

**A HISTORICAL PERSPECTIVE OF THE DEVELOPMENT AND USE OF  
THE FEDERAL ENERGY REGULATORY COMMISSION'S TWO-STEP  
DISCOUNTED CASH FLOW METHODOLOGY**

**OR**

**“A BRIEF HISTORY OF TIME”**

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**FEDERAL ENERGY REGULATORY COMMISSION  
DISCOUNTED CASH FLOW METHODOLOGY  
USED TO DETERMINE RETURN ON EQUITY FOR  
NATURAL GAS PIPELINES AND ELECTRIC UTILITIES.**

$$k = D/P (1 + .5g) + g$$

**where:**

**k = discount rate or investors required rate of return = ROE**

**D = dividends per share**

**P = stock price**

**D/P = dividend yield**

**D/P (1 + .5g) = adjusted dividend yield**

**g = expected growth rate in dividends**

**Short-term growth weighted 2/3s**

**Long-term growth weighted 1/3**

**FERC refers to this as “two-step DCF methodology”**

## **DIVIDEND YIELD**

**Dividend yield for each proxy company is computed over a six-month period.**

**For each of six months:**

**DPS as declared as of that month**

**High and low stock prices for that month**

**Dividend yield computed for each proxy company for each month**

**Dividend yield for each proxy company is average for six-month period**

## **GROWTH RATE**

### **Two sets of growth rates**

**Short-term growth = expected growth over next five years = IBES EPS growth**

**projections for each proxy company.**

**Long-term growth = expected growth over years 5-25 + = projections of Gross**

**Domestic Product (GDP a measure of the total output of the U.S. economy) =**

**average of three sources:**

**Energy Information Administration (EIA)**

**Social Security Administration (SSA)**

**IHS Global Insight**

# **HISTORICAL PERSPECTIVE OF NATURAL GAS PIPELINES**

Consolidated Gas Supply Corp.      Docket No. RP81-80 Issued July 12, 1983

Early case in which FERC adopted the constant growth DCF model for natural gas pipelines.

Yield is average of discrete ( $D_0/P$ ) and continuous ( $D_1/P$ ), or  $D/P(1+g)$  models  
cited limitations on sole use of EPS projections for growth rate.

“...projections by investment advisory services of growth for relatively short periods of years into the future” ... cannot be relied on ‘without further consideration.’”

First case where a two-step DCF method was used.

“In the constant growth DCF analysis used by the parties in this proceeding, dividends are expected to grow indefinitely at the rate ( $g$ ). The indefinite future used by the DCF model is 50 years or more.... While we concede that it is more difficult to project growth for many years from the present time, we conclude that a projection limited to five years, with no evidence of what is anticipated beyond that point, is not consistent with the DCF model and cannot be relied on in a DCF analysis.”

Long-term growth as defined as industry-specific projections of the growth of natural gas consumption and the growth of natural gas prices.

Capital Structure – If pipeline issues its own debt, not guaranteed by its parent, and has its own separate bond rating, the capital structure of the pipeline will be used for computing cost of capital.

Opinion No. 396-B Northwest Pipeline Corp. Docket No. RP95-409-000  
Issued 1997

Commission modified Ozark two-step DCF by using forecasts of Gross Domestic Product (“GDP”) growth as the long-term growth rate.

“It is reasonable to expect that, over the long-run, a regulated firm will grow at the rate of the average firm in the economy, because regulation will generally prevent the firm from being extremely profitable during good periods, but also protects it somewhat during bad periods.”

Commission continued to weigh short-term growth and long-term growth 50%/50%

Sources of long-term GDP growth:

DRI/McGraw Hill

EIA

Wharton

Post Opinion No. 396-B

Current sources of long-term GDP growth”

Global Insight

EIA

Social Security Administration

Based upon the pipeline’s risk, relative to the proxy group, the ROE can be set at the bottom, midpoint, or top of the “zone of reasonableness.”



Opinion No. 414-A Transcontinental Gas Pipe Line Corporation Docket Nos. RP95-197-002  
et al Issued July 29, 1998

Capital Structure – “the Commission will utilize an imputed capital structure (most often that of the corporate parent) if the record in a particular case reveals that the pipeline’s own equity ratio is so far outside the range of other equity ratios approved by the Commission and the range of proxy company equity ratios that it is unreasonable.”

Commission changed weighting of short-term and long-term growth and now gives short-term growth two-thirds weight.

“...the Commission now has determined to give short-term growth a two-thirds weighting and long-term growth a one-third weighting....While determining the cost of equity nevertheless requires that a long-term evaluation be taken into account, long-term projections are inherently more difficult to make, and thus less reliable, than short-term projections. Over a longer period, there is a greater likelihood for unanticipated developments to occur affecting the projection. Given the greater reliability of the short-term projection, we believe it is appropriate to give it greater weight.”

Placement within range

“...the Commission now is modifying its policy that required selection of the ROE from the range established by the proxy companies. The Commission has concluded that requiring the ROE to be set on one of only three possible positions in the range established by reference to the proxy companies does not give the Commission the necessary flexibility required to evaluate the specific circumstances of each case. Thus, the Commission has determined that the parties to a rate proceeding may present evidence they believe is warranted to support any ROE that is within the DCF-derived zone of reasonableness, including evidence of the pipeline’s operating performance.

“By utilizing the median rather than the midpoint of the range, the Commission is giving consideration to more of the companies in the proxy group, rather only those at the top and the bottom. This will lessen the impact of any single proxy company whose ROE is atypically high or low.”

It is proper to use median DCF values of proxy group companies.

### Proxy Group Selection

- Company’s stock must be publicly-traded
- Company be recognized as a natural gas pipeline company and that its stock be recognized and tracked by an investment information service.
- Pipeline operation constitute a high proportion of the company’s business  
As evidenced by a company’s pipeline business (segment) accounting for, on average, at least 50 percent of the company’s assets or operating income over the most recent three-year period.

Proxy Companies over time

	<u>Ozark</u>	<u>Northwest</u>	<u>Transco</u>	<u>Williston</u>	<u>Policy Sta.</u>	<u>El Paso</u>
Coastal	X	X	X	X		
El Paso Corp	X	X	X		X	
Enron	X	X	X	X		
Panhandle	X	X	X			
Sonat	X	X	X			
Williams	X	X	X	X	X	
Columbia Energy				X		
Equitable				X		
Kinder Morgan Inc				X		
National Fuel Gas				X		
Questar				X		
Spectra Energy Corp					X	X
Spectra Energy Partners					X	X
Oneok Partners, LP					X	
Oneok Inc						
Boardwalk Pipeline Partners, LP					X	X
TC Pipelines, LP					X	X
Enterprise Products Partners					X	
Kinder Energy Partners LP					X	
TEPPCO Partners LP					X	
Williams Partners, LP						X

### Proxy Group

Commission noted that "...mergers and acquisitions continue to eliminate gas pipelines from the proxy groups..."

Commission adopted pipeline's proposed proxy group, which was "...based on companies listed among the Value Line group of diversified natural gas companies that own FERC-regulated natural gas pipelines.... We recognize that the structure of the natural gas industry is undergoing changes, and this makes it difficult to pick a representative proxy group."

Commission rejected the "proposed flotation cost adjustment and the proposed leverage adjustment."

RE: flotation cost adjustment. "...a flotation cost adjustment is only proper if supported by actual test period evidence that such costs can be expected to occur."

RE: leverage adjustment. "...we find that any leverage adjustment is unnecessary and that the return on equity provided to Williston in this proceeding is sufficient to attract investors."

Commission relaxed the requirement that natural gas business account for at least 50 % of the corporation's assets or operating income. Instead, proxy group to be determined from corporations listed in Value Line's list of diversified natural gas corporations that own FERC-regulated natural gas pipelines.

Issued January 35, 2005

Commission declined to use Master Limited Partnerships (“MLPs”) in proxy group. MLPs do not pay corporate taxes and they can pay out substantially larger dividends than corporations.

#### Placement within Range

“The Commission begins its risk analysis with the assumption that pipelines generally fall into a broad range of average risk, absent highly unusual circumstances that indicate an anomalously high or low risk as compared to other pipelines....the tools available to the Commission for determining the return on equity to be awarded a particular pipeline are blunt. Therefore, the Commission is skeptical of its ability to make carefully calibrated adjustments within the zone of reasonableness to reflect the generally subtle differences in risk among pipelines. Unless a party makes a very persuasive case in support of the need for an adjustment and the level of the adjustment proposed, the Commission will set the pipeline’s return at the median of the range of reasonable returns.”

## HIOS and Petal Gas Storage Appeals

U.S. Court of Appeals for the District of Columbia rejected use of LDC-heavy proxy companies (even with adjustment for higher risk relative to pipeline operations).

The court emphasized that the Commission's "proxy group arrangements must be risk appropriate."

Commission concluded:

MLPs should be included in the ROE proxy group for both oil and gas pipelines

There should be no cap on the level of distributions included in the Commission's current DCF methodology

The Institutional Brokers Estimated System (IBES) forecasts should remain the basis of the short-term growth forecast used in the DCF calculation

There should be an adjustment to the long-term growth rate used to calculate the equity cost of capital for MLPs

There should be no modification to the current respective two-thirds and one-third weightings of the short-term and long-term growth factors.

“Since the 1980s, the Commission has used the DCF model to develop a range of returns earned on investments in companies with corresponding risks for purposes of determining the ROE to be awarded natural gas oil pipelines.”

Long-term growth rate for MLP members of proxy group should be 50% of GDP projections.

#### Placement in Zone

Commission added certain companies with LDC operations to proxy group.

“However, where, as here, there is a small proxy group that contains companies with a relatively low proportion of pipeline business and substantial distribution operations, we must recognize that our traditional approach of selecting the median will tend to understate the required return on equity for the pipeline business. We will therefore permit an adjustment above the median of the range to account for differences in risk between the pipeline and proxy group companies whose LDC operations account for a greater proportion of their business than previously occurred under our traditional policy.”

Commission added 50 basis points to median of DCF results for proxy group.

Opinion No. 486-B      Paper Hearing      Issued January 15, 2009

First natural gas pipeline case after Policy Statement

#### Proxy Group

Kinder Morgan Inc

National Fuel Gas

Northern Border (MLP)

TC Pipelines (MLP)

Kinder Morgan Energy Partners (MLP)

“Commission concludes that a proxy group should consist of at least four, and preferably at least five members, if representative members can be found.”

Commission used credit ratings to determine where Kern River should fall within “range of reasonable returns.”



Commission indicated new “categories” for inclusion in proxy group:

- Corporations satisfying the historic requirement that a proxy firm’s pipeline business account for, on average, at least 50 percent of the firm’s assets or operating income
- MLPs owning natural gas transmission companies
- Diversified natural gas companies with some interstate natural gas transmission business but with a majority of the business in other natural gas businesses such as distribution and exploration and production

#### Proxy Group Selection

“In an attempt to further refine the selection process, the Commission also takes into account the credit ratings of companies on the assumption that such ratings, although not focused exclusively on equity risk, are nevertheless used by equity investors in developing their risk perceptions. Common sense dictates that a company with a high credit rating will be perceived as a lower risk by equity investors than a company with a low credit rating.”

#### Placement within Zone

“The Commission places a heavy burden on those attempting to justify a deviation from the median ROE....”

## **HISTORICAL PERSPECTIVE OF PUBLIC (ELECTRIC) UTILITIES**

Minnesota Power and Light Co.      Docket No. E-8494      Issued April 18, 1978

One of the first cases in which FERC took cognizance of the DCF methodology in public utility cases.

“We are interested in forward looking analyses of the market’s required rates of return. The Commission seeks to have before it estimates of the opportunity cost of equity capital in capital markets to use in making rate of return determinations. Market oriented techniques, including the DCF approach, are useful in this regard. As the record indicates, the result of any DCF analysis depends importantly upon the assumptions used and the choice of input data, particularly the assumptions and data used for the growth component of the model....Nevertheless, because the DCF approach examines evidence regarding expectations of investors which are critical in determining the attractiveness of a company’s securities, in this case, and in many others, it is a particularly helpful technique for determining the rates required to meet the *Hope* and *Bluefield* tests.”

## GENERIC RETURN FOR ELECTRIC UTILITIES

Order No. 420 Generic determination of Rate of Return on Common Equity for Public Utilities

Docket No. RM84-15-000 Issued May 20, 1985

Commission set up a quarterly indexing procedure

Dividend Yield –  $D/P(1+.5g)$ , where  $1+.5g$  is the “adjustment factor.” This was “intended to produce a dividend rate value somewhere between the  $D_0$  of the continuous model and  $D_1$  of the discrete annual DCF model.”

Quarterly yield calculations used.

Growth Rate -- 4% - 5%

“Fundamental Analysis” –  $br+sv$

Supported by 10-year historical growth rate of dividends and analysts’ forecasts

Flotation Costs

Only issuance costs included – 6 basis points

Order No. 538 Issued January 2, 1992

Abolished generic benchmark determinations

Issued July 26, 2000

“The Commission, to date, has not expressly addressed the differing approaches taken in setting ROEs for gas pipelines and for electric utilities...The issue presented here, therefore, is whether the Commission’s preferred DCF methodology for natural gas pipeline companies should be applied, without variation, to an electric company, in place of the Commission’s standard, constant growth DCF model, previously relied upon by the Commission in calculating an ROE for an electric utility company.”

“We find that our rationale in Opinion No. 396-B does not support the use of GDP data in developing a growth rate estimate in the proceeding. Unlike the gas pipeline industry, which was nearly through with major restructuring at the time we issued Opiniobn No. 396-B on June 11, 1997, the electric utility industry is just beginning a significant new phase of restructuring.”

Midwest Independent Transmission System Operator, Inc. Docket No. ER02-485-003  
Order on Remand Issued March 26, 2004

“Because the ROE in this case will apply to a diverse group of companies, the current range of results yielded by the subset is relevant here. Thus, we find that using the midpoint is the most appropriate measure for determining a single ROE for all Midwest ISO TOs, since it fully considers that range. Selecting the most refined measure of central tendency, as might be achieved with use of the median, is not the Commission’s goal in this case, given that we are not selecting a ROE for a single utility of average risk.”

Opinion No. 489      Bangor Hydro-Electric Company      Docket No. ER04-157-004  
Issued Oct. 31, 2006

Low-end outlier – a DCF cost rate that is less than the company’s own cost of debt  
If a company’s low-end DCF rate is not used, then its high-end DCF is not used

Flotation cost adjustment – “In the past, the Commission has approved flotation cost adjustments only when the utility demonstrates that a new stock issuance is imminent.”



Virginia Electric and Power Company      Docket Nos. ER08-92-000 et al  
Order on Formula Rate Proposal      Issued April 29, 2008

Proxy group should be expended to include entities within the interrelated RTO markets operated by PJM, ISO-NE, and the New York ISO whose risk is comparable to VEPCO.

Risk – “It is reasonable to use the proxy companies’ corporate credit rating as a good measure of investment risk, since this rating considers both financial and business risk.”

“In the instant proceeding, we are determining the appropriate ROE for an individual utility of average risk, rather than a group of utilities. We agree with the Indicated Customers that, in this circumstance, use of the median rather than the midpoint is appropriate because the median ‘best represents the central tendency in a proxy group with a skewed distribution of returns.’”

“The appropriate proxy group for use in calculating an ROE using the DCF method is comprised of companies from the region in which the utility is located. We find that being located in the same geographic and economic region is a relevant factor to consider in determining whether companies face similar risk.”

On Paper Hearing, Commission used national group of electric utilities.

Screening parameters:

- Utilities that are currently paying cash dividends
- Utilities that are covered by two generally recognized utility industry analysts
- Utilities that had a similar senior bond and/or corporate credit rating
- Utilities that had not announced a merger during the six-month period used to calculate dividend yields
- Utilities that have both a Thompson Financial First Call (IBES) growth rate and are covered by Value Line

Low-End Outlier DCF Results – exclude any proxy company whose low-end ROE fails to exceed the average bond yield by about 100 basis points above the cost of debt.

High-End Outlier DCF Results – exclude any proxy company whose growth rate is greater to or equal to 13.3%

If either low-end or high-end result is eliminated, the other growth rate of proxy company is also eliminated.

“The Commission believes that using the median is advantageous for a single utility of average risk because it takes into account more of the companies in the proxy group, and not just those at the top and the bottom. It also minimizes the impact of a potentially skewed proxy group.”

Opinion No. 531      Coakley vs. New England Transmission Owners      Docket No. EL11-66  
Issued June 19, 2014

Opinion No. 531-A    Issued October 16, 2014

Opinion No. 531-B    Issued March 3, 2015

“...the Commission has historically applied different DCF methodologies in determining the ROE for public utilities and natural gas and oil pipelines. While there are multiple difference between the two DCF methodologies, the most fundamental difference is that the methodology applied to natural gas and oil pipelines (i.e., the two-step DCF methodology) considers long-term growth projections in estimating a company’s cost of equity, whereas the methodology applied to public utilities (i.e., the one-step DCF methodology) considers only short-term growth projections....we conclude it is now appropriate to use the same model for the electric industry as the Commission has used for the natural gas and oil pipeline industries – i.e., use of the two-step DCF methodology.”