 low levels of government bond yields.

1 **Q60. What is your recommendation with regard to interpreting the DCF results in light of**
2 **the current economic conditions?**

3 A60. I believe that while the cost of capital has declined from its peak during the global
4 financial crisis, the spread between the cost of equity and the cost of debt remains higher
5 than before the crisis. Unfortunately, it is impossible to predict when and by how much
6 the risk premium will decrease. In the meantime, I recommend that when evaluating the
7 Company's requested ROE, the Commission continue to acknowledge that under current
8 market conditions, the DCF results may not fully reflect investors required returns on
9 equity investments in natural gas pipelines.

10 **C. CHARACTERISTICS OF THE NATURAL GAS PIPELINE PROXY GROUP**

11 **Q61. Please describe the financial characteristics of your sample.**

12 A61. Table 3 below provides basic financial information for the sample companies including
13 prior twelve month revenues, the most recent fiscal quarter data on market capitalization,
14 and credit ratings for the sample companies. Table 3 also illustrates analyst growth
15 forecasts for the sample companies. ANR witness Carpenter presents evidence about the
16 operating characteristics of the sample companies.

Table 3: Financial characteristics of the sample companies

Company	Last Twelve Months of Revenue As of 09/30/15 (\$MM)	Market Cap. As of Most Recent Quarter 09/30/15 (\$MM)	S&P Bond Rating	Moody's Bond Rating	IBES Consensus Growth Rate Forecast	6-month Average of IBES estimates	Value Line Projected EPS Growth Rate	6-month average of IBES and VL GR
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Boardwalk Pipeline	1,227	3,634	BBB-	NA	8.14%	9.26%	11.50%	10.38%
Columbia Pipeline Partners LP	1,315	2,536	NA	NA	31.02%	31.02%	NA	31.02%
Enable Midstream Partners LP	2,587	6,753	BBB-	Baa3	4.00%	2.69%	-2.55%	0.07%
EQT Midstream Partners LP	560	5,883	BBB-	Ba1	12.13%	14.25%	15.70%	14.98%
Tallgrass Energy Partners LP	495	2,953	NR	NA	39.85%	54.08%	19.00%	36.54%
TC PipeLines LP	342	3,756	BBB-	Baa2	11.55%	13.80%	6.60%	10.20%
Kinder Morgan Inc.	14,718	84,005	BBB-	Baa3	3.90%	-0.38%	13.00%	6.31%
Spectra Energy Partners LP	2,420	14,033	BBB	Baa2	5.70%	-0.28%	5.70%	2.71%

Sources and Notes:
[1] - [4]: Bloomberg as of November 30, 2015.
[5]: IBES data from ThompsonOne as of November 30, 2015. IBES data above represents forward 5-year growth rates for the companies listed above.
[6]: Equally-weighted average of past 6 months of IBES estimates.
[7]: Proj EPS Growth Rate. From Valueline Investment Analyzer as of Dec 01, 2015.
[8]: Equally-weighted average of VL Projected EPS GR and past 6 months of IBES estimates.

1 The full range of median estimates derived in Table 4 - Table 7 is 11.85 to 13.19 percent
2 (representing the range of medians across different sources of 5-year EPS growth rate
3 forecasts). The range of ROE estimates using my preferred method for deriving 1st-stage
4 growth rates (*i.e.*, the mean of *Value Line* and 6-month average IBES consensus estimates)
5 goes from 7.94 percent to 30.84 percent. The determination of where ANR's cost of equity
6 will fall within this range depends on the comparison of ANR's risk to the business risks
7 of the proxy group. Discussion of this issue follows in *Section IV* below and in the
8 testimony of ANR witness Carpenter.

9 **D. THE RANGE OF REASONABLENESS**

10 **Q62. How would you use the cost of equity estimates for the companies in the sample to**
11 **derive an estimate of the appropriate ROE for ANR?**

12 A62. The sample's estimates are used to establish a zone of reasonableness, and the
13 corresponding median is set as the benchmark estimate of the cost of equity for companies
14 of average business risk. The Commission's decision in *Enbridge* provides a summary of
15 this approach:

16 Once the rates of return for the proxy companies are determined, thereby
17 establishing a range of reasonable returns, the Commission must determine
18 where to set the pipeline's return in that range based upon how the
19 pipeline's risk compares with that of other pipelines. The Commission
20 begins its risk analysis with the assumption that pipelines generally fall
21 within a broad range of average risk, absent highly unusual circumstances
22 that indicate and [sic] anomalously high or low risk as compared to other
23 pipelines. As a result, the Commission has generally placed pipelines at
24 the middle of the range, using the median of the proxy group returns to
25 calculate the middle.⁴⁷

26 In this proceeding, however, I do not recommend a specific point estimate of the cost of
27 equity for ANR; rather, I provide a range derived from the cost of equity estimates of my
28 sample companies. The testimony of ANR witness Carpenter presents a more detailed
29 analysis of ANR's business and financial risks relative to the sample; Dr. Carpenter also

⁴⁷ *Enbridge* at P 216.

1 makes a recommendation regarding the placement of ANR's cost of equity within the
2 range of reasonableness, based upon ANR's business risk relative to that of the sample.

3 **Q63. What are the results of the application of the Commission's DCF methodology,**
4 **incorporating all your adjustments, to the sample of natural gas companies?**

5 A63. The results are displayed in four tables corresponding to the four different estimates of the
6 EPS growth rate to be used in the analysis. Table 4 - Table 7 below summarize the results
7 as of November 30, 2015, which is the most recent data available at the time of this report.
8 Each table reports the maximum, the minimum and the median cost of equity estimates for
9 the sample range for each growth rate estimate.

Table 4: Commission's DCF Method using IBES Growth Rates as of November 30, 2015

Company	S&P Bond Rating	Moody's Bond Rating	Dividend Yield	Adjusted Dividend Yield	GDP Growth Forecast	IBES Consensus Growth Rate Forecast	Combined Growth Rate	Implied Cost of Equity
			[1]	[2]	[3]	[4]	[5]	[6]
Boardwalk Pipeline	BBB-	NA	2.97%	3.06%	2.20%	8.14%	6.16%	9.23%
Columbia Pipeline Partners LP	NA	NA	3.31%	3.67%	2.20%	31.02%	21.41%	25.08%
Enable Midstream Partners LP	BBB-	Baa3	9.23%	9.39%	2.20%	4.00%	3.40%	12.79%
EQT Midstream Partners LP	BBB-	Ba1	3.38%	3.53%	2.20%	12.13%	8.82%	12.35%
Tallgrass Energy Partners LP	NR	NA	5.11%	5.80%	2.20%	39.85%	27.30%	33.10%
TC PipeLines LP	BBB-	Baa2	6.55%	6.82%	2.20%	11.55%	8.43%	15.26%
Kinder Morgan Inc.	BBB-	Baa3	6.26%	6.38%	4.39%	3.90%	4.06%	10.45%
Spectra Energy Partners LP	BBB	Baa2	5.34%	5.46%	2.20%	5.70%	4.53%	9.99%
Full Sample:								
Maximum								33.10%
Minimum								9.23%
Median Estimate								12.57%
Sources and Notes:								
[1]: Table No. MJV-4, [19].								
[2]: $[1] \times (1 + (0.5 \times [5]))$.								
[3]: Long Term GDP Growth Rate Forecast. Half of the forecasted growth rate is used in the case of MLP per Proxy Group Statement, 123 FERC.								
[4]: Equally-weighted average of VL Projected EPS GR and past 6 months of IBES estimates.								
[5]: $((1/3) \times [3]) + ((2/3) \times [4])$.								
[6]: $[2] + [5]$.								
Note: Companies are excluded for (i) the low spread between cost of equity and cost of debt; and/or (ii) negative long-term growth rate per I/B/E/S. NA reflects unavailable data.								

Table 5: Commission's DCF Method using 6-month Average of IBES Growth Rates

Company	S&P Bond Rating	Moody's Bond Rating	Dividend Yield	Adjusted Dividend Yield	GDP Growth Forecast	6-month Average of IBES estimates	Combined Growth Rate	Implied Cost of Equity
			[1]	[2]	[3]	[4]	[5]	[6]
Boardwalk Pipeline	BBB-	NA	2.97%	3.08%	2.20%	9.26%	6.91%	9.98%
Columbia Pipeline Partners LP	NA	NA	3.31%	3.67%	2.20%	31.02%	21.41%	25.08%
Enable Midstream Partners LP	BBB-	Baa3	9.23%	9.35%	2.20%	2.69%	2.53%	11.88%
EQT Midstream Partners LP	BBB-	Ba1	3.38%	3.55%	2.20%	14.25%	10.24%	13.79%
Fallgrass Energy Partners LP	NR	NA	5.11%	6.05%	2.20%	54.08%	36.78%	42.83%
TC PipeLines LP	BBB-	Baa2	6.55%	6.87%	2.20%	13.80%	9.93%	16.80%
Kinder Morgan Inc.	BBB-	Baa3	6.26%	6.29%	4.39%	-0.38%	1.21%	7.51%
Spectra Energy Partners LP	BBB	Baa2	5.34%	5.35%	2.20%	-0.28%	0.55%	5.90%
Full Sample:								
Maximum								42.83%
Minimum								5.90%
Median Estimate								12.83%
Sources and Notes:								
[1]: Table No. MJV-4, [19].								
[2]: $[1] \times (1 + (0.5 \times [5]))$.								
[3]: Long Term GDP Growth Rate Forecast. Half of the forecasted growth rate is used in the case of MLP per Proxy Group Statement, 123 FERC.								
[4]: Equally-weighted average of VL Projected EPS GR and past 6 months of IBES estimates.								
[5]: $((1/3) \times [3]) + ((2/3) \times [4])$.								
[6]: $[2] + [5]$.								
Note: Companies are excluded for (i) the low spread between cost of equity and cost of debt; and/or (ii) negative long-term growth rate per I/B/E/S. NA reflects unavailable data.								

Table 6: Commission’s DCF Method using Value Line Projected Growth Rates

Company	S&P Bond Rating	Moody's Bond Rating	Dividend Yield	Adjusted Dividend Yield	GDP Growth Forecast	Value Line Projected EPS Growth Rate	Combined Growth Rate	Implied Cost of Equity
			[1]	[2]	[3]	[4]	[5]	[6]
Boardwalk Pipeline	BBB-	NA	2.97%	3.10%	2.20%	11.50%	8.40%	11.50%
Columbia Pipeline Partners LP	NA	NA	3.31%	NA	2.20%	NA	NA	NA
Enable Midstream Partners LP	BBB-	Baa3	9.23%	9.19%	2.20%	-2.55%	-0.97%	8.22%
EQT Midstream Partners LP	BBB-	Ba1	3.38%	3.57%	2.20%	15.70%	11.20%	14.77%
Tallgrass Energy Partners LP	NR	NA	5.11%	5.45%	2.20%	19.00%	13.40%	18.85%
TC PipeLines LP	BBB-	Baa2	6.55%	6.72%	2.20%	6.60%	5.13%	11.85%
Kinder Morgan Inc.	BBB-	Baa3	6.26%	6.57%	4.39%	13.00%	10.13%	16.71%
Spectra Energy Partners LP	BBB	Baa2	5.34%	5.46%	2.20%	5.70%	4.53%	9.99%
Full Sample:								
Maximum								18.85%
Minimum								8.22%
Median Estimate								11.85%
Sources and Notes:								
[1]: Table No. MJV-4, [19].								
[2]: $[1] \times (1 + (0.5 \times [5]))$.								
[3]: Long Term GDP Growth Rate Forecast. Half of the forecasted growth rate is used in the case of MLP per Proxy Group Statement, 123 FERC.								
[4]: Equally-weighted average of VL Projected EPS GR and past 6 months of IBES estimates.								
[5]: $((1/3) \times [3]) + ((2/3) \times [4])$.								
[6]: $[2] + [5]$.								
Note: Companies are excluded for (i) the low spread between cost of equity and cost of debt; and/or (ii) negative long-term growth rate per I/B/E/S. NA reflects unavailable data.								

Table 7: Commission's DCF Method using 6-month Average of IBES and Value Line Growth Rates

Company	S&P Bond Rating	Moody's Bond Rating	Dividend Yield	Adjusted Dividend Yield	GDP Growth Forecast	6-month average of IBES and VL GR	Combined Growth Rate	Implied Cost of Equity
			[1]	[2]	[3]	[4]	[5]	[6]
Boardwalk Pipeline	BBB-	NA	2.97%	3.09%	2.20%	10.38%	7.65%	10.74%
Columbia Pipeline Partners LP	NA	NA	3.31%	3.67%	2.20%	31.02%	21.41%	25.08%
Enable Midstream Partners LP	BBB-	Baa3	9.23%	9.27%	2.20%	0.07%	0.78%	10.05%
EQT Midstream Partners LP	BBB-	Ba1	3.38%	3.56%	2.20%	14.98%	10.72%	14.28%
Tallgrass Energy Partners LP	NR	NA	5.11%	5.75%	2.20%	36.54%	25.09%	30.84%
TC PipeLines LP	BBB-	Baa2	6.55%	6.79%	2.20%	10.20%	7.53%	14.33%
Kinder Morgan Inc.	BBB-	Baa3	6.26%	6.43%	4.39%	6.31%	5.67%	12.11%
Spectra Energy Partners LP	BBB	Baa2	5.34%	5.40%	2.20%	2.71%	2.54%	7.94%
Full Sample:								
Maximum								30.84%
Minimum								7.94%
Median Estimate								13.19%
Sources and Notes:								
[1]: Table No. MJV-4, [19].								
[2]: $[1] \times (1 + (0.5 \times [5]))$.								
[3]: Long Term GDP Growth Rate Forecast. Half of the forecasted growth rate is used in the case of MLP per Proxy Group Statement, 123 FERC.								
[4]: Equally-weighted average of VL Projected EPS GR and past 6 months of IBES estimates.								
[5]: $((1/3) \times [3]) + ((2/3) \times [4])$.								
[6]: $[2] + [5]$.								
Note: Companies are excluded for (i) the low spread between cost of equity and cost of debt; and/or (ii) negative long-term growth rate per I/B/E/S. NA reflects unavailable data.								

1 The range of estimates based on my recommended approach to determining 1st-stage
2 growth rates is from 7.94 to 30.84 percent, with a median of 13.19 percent as shown in
3 Table 7. In this scenario, the 5-year EPS forecast growth rate for the sample companies is
4 estimated as the equally-weighted average of *Value Line* projected EPS growth rate and
5 the average of the past six months of IBES growth rate estimates.

6 **Q64. Do you believe that the DCF result of 30.84 percent for Tallgrass Energy Partners is**
7 **a reasonable estimate of the cost of equity capital that could be applied to ANR?**

8 A64. While I defer to ANR witness Carpenter on the matter of appropriate placement of ANR's
9 allowed ROE based on its level of business risk relative to that of the sample, I would
10 certainly not argue that ANR should be allowed to earn a 30.84 percent return on the
11 equity portion of its rate base. However, that does not mean that my estimate for Tallgrass
12 is calculated in error or that it is uninformative with regard to the market's expectations
13 for returns in the gas pipeline industry. Unlike estimates lower than the current market

1 cost of debt, there is no theoretical threshold for estimates at the high end of the ranges.
2 As described above, all the of the companies in my proxy group—from TEP at the high
3 end of the range to SEP at the low end—are to the greatest extent possible representative
4 of the business risk inherent in operating FERC-regulated natural gas pipelines. Likewise,
5 all of the inputs for these companies are equally valid, and all of the ROE estimates are
6 calculated in accordance with FERC's established two-stage DCF model, which implicitly
7 tapers near-term high or low growth rates toward the rate of GDP growth in the long term.
8 Therefore, I believe all the estimates are equally informative of the distribution of returns
9 expected by investors in the natural gas transmission industry.

10 It is critical to keep in mind that the procedure historically relied on by the Commission
11 for selecting the proper ROE for natural gas pipelines focuses on the median of the results
12 for the sample, not the average of the sample estimates or the midpoint of the high and
13 low estimates. The average is directly and significantly affected by the high estimates, but
14 the median is affected only to the extent that the high cost of capital estimates are greater
15 than the median. Perhaps an example best illustrates my point. Consider the following
16 five ROE estimates: 9, 10, 12, 14, and 17 percent. The median is 12 percent including all
17 5 estimates. If the highest estimate had been 18 percent, the median would still be 12
18 percent. In fact, if it had been 35 percent, the median would still be 12 percent. The
19 median is only affected if the high estimate is eliminated from consideration. Eliminating
20 the high estimate in this example yields a median of 11 percent (the average of 10 and 12
21 percent). The critical question is whether 11 percent is a better estimate than 12 percent
22 when one estimate is arbitrarily deleted. If the focus is on the median, as it typically is for
23 natural gas pipelines, then I believe including all estimates from all sample companies
24 provides a more economically sound and supportable estimate.

1 **V. CONCLUSIONS**

2 **Q65. What is your overall recommendation for the range of reasonableness for ANR's cost**
3 **of equity?**

4 A65. I recommend a range of reasonableness for the cost of equity of 7.94 to 30.84 percent (see
5 Table 7), with a median of 13.19 percent. ANR witness Carpenter provides a
6 recommendation for the relative placement of the Company's cost of equity relative to the
7 sample company estimates based upon a detailed analysis of the specific business and
8 financial risks of ANR relative to the sample group.

9 **Q66. Does this conclude your direct testimony?**

10 A66. Yes.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**


ANR Pipeline Company)

Docket No. RP16-____-000

State of _____)
) ss.
County of _____)

AFFIDAVIT OF MICHAEL J. VILBERT

Michael J. Vilbert, being first duly sworn, on oath states that he is the witness whose testimony appears on the preceding pages entitled "Prepared Direct Testimony of Michael J. Vilbert; that, if asked the questions which appear in the text of said testimony, he would give the answers that are therein set forth; and that affiant adopts the aforesaid testimony as Michael J. Vilbert's sworn testimony in this proceeding.



Michael J. Vilbert

SWORN TO AND SUBSCRIBED BEFORE ME THIS 25th DAY OF January, 2016

Please see attached
document.

Notary Public
My Commission Expires:

CALIFORNIA JURAT WITH AFFIANT STATEMENT

GOVERNMENT CODE § 8202

- See Attached Document (Notary to cross out lines 1-6 below)
- See Statement Below (Lines 1-6 to be completed only by document signer[s], *not* Notary)

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

Signature of Document Signer No. 1

Signature of Document Signer No. 2 (if any)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
 County of San Francisco

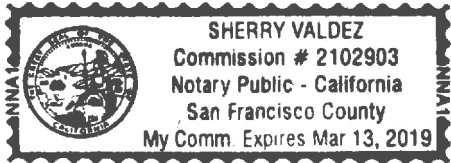
Subscribed and sworn to (or affirmed) before me
 on this 25 day of 1, 2016,
 by Date Month Year

(1) Michael J. Vilbert

(and (2) _____),
Name(s) of Signer(s)

proved to me on the basis of satisfactory evidence
to be the person(s) who appeared before me.

Signature _____
 Signature of Notary Public



Seal
 Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____ Document Date: _____

Number of Pages: _____ Signer(s) Other Than Named Above: _____