COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2016 ASSESSMENT YEAR

APPENDIX C

NATURAL GAS DISTRIBUTION

EQUITY RATE						**8.50%**	
CAPITAL ASSET PRICING MODEL							PAGE
CAPM Ex Ante			7.13%				4
DIVIDEND GROWTH MODELS							
Value Line, based on Dividends Growth			7.50%				6
Value Line, based on Earnings Growth			9.00%				7
Value Line, based on Return on Equity			7.00%				8
					RANGE	7.00 -9.00%	
DEBT RATE						**4.40%**	9
MARKET CAPITAL STRUCTURE							
Equity	60%	x	8.50%	=		5.10%	3
Debt	40%	x	4.40%	=	1.76%		3
Marginal Tax Rate	38%	=	(1-.38)	x	1.76%	1.09%	

WEIGHTED AVERAGE COST OF CAPITAL **6.19%**

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Capital Structure at Book Value

Company	Ticker	Beta	P/E Ratio	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt (VL)	%	Total Debt & Equity
AGL Resources	gas	0.60	19.70	3.3%	3,913,809,852	55.4%		0.0%	3,150,000,000	44.6%	7,063,809,852
Atmos Energy Corp	ato	0.80	19.40	2.7%	3,193,145,519	56.5%		0.0%	2,455,300,000	43.5%	5,648,445,519
Laclede Group	lg	0.70	17.80	3.4%	1,575,353,936	47.1%		0.0%	1,771,500,000	52.9%	3,346,853,936
New Jersey Resources	njr	0.80	18.40	3.1%	1,114,492,716	56.9%		0.0%	843,600,000	43.1%	1,958,092,716
Nisource Inc	ni	NMF	18.60	3.1%	3,776,254,668	38.1%		0.0%	6,133,500,000	61.9%	9,909,754,668
NW Natural Gas	nwn	0.65	24.20	3.9%	786,934,708	55.9%		0.0%	621,700,000	44.1%	1,408,634,708
Piedmont Natural Gas	pny	0.75	29.40	2.3%	1,394,009,971	50.2%		0.0%	1,384,500,000	49.8%	2,778,509,971
South Jersey Industries	sji	0.80	15.50	4.6%	1,039,416,705	52.6%		0.0%	937,400,000	47.4%	1,976,816,705
Southwest Gas	swx	0.80	18.80	3.0%	1,579,969,523	50.6%		0.0%	1,540,400,000	49.4%	3,120,369,523
UGI Corp	ugi	0.95	16.10	2.6%	2,868,115,099	44.1%		0.0%	3,628,300,000	55.9%	6,496,415,099
WGL Holdings	wgl	0.75	19.60	3.0%	1,244,299,422	56.1%	28,200,000	1.3%	944,200,000	42.6%	2,216,699,422
Mean		**0.76**	**19.77**	**3.2%**	**2,044,163,829**	**51.2%**		**0.1%**	**2,128,218,182**	**48.7%**	**4,174,945,647**
Harmonic Mean		**0.75**	**19.20**	**3.08%**		**50.5%**				**48.0%**	
Median		**0.78**	**18.80**	**3.10%**		**52.6%**		**0.0%**		**47.4%**	
Weighted Mean					**22,485,802,117**	**49.0%**	**28,200,000**	**0.1%**	**23,410,400,000**	**51.0%**	**45,924,402,117**

SUPPORT FOR CAPITAL STRUCTURE

MARKET VALUE

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Capital Structure at Market Value

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Operating Lease	%	Long Term Debt	%	Total Debt & Equity
AGL Resources	gas	63.810	120,239,934	7,672,510,189	63.0%			445,689,343	3.7%	4,066,000,000	33.4%	12,184,199,531
Atmos Energy Corp	ato	63.040	101,369,699	6,390,345,825	67.2%			444,163,406	4.7%	2,669,323,000	28.1%	9,503,832,231
Laclede Group	lg	59.410	43,350,411	2,575,447,918	56.9%			13,835,071	0.3%	1,937,300,000	42.8%	4,526,582,989
New Jersey Resources	njr	32.960	85,796,206	2,827,842,950	76.7%			39,435,073	1.1%	817,319,000	22.2%	3,684,597,022
Nisource Inc	ni	19.510	318,671,280	6,217,276,673	37.4%			921,540,228	5.5%	9,505,700,000	57.1%	16,644,516,901
NW Natural Gas	nwn	50.610	27,371,642	1,385,278,802	62.1%			86,898,988	3.9%	756,808,000	34.0%	2,228,985,790
Piedmont Natural Gas	pny	57.020	79,205,112	4,516,275,486	71.6%			70,696,474	1.1%	1,720,586,000	27.3%	6,307,557,961
South Jersey Industries	sji	23.520	69,294,447	1,629,805,393	60.6%			-		1,058,500,000	39.4%	2,688,305,393
Southwest Gas	swx	55.160	47,375,398	2,613,226,954	58.5%			61,668,507	1.4%	1,795,928,000	40.2%	4,470,823,461
UGI Corp	ugi	33.760	172,778,018	5,832,985,888	55.2%			928,709,084	8.8%	3,803,100,000	36.0%	10,564,794,972
WGL Holdings	wgl	62.990	49,831,775	3,138,903,507	72.9%	28,200,000	0.7%	83,484,496	1.9%	1,057,900,000	24.6%	4,308,488,004
			Mean		**62.0%**		**0.7%**		**3.2%**		**35.0%**	
			Harmonic Mean		**59.9%**		**0.7%**		**1.4%**		**32.7%**	
			Median		**62.1%**		**0.7%**		**2.8%**		**34.0%**	
			Weighted Mean	**44,799,899,583**	**58.1%**	**28,200,000**	**0.0%**	**3,096,120,672**	**4.0%**	**29,188,464,000**	**37.9%**	**77,112,684,256**
			Std Dev		**10.7%**				**2.6%**		**9.9%**	
			Coefficient of Variation		**17.3%**				**80.9%**		**28.3%**	
			Say		**60%**						**40%**	**100%**

Source:

Stock Price: Yahoo

Market Value Debt: Bond Analysis

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 Assessment Year - Natural Gas Distribution

Ex Ante

Ke = Rf + B (Rp)

Ke =	**Cost of Equity**				**7.13%**
					to page 1
	Rm =	rate of return	8.50%		
	Rf =	risk free rate	3.00%		
	Rp =	risk premium	5.50%		
	B =	Beta	0.75		page 7
Rp =	**Risk Premium**				**5.50%**
					to above
	Shannon Pratt and Roger Grabowski		3.50%-6.00%		
	Cost of Capital, Applications and Examples, 3rd				
	Dr. Aswath Damodaran		6.12%	chart page 16	
	http://pages.stern.nyu.edu/~adamodar/		5.39%	adjusted for Rf	
	2015 Implied Premium				
	John Graham and Campbell Harvey		4.19%	10 year expected return	
	Duke CFO magazine Global Business Outlook		3.55%-4.83%	95% Interval 10 year exp	
	4th Qtr 2015		3.49%	adjusted for Rf	
Rf =	**Risk Free Rate**				**3.00%**
					to above
	2015 Valuation Handbook, page 3-15				
	Long Term (20 years) US Treasury Bond Yield (as		2.67%		
	Value Line Investment Survey, Selected Yields January 8, 2016, page 3821				
	as of 12-29-15				
	US Treasury Securities year end data				
		5 year	1.79%		
		10 year	2.31%		
		30 year	3.04%		
		30 year Zero	3.17%		
	Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)				
	January 4, 2016 as of 12-31-15				
		Treasury Constant Maturities			
		5 year	1.76%		
		10 year	2.27%		
		20 year	2.67%		
		30 year	3.01%		
		20 year TIPS	1.07%	1.60%	
		30 year TIPS	1.28%	1.73%	
				TIPS inflation indication	
Inflation					**2.00%**
	Value Line Investment Survey, Economic Series January 1, 2016, page 1300				
	Consumer Price Index Annual Rate of Change 2018-2020			2.50%	
	The Livingston Survey December 10, 2015 page 2, 10				
	Inflation median (measured by the CPI) over next 10 years			2.25%	
Gross Domestic Product (GDP)					**4.00%**
	Federal Reserve Projected Long Run Real GDP Growth				
	Median Projection Value From December 16, 2015 Report			2.00%	
	http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm				
	Congressional Budget Office Real GDP Economic Projections				
	The Budget and Economic Outlook 2016-2026			Table 2-1 pg 157	
	Average Percentage		2018-2020	1.90%	
	http://www.cbo.gov/publication/51129		2021-2026	2.00%	
	Wells Fargo US Economic Forecast				
	2016 Federal Fiscal Policy Outlook Part I, From Feb		2018-2021	2.10%	
	https://www.wellsfargo.com/com/insights/economics/special-re		2022-2026	1.90%	
	Federal Reserve Bank of Philadelphia				
	The Livingston Survey, December 10, 2015			pg 4	
	Average Annual Real GDP Growth Rate for Next Ten Years			2.25%	
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey				

BETA CALCULATION FOR CAPM

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Company	Ticker	Value Line
AGL Resources	gas	0.60
Atmos Energy Corp	ato	0.80
Laclede Group	lg	0.70
New Jersey Resources	njr	0.80
Nisource Inc	ni	nmf
NW Natural Gas	nwn	0.65
Piedmont Natural Gas	pny	0.75
South Jersey Industries	sji	0.80
Southwest Gas	swx	0.80
UGI Corp	ugi	0.95
WGL Holdings	wgl	0.75
	Mean	**0.76**
	Harmonic Mean	**0.75**
	Median	**0.78**
	Max	**0.95**
	Min	**0.60**
Source: Value Line-five year, weekly	**Say**	**0.75**

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Based on Dividend Growth

Ke = (D1 / Po) + G

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Sustainable Growth

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Dividend Short Term Growth (G)	K_e Short Term Growth	K_e with Multi Stage Growth Adj
AGL Resources	gas	63.810	2.10	3.29%	4.50%	7.79%	6.63%
Atmos Energy Corp	ato	63.040	1.68	2.66%	5.00%	7.66%	6.32%
Laclede Group	lg	59.410	1.96	3.30%	4.50%	7.80%	6.75%
New Jersey Resources	njr	32.960	0.96	2.91%	3.50%	6.41%	6.45%
Nisource Inc	ni	19.510	0.66	3.38%	-3.50%	nmf	nmf
NW Natural Gas	nwn	50.610	1.91	3.77%	2.50%	6.27%	5.40%
Piedmont Natural Gas	pny	57.020	1.35	2.37%	3.00%	5.37%	5.58%
South Jersey Industries	sji	23.520	1.10	4.68%	7.00%	11.68%	11.02%
Southwest Gas	swx	55.160	1.74	3.15%	8.00%	11.15%	9.19%
UGI Corp	ugi	33.760	0.92	2.73%	5.00%	7.73%	6.87%
WGL Holdings	wgl	62.990	1.87	2.97%	3.00%	5.97%	6.00%
					Mean	**7.78%**	**7.02%**
					Harmonic Mean	**7.35%**	**6.72%**
					Median	**7.70%**	**6.54%**
					Max	**11.68%**	**11.02%**
					Min	**5.37%**	**5.40%**
					Std Dev	**2.10%**	**1.75%**
					Coefficient of Variation	**27.03%**	**24.89%**
					Say	**7.50%**	

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Based on Earnings Growth

Ke = (D1 / Po) + G

Ke = Cost of Equity
D1 = Expected Earnings
Po = Current Price
G = Sustainable Growth

Company	Ticker	Stock Price (Po)	Expected Earnings (D1)	Yield (D1/Po)	Earnings Short Term Growth (G)	K_e Short Term Growth	K_e with Multi Stage Growth Adj
AGL Resources	gas	63.810	2.10	3.29%	6.50%	9.79%	9.19%
Atmos Energy Corp	ato	63.040	1.68	2.66%	7.00%	9.66%	7.11%
Laclede Group	lg	59.410	1.96	3.30%	10.00%	13.30%	10.28%
New Jersey Resources	njr	32.960	0.96	2.91%	4.00%	6.91%	7.24%
Nisource Inc	ni	19.510	0.66	3.38%	-1.50%	nmf	nmf
NW Natural Gas	nwn	50.610	1.91	3.77%	7.00%	10.77%	7.67%
Piedmont Natural Gas	pny	57.020	1.35	2.37%	3.00%	5.37%	5.82%
South Jersey Industries	sji	23.520	1.10	4.68%	7.00%	11.68%	10.97%
Southwest Gas	swx	55.160	1.74	3.15%	7.00%	10.15%	9.47%
UGI Corp	ugi	33.760	0.92	2.73%	5.00%	7.73%	9.55%
WGL Holdings	wgl	62.990	1.87	2.97%	5.50%	8.47%	7.42%
					Mean	**9.38%**	**8.47%**
					Harmonic Mean	**8.80%**	**8.18%**
					Median	**9.73%**	**8.43%**
					Max	**13.30%**	**10.97%**
					Min	**5.37%**	**5.82%**
					Std Dev	**2.34%**	**1.64%**
					Coefficient of Variation	**24.91%**	**19.41%**
					Say	**9.00%**	

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Based on Return on Equity

Ke = (D1 / Po) + G

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Sustainable Growth
b = Retained Earnings (plowback)
ROE = Return on Equity

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	b (1-payout ratio)	ROE	mk:bk	$=ROE_1$ market	Growth (b*ROE)	K_e Dividends	Expected Earnings (D1)	Earnings Yield (D1/Po)	Growth (b*ROE)	K_e Earnings
AGL Resources	gas	63.810	2.10	3.3%	34.0%	10.0%	1.96	5.09%	1.73%	5.02%	3.25	5.09%	1.73%	6.82%
Atmos Energy Corp	ato	63.040	1.68	2.7%	49.0%	10.5%	2.00	5.16%	2.53%	5.19%	3.25	5.16%	2.53%	7.68%
Laclede Group	lg	59.410	1.96	3.3%	42.0%	8.5%	1.63	5.72%	2.40%	5.70%	3.40	5.72%	2.40%	8.13%
New Jersey Resources	njr	32.960	0.96	2.9%	49.0%	12.0%	2.54	5.01%	2.45%	5.37%	1.65	5.01%	2.45%	7.46%
Nisource Inc	ni	19.510	0.66	3.4%	24.0%	9.5%	1.65	6.15%	1.48%	4.86%	1.20	6.15%	1.48%	7.63%
NW Natural Gas	nwn	50.610	1.91	3.8%	-4.0%	7.5%	1.76	4.35%	-0.17%	3.60%	2.20	4.35%	-0.17%	4.17%
Piedmont Natural Gas	pny	57.020	1.35	2.4%	29.0%	11.0%	3.24	3.51%	1.02%	3.38%	2.00	3.51%	1.02%	4.52%
South Jersey Industries	sji	23.520	1.10	4.7%	29.0%	10.0%	1.57	6.80%	1.97%	6.65%	1.60	6.80%	1.97%	8.78%
Southwest Gas	swx	55.160	1.74	3.2%	42.0%	9.0%	1.65	5.80%	2.44%	5.59%	3.20	5.80%	2.44%	8.24%
UGI Corp	ugi	33.760	0.92	2.7%	56.0%	11.5%	2.03	6.37%	3.57%	6.29%	2.15	6.37%	3.57%	9.93%
WGL Holdings	wgl	62.990	1.87	3.0%	43.0%	12.0%	2.52	4.92%	2.12%	5.08%	3.10	4.92%	2.12%	7.04%
									Mean	**5.16%**				**7.31%**
									Harmonic Mean	**4.96%**				**6.86%**
									Median	**5.19%**				**7.63%**
									Max	**6.65%**				**9.93%**
									Min	**3.38%**				**4.17%**
									Std Dev	**0.99%**				**1.70%**
									Coefficient of Variation	**19.11%**				**23.19%**

Say **7.00%**

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Company	Ticker	Mergent's Ratings	S&P Ratings
AGL Resources	gas		BBB+
Atmos Energy Corp	ato		A-
Laclede Group	lg		A-
New Jersey Resources	njr		
Nisource Inc	ni	Baa2	BBB+
NW Natural Gas	nwn		A+
Piedmont Natural Gas	pny	A2	A
South Jersey Industries	sji		BBB+
Southwest Gas	swx		BBB+
UGI Corp	ugi		
WGL Holdings	wgl		A+
Overall Average Debt Rating		**A3**	**A-**

Mergent's Bond Record January 2016, page 208

Corporate	**Aaa**	**Aa**	**A**	**Baa**
October	3.95%	4.11%	4.33%	5.34%
November	4.06%	4.21%	4.43%	5.46%
December	3.97%	4.16%	4.38%	5.46%
4th Qtr Average	**3.99%**	**4.16%**	**4.38%**	**5.42%**
Public Utilities	**Aaa**	**Aa**	**A**	**Baa**
October		4.13%	4.29%	5.47%
November		4.22%	4.40%	5.57%
December		4.16%	4.35%	5.55%
4th Qtr Average		**4.17%**	**4.35%**	**5.53%**
Industrials	**Aaa**	**Aa**	**A**	**Baa**
October	3.95%	4.08%	4.37%	5.21%
November	4.06%	4.20%	4.45%	5.34%
December	3.97%	4.16%	4.40%	5.36%
4th Qtr Average	**3.99%**	**4.15%**	**4.41%**	**5.30%**

Debt Yield Rate	**4.40%**

to page 1

Secured Debt (Lease) Rate	**4.15%**

DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Instructions: Data entered on this page will flow to the applicable worksheets.

all div to net profits

Guideline Companies		Stock Price	Revenues	Cash Flow	Earnings	Dividends	Bk Value	Common	Calculated Debt	Payout Ratio	Payout Ratio	% Rtn on Shrhldrs Equity
Name	**Ticker**	**Year End**	**Per Share**	**Per Share**	**Per Share**	**Per Share**	**Stock**	**Shares**	**mk to bk**	**calculated**	**V L**	**V L**
AGL Resources	gas	63.810	35.25	6.60	3.10	2.04	32.55	120,239,934	129.08%	66%	66%	9.5%
Atmos Energy Corp	ato	63.040	40.80	5.80	3.09	1.56	31.50	101,369,699	108.72%	50%	51%	10.0%
Laclede Group	lg	59.410	46.64	5.07	3.16	1.84	36.34	43,350,411	109.36%	58%	58%	8.7%
New Jersey Resources	njr	32.960	32.09	2.50	1.78	0.93	12.99	85,796,206	96.88%	52%	51%	13.7%
Nisource Inc	ni	19.510	17.20	2.95	1.10	0.83	11.85	318,671,280	154.98%	75%	76%	9.0%
NW Natural Gas	nwn	50.610	26.90	4.50	1.80	1.87	28.75	27,371,642	121.73%	104%	104%	6.5%
Piedmont Natural Gas	pny	57.020	17.55	3.35	1.85	1.31	17.60	79,205,112	124.27%	71%	71%	10.5%
South Jersey Industries	sji	23.520	14.15	2.45	1.45	1.02	15.00	69,294,447	112.92%	70%	71%	9.5%
Southwest Gas	swx	55.160	50.50	8.45	2.85	1.62	33.35	47,375,398	116.59%	57%	58%	8.5%
UGI Corp	ugi	33.760	38.65	4.25	2.01	0.90	16.60	172,778,018	104.82%	45%	44%	12.5%
WGL Holdings	wgl	62.990	53.42	5.60	3.16	1.83	24.97	49,831,775	112.04%	58%	57%	12.7%
Value Line December 4, 2015		Yahoo	Value Line	Value Line	Value Line	Value Line	Value Line	Value Line		calculated		

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

			2015		2016		2015		2016	
Company	**Ticker**	**Stock Price**	**Actual Earnings Ratio (EPS/P)**		**Projected Earnings Ratio (PEPS/P)**		**Cash Flow Ratio (CF/P)**		**Projected Cash Flow Ratio**	
AGL Resources	gas	63.81	3.10	4.9%	3.25	5.1%	6.60	10.3%	7.10	11.1%
Atmos Energy Corp	ato	63.04	3.09	4.9%	3.25	5.2%	5.80	9.2%	6.00	9.5%
Laclede Group	lg	59.41	3.16	5.3%	3.40	5.7%	5.07	8.5%	5.30	8.9%
New Jersey Resources	njr	32.96	1.78	5.4%	1.65	5.0%	2.50	7.6%	2.40	7.3%
Nisource Inc	ni	19.51	1.10	5.6%	1.20	6.2%	2.95	15.1%	3.20	16.4%
NW Natural Gas	nwn	50.61	1.80	3.6%	2.20	4.3%	4.50	8.9%	5.00	9.9%
Piedmont Natural Gas	pny	57.02	1.85	3.2%	2.00	3.5%	3.35	5.9%	3.55	6.2%
South Jersey Industries	sji	23.52	1.45	6.2%	1.60	6.8%	2.45	10.4%	2.70	11.5%
Southwest Gas	swx	55.16	2.85	5.2%	3.20	5.8%	8.45	15.3%	9.00	16.3%
UGI Corp	ugi	33.76	2.01	6.0%	2.15	6.4%	4.25	12.6%	4.35	12.9%
WGL Holdings	wgl	62.99	3.16	5.0%	3.10	4.9%	5.60	8.9%	5.30	8.4%
		Mean		**5.0%**		**5.4%**		**10.3%**		**10.8%**
		Harmonic Mean		**4.8%**		**5.2%**		**9.5%**		**9.9%**
		Median		**5.2%**		**5.2%**		**9.2%**		**9.9%**
		Max		**6.2%**		**6.8%**		**15.3%**		**16.4%**
		Min		**3.2%**		**3.5%**		**5.9%**		**6.2%**
		Std Dev		**0.9%**		**0.9%**		**3.0%**		**3.3%**
		Coefficient of Variation		**18.0%**		**17.7%**		**29.1%**		**31.0%**
Source:		**Say**		**5.0%**		**5.2%**		**9.5%**		**10.0%**

Actual earnings: Value Line / Q4 average stock price

Estimated Earnings: Value Line / Q4 average stock price

Actual Cash Flow: Value Line / Q4 average stock price

Estimated Cash Flow: Value Line / Q4 average stock price

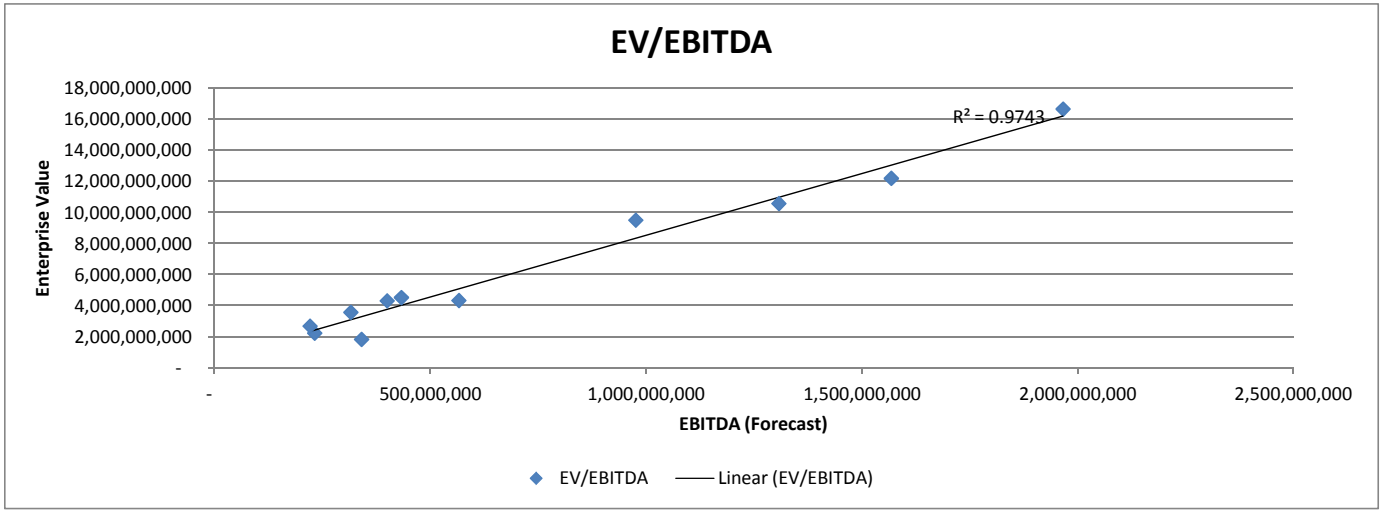
SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

Company	Ticker	Stock Price	Enterprise Value + Operating Lease	EBITDA + Operating Lease Historical	EV / EBITDA Historical	Annual Change Rate Growth VL	EBITDA Forecast	EV / EBITDA Forecast
AGL Resources	gas	63.81	12,184,199,531	1,508,000,000	8.08	4.00%	1,568,320,000	7.77
Atmos Energy Corp	ato	63.04	9,503,832,231	938,700,000	10.12	4.00%	976,248,000	9.74
Laclede Group	lg	59.41	4,526,582,989	405,000,000	11.18	7.00%	433,350,000	10.45
New Jersey Resources	njr	32.96	3,575,597,022	311,554,000	11.48	1.50%	316,227,310	11.31
Nisource Inc	ni	19.51	16,644,516,901	1,927,800,000	8.63	2.00%	1,966,356,000	8.46
NW Natural Gas	nwn	50.61	2,228,985,790	227,900,000	9.78	2.00%	232,458,000	9.59
Piedmont Natural Gas	pny	57.02	1,832,557,961	329,701,000	5.56	3.50%	341,240,535	5.37
South Jersey Industries	sji	23.52	2,688,305,393	207,000,000	12.99	7.00%	221,490,000	12.14
Southwest Gas	swx	55.16	4,333,823,461	542,330,000	7.99	4.50%	566,734,850	7.65
UGI Corp	ugi	33.76	10,564,794,972	1,288,700,000	8.20	1.50%	1,308,030,500	8.08
WGL Holdings	wgl	62.99	4,308,488,004	388,500,000	11.09	3.00%	400,155,000	10.77
		Mean						**9.21**
		Harmonic Mean						**8.77**
		Median						**9.59**
		Std Dev						**1.96**
		Coefficient of Variation						**0.21**
		Say						**9.00**



STOCK PRICE

WASHINGTON STATE DEPARTMENT OF REVENUE

2016 ASSESSMENT YEAR

NATURAL GAS DISTRIBUTION

47.44

AGL Resources gas — **Year End**

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**63.810**
31-Dec-15	63.74	63.95	63.34	63.81	1,334,600	63.81	

Atmos Energy Corp ato — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**63.040**
31-Dec-15	64.11	64.11	62.92	63.04	899,200	63.04	

Laclede Group Inc lg — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**59.410**
31-Dec-15	60.52	60.79	59.24	59.41	345,600	59.41	

New Jersey Resources njr — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**32.960**
31-Dec-15	33.72	33.88	32.93	32.96	1,453,400	32.96	

Nisource Inc ni — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**19.510**
31-Dec-15	19.78	19.86	19.49	19.51	5,115,000	19.51	

NW Natural Gas nwn — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**50.610**
31-Dec-15	51.48	51.48	50.29	50.61	196,400	50.61	

Piedmont Natural Gas pny — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**57.020**
31-Dec-15	57.04	57.17	56.91	57.02	820,800	57.02	

South Jersey Industries sji — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**23.520**
31-Dec-15	24.02	24.02	23.21	23.52	847,000	23.52	

Southwest Gas Corp swx — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**55.160**
31-Dec-15	56.11	56.62	54.94	55.16	391,800	55.16	

UGI Corp ugi — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**33.760**
31-Dec-15	34.24	34.27	33.6	33.76	1,511,600	33.76	

WGL Holdings wgl — **Adj Close***

Date	Open	High	Low	Close	Avg Vol	Adj Close*	**62.990**
31-Dec-15	65.03	65.03	62.98	62.99	678,600	62.99	

Source:
finance.yahoo.com
Historical Stock Quotes

IMPLIED PREMIUMS FOR US MARKET

These implied premiums are calculated using the S&P 500. Updated January 5, 2016.

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Dividends + B	Change in Earnings	Change in Dividend	T.Bill Rate	T.Bond Rate	Bond-Bill	Smoothed Growth	Implied Premium (	Analyst Growth Es	Implied Premium (A	Implied Premium (FCFF	ERP/Riskfree Rate
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%					
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%		2.92%		1.24
1962	5.81%	3.40%	63.1	3.67	2.15		8.79%	5.21%	2.73%	3.85%	1.12%	4.05%	3.56%		3.56%		0.92
1963	5.51%	3.13%	75.02	4.13	2.35		12.75%	9.45%	3.12%	4.14%	1.02%	4.96%	3.38%		3.38%		0.82
1964	5.62%	3.05%	84.75	4.76	2.58		15.23%	10.08%	3.54%	4.21%	0.67%	5.13%	3.31%		3.31%		0.79
1965	5.73%	3.06%	92.43	5.30	2.83		11.20%	9.42%	3.93%	4.65%	0.72%	5.46%	3.32%		3.32%		0.71
1966	6.74%	3.59%	80.33	5.41	2.88		2.23%	1.96%	4.76%	4.64%	-0.12%	4.19%	3.68%		3.68%		0.79
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	5.70%	1.49%	5.25%	3.20%		3.20%		0.56
1968	5.51%	2.93%	103.86	5.72	3.04		4.81%	2.09%	5.21%	6.16%	0.95%	5.32%	3.00%		3.00%		0.49
1969	6.63%	3.52%	92.06	6.10	3.24		6.66%	6.49%	6.58%	7.88%	1.30%	7.55%	3.74%		3.74%		0.47
1970	5.98%	3.46%	92.15	5.51	3.19		-9.72%	-1.61%	6.53%	6.50%	-0.03%	4.78%	3.41%		3.41%		0.52
1971	5.46%	3.10%	102.09	5.57	3.16		1.15%	-0.74%	4.39%	5.89%	1.50%	4.57%	3.09%		3.09%		0.52
1972	5.23%	2.70%	118.05	6.17	3.19		10.76%	0.71%	3.84%	6.41%	2.57%	5.21%	2.72%		2.72%		0.42
1973	8.16%	3.70%	97.55	7.96	3.61		28.93%	13.24%	6.93%	6.90%	-0.03%	8.30%	4.30%		4.30%		0.62
1974	13.64%	5.43%	68.56	9.35	3.72		17.48%	3.14%	8.00%	7.40%	-0.60%	6.42%	5.59%		5.59%		0.76
1975	8.55%	4.14%	90.19	7.71	3.73		-17.54%	0.30%	5.80%	7.76%	1.96%	5.99%	4.13%		4.13%		0.53
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	5.08%	6.81%	1.73%	8.19%	4.55%		4.55%		0.67
1977	11.43%	5.11%	95.1	10.87	4.86		11.53%	15.07%	5.12%	7.78%	2.66%	9.52%	5.92%		5.92%		0.76
1978	12.11%	5.39%	96.11	11.64	5.18		7.07%	6.60%	7.18%	9.15%	1.97%	8.48%	5.72%		5.72%		0.63
1979	13.48%	5.53%	107.94	14.55	5.97		25.01%	15.23%	10.38%	10.33%	-0.05%	11.70%	6.45%		6.45%		0.62
1980	11.04%	4.74%	135.76	14.99	6.44		3.01%	7.81%	11.24%	12.43%	1.19%	11.01%	5.03%		5.03%		0.40
1981	12.39%	5.57%	122.55	15.18	6.83		1.31%	6.08%	14.71%	13.98%	-0.73%	11.42%	5.73%		5.73%		0.41
1982	9.83%	4.93%	140.64	13.82	6.93		-8.95%	1.58%	10.54%	10.47%	-0.07%	7.96%	4.90%		4.90%		0.47
1983	8.06%	4.32%	164.93	13.29	7.12		-3.84%	2.76%	8.80%	11.80%	3.00%	9.09%	4.31%		4.31%		0.37
1984	10.07%	4.68%	167.24	16.84	7.83		26.69%	9.85%	9.85%	11.51%	1.66%	11.02%	5.11%		5.11%		0.44
1985	7.42%	3.88%	211.28	15.68	8.20		-6.91%	4.74%	7.72%	8.99%	1.27%	7.89%	4.03%	6.75%	3.84%		0.43
1986	5.96%	3.38%	242.17	14.43	8.19		-7.93%	-0.15%	6.16%	7.22%	1.06%	5.54%	3.36%	6.96%	3.58%		0.50
1987	6.49%	3.71%	247.08	16.04	9.17		11.10%	11.99%	5.47%	8.86%	3.39%	9.66%	4.18%	8.58%	3.99%		0.45
1988	8.20%	3.68%	277.72	24.12	10.22		50.42%	11.49%	6.35%	9.14%	2.79%	9.76%	4.12%	7.67%	3.77%		0.41
1989	6.80%	3.32%	353.4	24.32	11.73		0.83%	14.80%	8.37%	7.93%	-0.44%	9.58%	3.85%	7.46%	3.51%		0.44
1990	6.58%	3.74%	330.22	22.65	12.35		-6.87%	5.26%	7.81%	8.07%	0.26%	7.39%	3.92%	7.19%	3.89%		0.48
1991	4.58%	3.11%	417.09	19.30	12.97		-14.79%	5.03%	7.00%	6.70%	-0.30%	6.34%	3.27%	7.81%	3.48%		0.52
1992	4.16%	2.90%	435.71	20.87	12.64		8.13%	-2.59%	5.30%	6.68%	1.38%	4.67%	2.83%	9.83%	3.55%		0.53
1993	4.25%	2.72%	466.45	26.90	12.69		28.89%	0.41%	3.50%	5.79%	2.29%	4.73%	2.74%	8.00%	3.17%		0.55
1994	5.89%	2.91%	459.27	31.75	13.36		18.03%	5.34%	5.00%	7.82%	2.82%	7.23%	3.06%	7.17%	3.55%		0.45
1995	5.74%	2.30%	615.93	37.70	14.17		18.74%	6.00%	3.50%	5.57%	2.07%	5.65%	2.44%	6.50%	3.29%		0.59
1996	4.83%	2.01%	740.74	40.63	14.89		7.77%	5.10%	5.00%	6.41%	1.41%	6.13%	2.11%	7.92%	3.20%		0.50
1997	4.08%	1.60%	970.43	44.09	15.52		8.52%	4.25%	5.35%	5.74%	0.39%	5.45%	1.67%	8.00%	2.73%		0.48
1998	3.11%	1.32%	1229.23	44.27	16.20		0.41%	4.37%	4.33%	4.65%	0.32%	4.60%	1.38%	7.20%	2.26%		0.49
1999	3.07%	1.14%	1469.25	51.68	16.71		16.74%	3.16%	5.37%	6.44%	1.07%	5.75%	1.20%	12.50%	2.05%		0.32
2000	3.94%	1.23%	1320.28	56.13	16.27		8.61%	-2.65%	5.73%	5.11%	-0.62%	3.71%	1.65%	12.00%	2.87%		0.56
2001	3.85%	1.37%	1148.09	38.85	15.74	30.08	-30.79%	-3.24%	1.80%	5.05%	3.25%	3.56%	1.73%	10.30%	3.62%	2.91%	0.72
2002	5.23%	1.83%	879.82	46.04	16.08	29.83	18.51%	2.15%	1.20%	3.81%	2.61%	3.57%	2.29%	8.00%	4.10%	4.73%	1.08
2003	4.87%	1.61%	1111.91	54.69	17.88	31.58	18.79%	11.19%	1.00%	4.25%	3.25%	5.35%	2.12%	11.00%	3.69%	4.74%	0.87
2004	5.58%	1.60%	1211.92	67.68	19.407	40.60	23.75%	8.54%	2.18%	4.22%	2.04%	4.90%	2.02%	8.50%	3.65%	4.86%	0.86
2005	5.47%	1.79%	1248.29	76.45	22.38	61.17	12.96%	15.32%	4.31%	4.39%	0.08%	6.16%	2.20%	8.00%	4.08%	5.22%	0.93
2006	6.18%	1.77%	1418.3	87.72	25.05	73.16	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%	4.16%	6.12%	0.89
2007	5.62%	1.89%	1468.36	82.54	27.73	95.36	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%	4.37%	4.59%	1.09
2008	7.24%	3.11%	903.25	65.39	28.05	67.52	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%	6.43%	6.92%	2.91
2009	5.35%	2.00%	1115.10	59.65	22.31	37.43	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%	4.36%	4.64%	1.14
2010	6.65%	1.84%	1257.64	83.66	23.12	55.53	40.25%	3.63%	0.13%	3.29%	3.16%	3.33%	2.24%	6.95%	5.20%	6.09%	1.58
2011	7.72%	2.07%	1257.60	97.05	26.02	**71.28**	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%	6.01%	8.34%	3.20
2012	7.18%	2.13%	1426.19	102.47	30.44	75.90	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%	5.78%	7.30%	3.28
2013	5.81%	1.96%	1848.36	107.45	36.28	88.13	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%	4.96%	4.99%	1.63
2014	5.49%	1.92%	2058.90	113.01	39.44	101.98	5.17%	8.71%	0.05%	2.17%	2.12%	2.77%	2.24%	5.58%	5.78%	5.48%	2.66
2015	5.20%	2.11%	2043.94	106.32	43.16	106.10	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.55%	6.12%	5.16%	2.70

2016 Multi Stage Dividend Growth Model for DGM-d6

Gas Distribution Industry

AGL Resources
GAS

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.10	2.04		(63.81)	price =	63.81
2016	1	2.00%	65.00%	3.16	2.06		2.06		65.09
2017	2	2.00%	65.00%	3.23	2.10		2.10		66.39
2018	3	4.50%	52.00%	3.37	1.75		1.75		69.38
2019	4	4.50%	52.00%	3.52	1.83		1.83		72.50
2020	5	4.50%	52.00%	3.68	1.91		1.91		75.76
2021	6	4.50%	52.00%	3.85	2.00		2.00		79.17
2022	7	4.42%	52.00%	4.02	2.09		2.09		82.67
2023	8	4.33%	52.00%	4.19	2.18		2.18		86.25
2024	9	4.25%	52.00%	4.37	2.27		2.27		89.91
2025	10	4.17%	52.00%	4.55	2.37		2.37		93.66
2026	11+	4.00%	52.00%	4.73	2.46	97.41	99.87		97.41
						K_e =	6.63%		

Atmos Energy Corp.
ATO

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.09	1.56		(63.04)	price =	63.04
2016	1	1.50%	51.00%	3.14	1.60		1.60		63.99
2017	2	1.50%	51.00%	3.18	1.62		1.62		64.95
2018	3	1.50%	51.00%	3.23	1.65		1.65		65.92
2019	4	3.50%	51.00%	3.34	1.71		1.71		68.23
2020	5	5.00%	51.00%	3.51	1.79		1.79		71.64
2021	6	5.50%	51.00%	3.70	1.89		1.89		75.58
2022	7	5.25%	51.00%	3.90	1.99		1.99		79.55
2023	8	5.00%	51.00%	4.09	2.09		2.09		83.52
2024	9	4.75%	51.00%	4.29	2.19		2.19		87.49
2025	10	4.50%	51.00%	4.48	2.29		2.29		91.43
2026	11+	4.00%	51.00%	4.66	2.38	95.08	97.46		95.08
						K_e =	6.32%		

Laclede Group

LG	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.16	1.84		(59.41)	price =	59.41
2016	1	2.50%	56.00%	3.24	1.81		1.81		60.90
2017	2	2.50%	56.00%	3.32	1.86		1.86		62.42
2018	3	3.50%	52.00%	3.44	1.79		1.79		64.60
2019	4	4.00%	52.00%	3.57	1.86		1.86		67.19
2020	5	4.50%	52.00%	3.73	1.94		1.94		70.21
2021	6	4.50%	52.00%	3.90	2.03		2.03		73.37
2022	7	4.42%	52.00%	4.07	2.12		2.12		76.61
2023	8	4.33%	52.00%	4.25	2.21		2.21		79.93
2024	9	4.25%	52.00%	4.43	2.30		2.30		83.33
2025	10	4.17%	52.00%	4.62	2.40		2.40		86.80
2026	11+	4.00%	52.00%	4.80	2.50	90.27	92.77		90.27
						K_e =	6.75%		

New Jersey Resources

NJR	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.78	1.84		(32.96)	price =	32.96
2016	1	4.00%	58.00%	1.85	1.07		1.07		34.28
2017	2	4.00%	58.00%	1.93	1.12		1.12		35.65
2018	3	3.00%	51.00%	1.98	1.01		1.01		36.72
2019	4	2.00%	51.00%	2.02	1.03		1.03		37.45
2020	5	3.50%	51.00%	2.09	1.07		1.07		38.76
2021	6	3.50%	51.00%	2.17	1.11		1.11		40.12
2022	7	3.58%	51.00%	2.24	1.14		1.14		41.56
2023	8	3.67%	51.00%	2.33	1.19		1.19		43.08
2024	9	3.75%	51.00%	2.41	1.23		1.23		44.70
2025	10	3.83%	51.00%	2.51	1.28		1.28		46.41
2026	11+	4.00%	51.00%	2.61	1.33	48.27	49.60		48.27
						K_e =	6.45%		

Nisource Inc

NI	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.10	0.83		(19.51)	price =	19.51
2016	1	0.00%	55.00%	1.10	0.61		0.61		19.51
2017	2	0.50%	55.00%	1.11	0.61		0.61		19.61
2018	3	3.00%	57.00%	1.14	0.65		0.65		20.20
2019	4	4.00%	57.00%	1.18	0.68		0.68		21.00
2020	5	3.50%	57.00%	1.23	0.70		0.70		21.74
2021	6	-3.50%	57.00%	1.18	0.67		0.67		20.98
2022	7	-2.25%	57.00%	1.16	0.66		0.66		20.51
2023	8	-1.00%	57.00%	1.14	0.65		0.65		20.30
2024	9	0.25%	57.00%	1.15	0.65		0.65		20.35
2025	10	1.50%	57.00%	1.16	0.66		0.66		20.66
2026	11+	4.00%	57.00%	1.21	0.69	21.48	22.17		21.48
						K_e =	nmf		

N.W. Nat'l Gas

NWN	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.80	1.87		(50.61)	price =	50.61
2016	1	3.00%	87.00%	1.85	1.61		1.61		52.13
2017	2	2.50%	87.00%	1.90	1.65		1.65		53.43
2018	3	2.50%	64.00%	1.95	1.25		1.25		54.77
2019	4	2.50%	64.00%	2.00	1.28		1.28		56.14
2020	5	2.50%	64.00%	2.05	1.31		1.31		57.54
2021	6	2.50%	64.00%	2.10	1.34		1.34		58.98
2022	7	2.75%	64.00%	2.16	1.38		1.38		60.60
2023	8	3.00%	64.00%	2.22	1.42		1.42		62.42
2024	9	3.25%	64.00%	2.29	1.47		1.47		64.45
2025	10	3.50%	64.00%	2.37	1.52		1.52		66.70
2026	11+	4.00%	64.00%	2.47	1.58	69.37	70.95		69.37
						K_e =	5.40%		

Piedmont Nat'l Gas

PNY	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.85	1.31		(57.02)	price =	57.02
2016	1	3.50%	68.00%	1.91	1.30		1.30		59.02
2017	2	3.50%	68.00%	1.98	1.35		1.35		61.08
2018	3	2.00%	71.00%	2.02	1.44		1.44		62.30
2019	4	3.00%	71.00%	2.08	1.48		1.48		64.17
2020	5	3.00%	71.00%	2.14	1.52		1.52		66.10
2021	6	3.00%	71.00%	2.21	1.57		1.57		68.08
2022	7	3.17%	71.00%	2.28	1.62		1.62		70.24
2023	8	3.33%	71.00%	2.35	1.67		1.67		72.58
2024	9	3.50%	71.00%	2.44	1.73		1.73		75.12
2025	10	3.67%	71.00%	2.53	1.79		1.79		77.87
2026	11+	4.00%	71.00%	2.63	1.87	80.99	82.85		80.99
						K_e =	5.58%		

South Jersey Inds.

SJI	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.45	1.02		(23.52)	price =	23.52
2016	1	8.50%	69.00%	1.57	1.09		1.09		25.52
2017	2	9.00%	69.00%	1.71	1.18		1.18		27.82
2018	3	8.50%	59.00%	1.86	1.10		1.10		30.18
2019	4	8.00%	59.00%	2.01	1.19		1.19		32.59
2020	5	7.00%	59.00%	2.15	1.27		1.27		34.88
2021	6	7.00%	59.00%	2.30	1.36		1.36		37.32
2022	7	6.50%	59.00%	2.45	1.45		1.45		39.74
2023	8	6.00%	59.00%	2.60	1.53		1.53		42.13
2024	9	5.50%	59.00%	2.74	1.62		1.62		44.44
2025	10	5.00%	59.00%	2.88	1.70		1.70		46.67
2026	11+	4.00%	59.00%	2.99	1.77	48.53	50.30		48.53
						K_e =	11.02%		

Southwest Gas

SWX

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			2.85	1.62		(55.16)	price =	55.16
2016	1	4.50%	55.00%	2.98	1.64		1.64		57.64
2017	2	8.00%	55.00%	3.22	1.77		1.77		62.25
2018	3	7.00%	46.00%	3.44	1.58		1.58		66.61
2019	4	7.50%	46.00%	3.70	1.70		1.70		71.61
2020	5	7.50%	46.00%	3.98	1.83		1.83		76.98
2021	6	8.00%	46.00%	4.30	1.98		1.98		83.14
2022	7	7.33%	46.00%	4.61	2.12		2.12		89.23
2023	8	6.67%	46.00%	4.92	2.26		2.26		95.18
2024	9	6.00%	46.00%	5.21	2.40		2.40		100.89
2025	10	5.33%	46.00%	5.49	2.53		2.53		106.27
2026	11+	4.00%	46.00%	5.71	2.63	110.52	113.15		110.52
						K_e =	9.19%		

UGI Corp

UGI

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			2.01	0.90		(33.76)	price =	33.76
2016	1	5.00%	43.00%	2.11	0.91		0.91		35.45
2017	2	5.00%	43.00%	2.22	0.95		0.95		37.22
2018	3	4.00%	38.00%	2.30	0.88		0.88		38.71
2019	4	4.00%	38.00%	2.40	0.91		0.91		40.26
2020	5	3.50%	38.00%	2.48	0.94		0.94		41.67
2021	6	5.00%	38.00%	2.60	0.99		0.99		43.75
2022	7	4.83%	38.00%	2.73	1.04		1.04		45.86
2023	8	4.67%	38.00%	2.86	1.09		1.09		48.00
2024	9	4.50%	38.00%	2.99	1.13		1.13		50.17
2025	10	4.33%	38.00%	3.12	1.18		1.18		52.34
2026	11+	4.00%	38.00%	3.24	1.23	54.43	55.66		54.43
						K_e =	6.87%		

WGL Holdings

WGL	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.16	1.83		(62.99)	price =	62.99
2016	1	2.50%	60.00%	3.24	1.94		1.94		64.56
2017	2	2.50%	60.00%	3.32	1.99		1.99		66.18
2018	3	3.00%	56.00%	3.42	1.91		1.91		68.16
2019	4	2.50%	56.00%	3.51	1.96		1.96		69.87
2020	5	3.00%	56.00%	3.61	2.02		2.02		71.96
2021	6	3.00%	56.00%	3.72	2.08		2.08		74.12
2022	7	3.17%	56.00%	3.84	2.15		2.15		76.47
2023	8	3.33%	56.00%	3.96	2.22		2.22		79.02
2024	9	3.50%	56.00%	4.10	2.30		2.30		81.79
2025	10	3.67%	56.00%	4.25	2.38		2.38		84.78
2026	11+	4.00%	56.00%	4.42	2.48	88.18	90.65		88.18
						K_e =	6.00%		

source: Value Line Dividends Growth

2016 Multi Stage Dividend Growth Model for DGM-e7
Gas Distribution Industry

AGL Resources
GAS

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.10	2.04		(63.81)	price =	63.81
2016	1	4.50%	65.00%	3.24	2.11		2.11		66.68
2017	2	8.00%	65.00%	3.50	2.27		2.27		72.02
2018	3	9.00%	52.00%	3.81	1.98		1.98		78.50
2019	4	9.00%	52.00%	4.16	2.16		2.16		85.56
2020	5	6.50%	52.00%	4.43	2.30		2.30		91.12
2021	6	6.50%	52.00%	4.71	2.45		2.45		97.05
2022	7	6.08%	52.00%	5.00	2.60		2.60		102.95
2023	8	5.67%	52.00%	5.28	2.75		2.75		108.78
2024	9	5.25%	52.00%	5.56	2.89		2.89		114.50
2025	10	4.83%	52.00%	5.83	3.03		3.03		120.03
2026	11+	4.00%	52.00%	6.06	3.15	124.83	127.98		124.83
						K_e =	9.19%		

Atmos Energy C ATO
ATO

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.09	1.56		(63.04)	price =	63.04
2016	1	7.00%	51.00%	3.31	1.69		1.69		67.45
2017	2	3.50%	51.00%	3.42	1.75		1.75		69.81
2018	3	4.50%	51.00%	3.58	1.82		1.82		72.96
2019	4	4.00%	51.00%	3.72	1.90		1.90		75.87
2020	5	4.50%	51.00%	3.89	1.98		1.98		79.29
2021	6	4.50%	51.00%	4.06	2.07		2.07		82.86
2022	7	4.42%	51.00%	4.24	2.16		2.16		86.52
2023	8	4.33%	51.00%	4.42	2.26		2.26		90.26
2024	9	4.25%	51.00%	4.61	2.35		2.35		94.10
2025	10	4.17%	51.00%	4.80	2.45		2.45		98.02
2026	11+	4.00%	51.00%	5.00	2.55	101.94	104.49		101.94
						K_e =	7.11%		

Laclede Group

LG	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.16	1.84		(59.41)	price =	59.41
2016	1	10.00%	56.00%	3.48	1.95		1.95		65.35
2017	2	2.00%	56.00%	3.55	1.99		1.99		66.66
2018	3	6.00%	52.00%	3.76	1.95		1.95		70.66
2019	4	8.00%	52.00%	4.06	2.11		2.11		76.31
2020	5	10.00%	52.00%	4.46	2.32		2.32		83.94
2021	6	10.00%	52.00%	4.91	2.55		2.55		92.34
2022	7	9.00%	52.00%	5.35	2.78		2.78		100.65
2023	8	8.00%	52.00%	5.78	3.01		3.01		108.70
2024	9	7.00%	52.00%	6.19	3.22		3.22		116.31
2025	10	6.00%	52.00%	6.56	3.41		3.41		123.28
2026	11+	4.00%	52.00%	6.82	3.55	128.22	131.76		128.22
						K_e =	10.28%		

New Jersey Resources

NJR	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.78	1.84		(32.96)	price =	32.96
2016	1	4.00%	58.00%	1.85	1.07		1.07		34.28
2017	2	5.50%	58.00%	1.95	1.13		1.13		36.16
2018	3	4.00%	51.00%	2.03	1.04		1.04		37.61
2019	4	6.00%	51.00%	2.15	1.10		1.10		39.87
2020	5	5.00%	51.00%	2.26	1.15		1.15		41.86
2021	6	3.50%	51.00%	2.34	1.19		1.19		43.33
2022	7	3.58%	51.00%	2.42	1.24		1.24		44.88
2023	8	3.67%	51.00%	2.51	1.28		1.28		46.52
2024	9	3.75%	51.00%	2.61	1.33		1.33		48.27
2025	10	3.83%	51.00%	2.71	1.38		1.38		50.12
2026	11+	4.00%	51.00%	2.81	1.44	52.12	53.56		52.12
						K_e =	7.24%		

Nisource Inc

NI	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.10	0.83		(19.51)	price =	19.51
2016	1	9.50%	55.00%	1.20	0.66		0.66		21.36
2017	2	11.50%	55.00%	1.34	0.74		0.74		23.82
2018	3	10.50%	57.00%	1.48	0.85		0.85		26.32
2019	4	10.50%	57.00%	1.64	0.93		0.93		29.09
2020	5	9.00%	57.00%	1.79	1.02		1.02		31.70
2021	6	-1.50%	57.00%	1.76	1.00		1.00		31.23
2022	7	-0.58%	57.00%	1.75	1.00		1.00		31.05
2023	8	0.33%	57.00%	1.76	1.00		1.00		31.15
2024	9	1.25%	57.00%	1.78	1.01		1.01		31.54
2025	10	2.17%	57.00%	1.82	1.04		1.04		32.22
2026	11+	4.00%	57.00%	1.89	1.08	33.51	34.59		33.51
						K_e =	nmf		

N.W. Nat'l Gas

NWN	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.80	1.87		(50.61)	price =	50.61
2016	1	4.00%	87.00%	1.87	1.63		1.63		52.63
2017	2	4.50%	87.00%	1.96	1.70		1.70		55.00
2018	3	4.50%	64.00%	2.04	1.31		1.31		57.48
2019	4	4.00%	64.00%	2.13	1.36		1.36		59.78
2020	5	5.50%	64.00%	2.24	1.44		1.44		63.06
2021	6	7.00%	64.00%	2.40	1.54		1.54		67.48
2022	7	6.50%	64.00%	2.56	1.64		1.64		71.87
2023	8	6.00%	64.00%	2.71	1.73		1.73		76.18
2024	9	5.50%	64.00%	2.86	1.83		1.83		80.37
2025	10	5.00%	64.00%	3.00	1.92		1.92		84.39
2026	11+	4.00%	64.00%	3.12	2.00	87.76	89.76		87.76
						K_e =	7.67%		

Piedmont Nat'l Gas

PNY	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.85	1.31		(57.02)	price =	57.02
2016	1	3.00%	68.00%	1.91	1.30		1.30		58.73
2017	2	2.50%	68.00%	1.95	1.33		1.33		60.20
2018	3	4.50%	71.00%	2.04	1.45		1.45		62.91
2019	4	4.00%	71.00%	2.12	1.51		1.51		65.42
2020	5	3.50%	71.00%	2.20	1.56		1.56		67.71
2021	6	3.00%	71.00%	2.26	1.61		1.61		69.75
2022	7	3.17%	71.00%	2.33	1.66		1.66		71.95
2023	8	3.33%	71.00%	2.41	1.71		1.71		74.35
2024	9	3.50%	71.00%	2.50	1.77		1.77		76.95
2025	10	3.67%	71.00%	2.59	1.84		1.84		79.78
2026	11+	4.00%	71.00%	2.69	1.91	82.97	84.88		82.97
						K_e =	5.82%		

South Jersey Inds.

SJI	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			1.45	1.02		(23.52)	price =	23.52
2016	1	9.00%	69.00%	1.58	1.09		1.09		25.64
2017	2	9.00%	69.00%	1.72	1.19		1.19		27.94
2018	3	7.50%	59.00%	1.85	1.09		1.09		30.04
2019	4	7.50%	59.00%	1.99	1.17		1.17		32.29
2020	5	7.50%	59.00%	2.14	1.26		1.26		34.71
2021	6	7.00%	59.00%	2.29	1.35		1.35		37.14
2022	7	6.50%	59.00%	2.44	1.44		1.44		39.56
2023	8	6.00%	59.00%	2.59	1.53		1.53		41.93
2024	9	5.50%	59.00%	2.73	1.61		1.61		44.24
2025	10	5.00%	59.00%	2.86	1.69		1.69		46.45
2026	11+	4.00%	59.00%	2.98	1.76	48.31	50.07		48.31
						K_e =	10.97%		

Southwest Gas
SWX

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			2.85	1.62		(55.16)	price =	55.16
2016	1	9.00%	55.00%	3.11	1.71		1.71		60.12
2017	2	9.00%	55.00%	3.39	1.86		1.86		65.54
2018	3	8.00%	46.00%	3.66	1.68		1.68		70.78
2019	4	7.00%	46.00%	3.91	1.80		1.80		75.73
2020	5	7.00%	46.00%	4.19	1.93		1.93		81.03
2021	6	7.00%	46.00%	4.48	2.06		2.06		86.71
2022	7	6.50%	46.00%	4.77	2.19		2.19		92.34
2023	8	6.00%	46.00%	5.06	2.33		2.33		97.88
2024	9	5.50%	46.00%	5.34	2.45		2.45		103.27
2025	10	5.00%	46.00%	5.60	2.58		2.58		108.43
2026	11+	4.00%	46.00%	5.83	2.68	112.77	115.45		112.77
						K_e =	9.47%		

UGI Corp
UGI

	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			2.01	0.90		(33.76)	price =	33.76
2016	1	5.00%	43.00%	2.11	0.91		0.91		35.45
2017	2	5.00%	43.00%	2.22	0.95		0.95		37.22
2018	3	8.00%	38.00%	2.39	0.91		0.91		40.20
2019	4	7.50%	38.00%	2.57	0.98		0.98		43.21
2020	5	10.00%	38.00%	2.83	1.08		1.08		47.53
2021	6	9.50%	38.00%	3.10	1.18		1.18		52.05
2022	7	8.58%	38.00%	3.36	1.28		1.28		56.52
2023	8	7.67%	38.00%	3.62	1.38		1.38		60.85
2024	9	6.75%	38.00%	3.87	1.47		1.47		64.96
2025	10	5.83%	38.00%	4.09	1.56		1.56		68.75
2026	11+	4.00%	38.00%	4.26	1.62	71.50	73.11		71.50
						K_e =	9.55%		

WGL Holdings

WGL	Year	Growth Rate	Payout Ratio	Earnings	Dividends	Terminal Value			
	0			3.16	1.83		(62.99)	price =	62.99
2016	1	5.50%	60.00%	3.33	2.00		2.00		66.45
2017	2	3.50%	60.00%	3.45	2.07		2.07		68.78
2018	3	3.50%	56.00%	3.57	2.00		2.00		71.19
2019	4	3.50%	56.00%	3.70	2.07		2.07		73.68
2020	5	4.00%	56.00%	3.84	2.15		2.15		76.63
2021	6	5.50%	56.00%	4.06	2.27		2.27		80.84
2022	7	5.25%	56.00%	4.27	2.39		2.39		85.09
2023	8	5.00%	56.00%	4.48	2.51		2.51		89.34
2024	9	4.75%	56.00%	4.69	2.63		2.63		93.58
2025	10	4.50%	56.00%	4.91	2.75		2.75		97.79
2026	11+	4.00%	56.00%	5.10	2.86	101.71	104.56		101.71
						K_e =	7.42%		

source: Value Line Earnings Growth