

COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2022 Assessment Year

APPENDIX C

NATURAL GAS DISTRIBUTION

EQUITY RATE						9.00%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		5.18%				4
DIVIDEND GROWTH MODELS							
	Value Line, based on Dividends Growth		8.50%				5
	Value Line, based on Earnings Growth		10.50%				6
	Value Line, based on Return on Equity		7.75%				7
	FCFE GROWTH MODEL Multi Stage		8.50%				8
				RANGE	5.18% - 10.5%		
DEBT RATE						3.30%	9
MARKET CAPITAL STRUCTURE							
	Equity	55%	x	9.00%	=	4.95%	3
	Debt	45%	x	3.30%	=	1.49%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	1.49%	
						<u>1.13%</u>	
WEIGHTED AVERAGE COST OF CAPITAL						6.08%	

SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2022 Assessment Year

Natural Gas Distribution

Capital Structure at Book Value

Company	Ticker	Beta	Fin'l Strength	P/E Ratio	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Atmos Energy Corp	ato	0.80	A+	20.00	2.4%	7,906,798,200	58.7%		0.0%	5,555,200,000	41.3%	13,461,998,200
Chesapeake Util	cpk	0.80	A	27.50	1.3%	798,300,000	61.2%		0.0%	505,500,000	38.8%	1,303,800,000
New Jersey Resources	njr	1.00	A+	16.90	3.3%	1,631,241,000	41.8%		0.0%	2,274,200,000	58.2%	3,905,441,000
NiSource Inc	ni	0.85	B+	21.00	3.2%	5,194,250,000	34.0%	880,000,000	5.8%	9,188,200,000	60.2%	15,262,450,000
Northwest Natural Gas	nwn	0.80	A	17.00	4.0%	1,052,450,000	53.5%		0.0%	916,000,000	46.5%	1,968,450,000
South Jersey Industries	sjj	1.00	B++	14.20	4.7%	1,822,500,000	36.3%		0.0%	3,195,900,000	63.7%	5,018,400,000
Southwest Gas	swx	0.95	A	16.00	3.4%	3,025,600,000	45.8%		0.0%	3,573,800,000	54.2%	6,599,400,000
Spire Inc	sr	0.85	B++	14.90	4.0%	2,411,784,000	41.2%	242,000,000	4.1%	3,206,800,000	54.7%	5,860,584,000
ONE Gas Inc	ogs	0.80	B++	19.60	3.0%	2,463,675,000	40.1%		0.0%	3,683,100,000	59.9%	6,146,775,000
UGI Corp	ugi	1.05	B++	12.60	2.9%	5,302,656,800	45.2%		0.0%	6,416,000,000	54.8%	11,718,656,800
	Mean	0.89		17.97	3.22%	3,160,925,500	45.8%		1.0%	3,851,470,000	53.2%	7,124,595,500
	Harmonic Mean	0.88		17.17	2.86%		44.2%				51.9%	
	Median	0.85		16.95	3.26%		43.5%		0.0%		54.7%	
	Weighted Mean					31,609,255,000	44.4%		0.0%	38,514,700,000	54.1%	71,245,955,000
	Say	0.85										

**SUPPORT FOR CAPITAL STRUCTURE
MARKET VALUE**

Washington State Department of Revenue
2022 Assessment Year
Natural Gas Distribution

Capital Structure at Market Value

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Atmos Energy Corp	ato	104.100	132,420,000	13,784,922,000	61.4%	-	0.0%	8,653,665,000	38.6%	22,438,587,000
Chesapeake Util	cpk	145.810	18,000,000	2,624,580,000	83.4%	-	0.0%	523,000,000	16.6%	3,147,580,000
New Jersey Resources	njr	41.060	94,950,000	3,898,647,000	62.2%	-	0.0%	2,373,791,000	37.8%	6,272,438,000
NiSource Inc	ni	27.390	395,000,000	10,819,050,000	48.9%	880,000,000	4.0%	10,415,700,000	47.1%	22,114,750,000
Northwest Natural Gas	nwn	48.280	31,000,000	1,496,680,000	57.4%	-	0.0%	1,110,741,000	42.6%	2,607,421,000
South Jersey Industries	sjj	26.120	112,500,000	2,938,500,000	44.6%	-	0.0%	3,653,868,000	55.4%	6,592,368,000
Southwest Gas	swx	69.430	61,000,000	4,235,230,000	59.0%	-	0.0%	2,942,000,000	41.0%	7,177,230,000
Spire Inc	sr	65.220	51,600,000	3,365,352,000	46.7%	242,000,000	3.4%	3,594,400,000	49.9%	7,201,752,000
ONE Gas Inc	ogs	76.960	53,500,000	4,117,360,000	51.4%	-	0.0%	3,900,000,000	48.6%	8,017,360,000
UGI Corp	ugi	45.910	209,840,000	9,633,754,400	57.8%	-	0.0%	7,048,000,000	42.2%	16,681,754,400
			Mean		57.3%				42.0%	
			Harmonic Mean		55.6%				37.9%	
			Median		57.6%				42.4%	
			Weighted Mean	56,914,075,400	55.7%	1,122,000,000	1.1%	44,215,165,000	43.2%	102,251,240,400
			Std Dev		11.1%				10.5%	
			Coefficient of Variation		19.3%				24.9%	
			Say		55%				45%	100%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

Washington State Department of Revenue

2022 Assessment Year - Natural Gas Distribution

$$\text{Ex Ante} \\ \text{Ke} = \text{Rf} + \text{B (Rp)}$$

Ke = Cost of Equity				5.18%
				to page 1
	Rm =	rate of return	5.76%	
	Rf =	risk free rate	1.90%	
	Rp =	risk premium	3.86%	
	B =	Beta	0.85	page 2
Rp = Risk Premium				3.86%
				to above
	Shannon Pratt and Roger Grabowski		3.50%-6.00%	
	Cost of Capital, App and Exam, 5th Ed, 2014			
	Dr. Aswath Damodaran		4.24%	chart page 15
	http://pages.stern.nyu.edu/~adamodar/		3.86%	adjusted for Rf
	2021 Implied Premium			
Rf = Risk Free Rate				1.90%
				to above
	Value Line Investment Survey, Selected Yields January 7, 2022, page 2089			
	as of 12-27-21			
		US Treasury Securities year end data		
		5 year	1.26%	
		10 year	1.48%	
		30 year	1.88%	
		30 year Zero	1.90%	
	Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)			
	As of 12-31-21			
		Treasury Constant Maturities		
		5 year	1.26%	
		10 year	1.52%	
		20 year	1.94%	
		30 year	1.90%	
		20 year TIPS	-0.63%	
		30 year TIPS	-0.44%	
Inflation				2.34%
				to appraisal template
	Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)			
	As of 12-31-21			
		Inflation Indication from Treasury Inflation-Protected Securities		
		20 year	2.57%	
		30 year	2.34%	
	Federal Reserve Bank of Philadelphia			
	The Livingston Survey December 17, 2021, page 8			
	Inflation median (measured by the CPI) over next 10 years		2.40%	
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey			
Gross Domestic Product (GDP) Nominal				4.14%
				real GDP + inflation est
	Federal Reserve Projected Long Run Real GDP Growth			
	Median Projection Value From Dec 15, 2021 Report		1.80%	
	https://www.federalreserve.gov/monetarypolicy/files/fomcprojt20211215.pdf			
	Congressional Budget Office Real GDP Economic Projections			Table 2.3, pg 15
	The Budget and Economic Outlook 2021-2031	2021-2025	1.90%	
	Average Percentage Change Year to Year	2026-2031	1.70%	
	https://www.cbo.gov/system/files/2021-02/56970-			
	Federal Reserve Bank of Philadelphia			
	The Livingston Survey December 17, 2021, page 8		2.10%	
	Median Annual Average Real GDP Growth Rate for Next 10 Years			
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey			

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

Washington State Department of Revenue
2022 Assessment Year
Natural Gas Distribution

Based on Dividend Growth

$$K_e = (D1 / P_o) + G$$

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)	Ke Short Term Growth
Atmos Energy Corp	ato	104.10	2.72	2.61%	7.00%	9.61%
Cheapeake Util	cpk	145.81	2.00	1.37%	8.00%	9.37%
New Jersey Resources	njr	41.06	1.45	3.53%	5.00%	8.53%
NiSource Inc	ni	27.39	0.94	3.43%	4.50%	7.93%
Northwest Natural Gas	nwn	48.28	1.93	4.00%	0.50%	4.50%
South Jersey Industries	sjj	26.12	1.25	4.79%	3.50%	8.29%
Southwest Gas	swx	69.43	2.48	3.57%	5.00%	8.57%
Spire Inc	sr	65.22	2.74	4.20%	5.00%	9.20%
ONE Gas Inc	ogs	76.96	2.48	3.22%	6.50%	9.72%
UGI Corp	ugi	45.91	1.38	3.01%	3.50%	6.51%
Mean						8.22%
Harmonic Mean						7.82%
Median						8.55%
Max						9.72%
Min						4.50%
Std Dev						1.62%
Coefficient of Variation						19.69%
Say						8.50%

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

Washington State Department of Revenue

2022 Assessment Year

Natural Gas Distribution

Based on Earnings Growth

$$K_e = (D_1 / P_0) + G$$

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

Company	Ticker	Stock Price (Po)	Expected Dividends (D1)	Yield (D1/Po)	Earnings Short Term Growth (G)	Ke Short Term Growth
Atmos Energy Corp	ato	104.10	2.72	2.61%	7.5%	10.11%
Chesapeake Util	cpk	145.81	2.00	1.37%	8.0%	9.37%
New Jersey Resources	njr	41.06	1.45	3.53%	4.5%	8.03%
NiSource Inc	ni	27.39	0.94	3.43%	10.5%	13.93%
Northwest Natural Gas	nwn	48.28	1.93	4.00%	6.0%	10.00%
South Jersey Industries	sjj	26.12	1.25	4.79%	10.0%	14.79%
Southwest Gas	swx	69.43	2.48	3.57%	8.0%	11.57%
Spire Inc	sr	65.22	2.74	4.20%	9.0%	13.20%
ONE Gas Inc	ogs	76.96	2.48	3.22%	6.0%	9.22%
UGI Corp	ugi	45.91	1.38	3.01%	7.0%	10.01%
Mean						11.02%
Harmonic Mean						10.64%
Median						10.06%
Max						14.79%
Min						8.03%
Std Dev						2.25%
Coefficient of Variation						20.40%
Say						10.50%

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

Washington State Department of Revenue
2022 Assessment Year
Natural Gas Distribution

Based on Return on Equity

$$K_e = (D1 / P_o) + G$$

- Ke** = Cost of Equity
- D1** = Expected Dividends
- E1** = Expected Earnings
- Po** = Current Price
- G** = Sustainable Growth
- b** = Retained Earnings % = (1 - Payout Ratio)
- ROE** = Return on Equity = (E1 / Po)

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Expected Earnings (E1)	Dividend Yield (D1/Po)	Retained Earnings (b)	ROE (E1/Po)	Growth (b*ROE)	Ke Dividends	Ke Earnings
Atmos Energy Corp	ato	104.100	2.72	5.50	2.6%	51.0%	5.28%	2.69%	5.31%	7.98%
Chesapeake Util	cpk	145.810	2.00	4.95	1.4%	61.0%	3.39%	2.07%	3.44%	5.47%
New Jersey Resources	njr	41.060	1.45	2.30	3.5%	44.0%	5.60%	2.46%	6.00%	8.07%
NiSource Inc	ni	27.390	0.94	1.50	3.4%	29.0%	5.48%	1.59%	5.02%	7.06%
Northwest Natural Gas	nwn	48.280	1.93	2.70	4.0%	23.0%	5.59%	1.29%	5.28%	6.88%
South Jersey Industries	sjj	26.120	1.25	1.75	4.8%	24.0%	6.70%	1.61%	6.39%	8.31%
Southwest Gas	swx	69.430	2.48	4.50	3.6%	36.0%	6.48%	2.33%	5.91%	8.81%
Spire Inc	sr	65.220	2.74	3.40	4.2%	46.0%	5.21%	2.40%	6.60%	7.61%
ONE Gas Inc	ogs	76.960	2.48	4.05	3.2%	39.0%	5.26%	2.05%	5.27%	7.31%
UGI Corp	ugi	45.910	1.38	2.90	3.0%	55.0%	6.32%	3.47%	6.48%	9.79%
Mean									5.57%	7.73%
Harmonic Mean									5.39%	7.56%
Median									5.61%	7.79%
Max									6.60%	9.79%
Min									3.44%	5.47%
Std Dev									0.94%	1.17%
Coefficient of Variation									16.85%	15.19%
say									7.75%	

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
FREE CASH FLOW TO EQUITY MODEL MULTI STAGE**

Washington State Department of Revenue

2022 Assessment Year

Natural Gas Distribution

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
Atmos Energy Corp	ato	104.10	5.50	18.93	49.00%	8.50%	7.42%
Chesapeake Util	cpk	145.81	4.95	29.46	40.00%	10.00%	NMF
New Jersey Resources	njr	41.06	2.30	17.85	63.00%	12.50%	7.36%
NiSource Inc	ni	27.39	1.50	18.26	68.00%	9.50%	8.90%
Northwest Natural Gas	nwn	48.28	2.70	17.88	72.00%	7.50%	7.67%
South Jersey Industries	sjj	26.12	1.75	14.93	74.00%	10.00%	10.85%
Southwest Gas	swx	69.43	4.50	15.43	56.00%	8.50%	10.36%
Spire Inc	sr	65.22	3.40	19.18	90.00%	6.50%	8.45%
UGI Corp	ugi	45.91	2.90	15.83	47.00%	10.50%	9.54%
ONE Gas Inc	ogs	76.96	4.05	19.00	62.00%	8.00%	7.29%
Mean				18.67	62.10%	9.15%	8.65%
Harmonic Mean				18.08	58.91%	8.87%	8.47%
Median				18.07	62.50%	9.00%	8.45%
Industry Summary				18.50	62.00%	9.00%	
						Say	8.50%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2022 Assessment Year

Natural Gas Distribution

Company	Ticker	Mergent's Ratings	S&P Ratings
Atmos Energy Corp	ato	A1	A-
Chesapeake Util	cpk		
New Jersey Resources	njr		
NiSource Inc	ni	Baa2	BBB+
Northwest Natural Gas	nwn	Baa1	A+
South Jersey Industries	sjj	A3	BBB
Southwest Gas	swx	Baa1	BBB
Spire Inc	sr	Baa2	A-
UGI Corp	ugi		
ONE Gas Inc	ogs	A3	BBB+
Overall Average Debt Rating		Baa1	BBB+

Mergent's Bond Record January 2022 page 90

Corporate	Aaa	Aa	A	Baa
October	2.68%	2.86%	3.02%	3.35%
November	2.62%	2.77%	2.95%	3.28%
December	2.71%	2.82%	3.04%	3.37%
4th Qtr Average	2.67%	2.82%	3.00%	3.33%
Public Utilities		Aa	A	Baa
October		2.99%	3.09%	3.32%
November		2.91%	3.02%	3.25%
December		3.01%	3.13%	3.36%
4th Qtr Average		2.97%	3.08%	3.31%
Industrials	Aaa	Aa	A	Baa
October	2.68%	2.73%	2.96%	3.38%
November	2.62%	2.63%	2.88%	3.30%
December	2.71%	2.62%	2.95%	3.37%
4th Qtr Average	2.67%	2.66%	2.93%	3.35%

		Corporate	Utilities
Bloomberg S&P Bond Yields	BBB+	2.93%	3.28%
Capital IQ Bond Yield	BBB+	3.69%	3.54%

Debt Yield Rate	3.30%
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SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

Washington State Department of Revenue
 2022 Assessment Year
 Natural Gas Distribution

Company	Ticker	Stock Price	2021		2022		2021		2022	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
Atmos Energy Corp	ato	104.10	5.12	4.9%	5.50	5.3%	8.64	8.3%	9.30	8.9%
Chesapeake Util	cpk	145.81	4.70	3.2%	4.95	3.4%	8.65	5.9%	9.50	6.5%
New Jersey Resources	njr	41.06	2.16	5.3%	2.30	5.6%	3.36	8.2%	3.65	8.9%
NiSource Inc	ni	27.39	1.35	4.9%	1.50	5.5%	3.10	11.3%	3.30	12.0%
Northwest Natural Gas	nwn	48.28	2.50	5.2%	2.70	5.6%	5.75	11.9%	6.10	12.6%
South Jersey Industries	sjj	26.12	1.65	6.3%	1.75	6.7%	2.70	10.3%	2.90	11.1%
Southwest Gas	swx	69.43	3.80	5.5%	3.40	4.9%	9.50	13.7%	7.75	11.2%
Spire Inc	sr	65.22	4.96	7.6%	2.90	4.4%	9.09	13.9%	5.20	8.0%
UGI Corp	ugi	45.91	2.96	6.4%	2.90	6.3%	4.34	9.5%	5.20	11.3%
ONE Gas Inc	ogs	76.96	3.85	5.0%	4.05	5.3%	7.75	10.1%	8.20	10.7%
Mean			5.4%		5.3%		10.3%		10.1%	
Harmonic Mean			5.2%		5.1%		9.7%		9.7%	
Median			5.2%		5.4%		10.2%		10.9%	
Max			7.6%		6.7%		13.9%		12.6%	
Min			3.2%		3.4%		5.9%		6.5%	
Std Dev			1.2%		0.9%		2.5%		2.0%	
Coefficient of Variation			21.4%		17.5%		24.3%		19.3%	
Say			5.2%		5.3%		10.2%		10.5%	

Source:

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

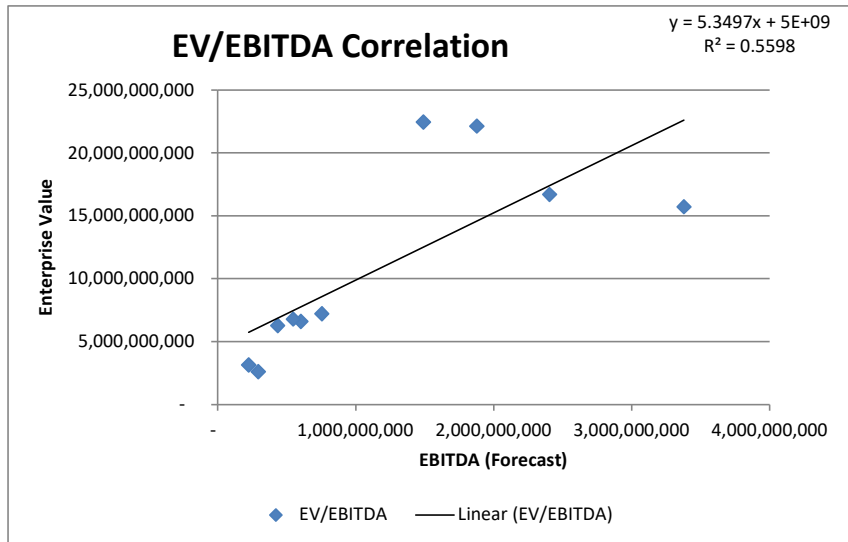
SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

Washington State Department of Revenue

2022 Assessment Year

Natural Gas Distribution

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast	Revenue Forecast	EV / Sales Forecast	Cash Flow Forecast	Debt Service	EV / CF Forecast
Atmos Energy Corp	ato	104.10	22,438,587,000	1,382,975,000	7.64%	1,488,618,924	15.07	3,502,509,000	6.41	1,231,506,000	285,570,945	14.79
Chesapeake Util	cpk	145.81	3,147,580,000	204,001,000	9.83%	224,047,341	14.05	632,700,000	4.97	171,000,000	17,259,000	16.72
New Jersey Resources	njr	41.06	6,272,438,000	399,737,000	8.63%	434,238,110	14.44	2,340,517,500	2.68	346,567,500	78,335,103	14.76
NiSource Inc	ni	27.39	22,114,750,000	1,763,000,000	6.45%	1,876,741,935	11.78	5,332,500,000	4.15	1,303,500,000	343,718,100	13.43
Northwest Natural Gas	nwn	48.28	2,607,421,000	276,651,000	6.09%	293,490,626	8.88	860,250,000	3.03	189,100,000	36,654,453	11.55
South Jersey Industries	sjj	26.12	6,592,368,000	560,772,000	7.41%	602,310,667	10.95	1,957,500,000	3.37	326,250,000	120,577,644	14.75
Southwest Gas	swx	69.43	7,201,752,000	663,300,000	13.68%	754,067,368	9.55	4,114,450,000	1.75	658,800,000	97,086,000	9.53
Spire Inc	sr	65.22	16,681,754,400	2,819,000,000	-14.74%	2,403,437,844	6.94	2,009,820,000	8.30	399,900,000	118,615,200	32.17
UGI Corp	ugi	45.91	15,708,754,400	2,819,000,000	19.82%	3,377,603,687	4.65	8,393,600,000	1.87	1,091,168,000	232,584,000	11.87
ONE Gas Inc	ogs	76.96	6,773,289,000	517,491,000	5.81%	547,538,865	12.37	1,829,700,000	3.70	438,700,000	128,700,000	11.94
Mean							10.87		4.02			15.15
Harmonic Mean							9.61		3.23			13.73
Median							11.36		3.53			14.09
Std Dev							3.39		2.06			6.34
Coefficient of Variation							0.31		0.51			0.42
Say							11.00		3.75			14.50



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast	
UGI Corp	4.65	
Spire Inc	6.94	7.49 Harmonic Mean
Northwest Natural Gas	8.88	8.19 Low Average
Southwest Gas	9.55	8.88 Low Median
South Jersey Industries	10.95	8.50 Say
NiSource Inc	11.78	13.42 High Harmonic Mean
ONE Gas Inc	12.37	13.54 High Average
Chesapeake Util	14.05	14.05 High Median
New Jersey Resources	14.44	13.75 Say
Atmos Energy Corp	15.07	

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2022 Assessment Year

Natural Gas Distribution

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Book Value	Multiple
Atmos Energy Corp	ato	104.10	25.73	4.05	8.64	12.05	5.12	20.33	59.71	1.74
Chesapeake Util	cpk	145.81	30.85	4.73	8.65	16.86	4.70	31.02	44.35	3.29
New Jersey Resources	njr	41.06	22.71	1.81	3.36	12.22	2.16	19.01	17.18	2.39
NiSource Inc	ni	27.39	12.65	2.17	3.10	8.84	1.35	20.29	13.15	2.08
Northwest Natural Gas	nwn	48.28	26.75	1.80	5.75	8.40	2.50	19.31	33.95	1.42
South Jersey Industries	sjj	26.12	16.65	1.57	2.70	9.67	1.65	15.83	16.20	1.61
Southwest Gas	swx	69.43	58.70	1.18	9.50	7.31	3.80	18.27	49.60	1.40
Spire Inc	sr	65.22	43.24	1.51	9.09	7.17	4.96	13.15	46.74	1.40
UGI Corp	ugi	45.91	35.49	1.29	4.34	10.58	2.96	15.51	25.27	1.82
ONE Gas Inc	ogs	76.96	32.05	2.40	7.75	9.93	3.85	19.99	46.05	1.67
Mean			2.25		10.30		19.27		1.88	
Harmonic Mean			1.86		9.70		18.40		1.76	
Median			1.81		9.80		19.16		1.71	
Max			4.73		16.86		31.02		3.29	
Min			1.18		7.17		13.15		1.40	
Say			2.00		10.00		19.20		1.75	

DATA INPUT

Washington State Department of Revenue

2022 Assessment Year

Natural Gas Distribution

Guideline Companies		Stock Price 12/31/21	Historic Figures (2021)													
			Beta Levered	Fin'l Strength	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Bk Value Per Share	Common Shares	Mkt/Bk	LTD (BV)	Trailing P/E Ratio	Div Yield	Calculated Debt	
Name	Ticker	Yahoo	VL	VL	VL	VL	VL	VL	VL	VL	VL	Formula	V L	V L	V L	Formula
Atmos Energy Corp	ato	104.10	0.80	A+	25.73	8.64	5.12	2.50	59.71	132,420,000	1.74	5,555,200,000	20.00	2.7%	108.71%	
Chesapeake Util	cpk	145.81	0.80	A	30.85	8.65	4.70	1.84	44.35	18,000,000	3.29	505,500,000	27.50	1.6%	91.95%	
New Jersey Resources	njr	41.06	1.00	A+	22.71	3.36	2.16	1.36	17.18	94,950,000	2.39	2,274,200,000	16.90	3.6%	107.76%	
NiSource Inc	ni	27.39	0.85	B+	12.65	3.10	1.35	0.88	13.15	395,000,000	2.08	9,188,200,000	21.00	3.3%	112.71%	
Northwest Natural Gas	nwn	48.28	0.80	A	26.75	5.75	2.50	1.92	33.95	31,000,000	1.42	916,000,000	17.00	4.1%	112.59%	
South Jersey Industries	sji	26.12	1.00	B++	16.65	2.70	1.65	1.22	16.20	112,500,000	1.61	3,195,900,000	14.20	5.1%	112.25%	
Southwest Gas	swx	69.43	0.95	A	58.70	9.50	3.80	2.38	49.60	61,000,000	1.40	3,573,800,000	16.00	3.8%	120.54%	
Spire Inc	sr	65.22	0.85	B++	43.24	9.09	4.96	2.60	46.74	51,600,000	1.40	3,206,800,000	14.90	4.3%	111.01%	
ONE Gas Inc	ogs	76.96	0.80	B++	32.05	7.75	3.85	2.32	46.05	53,500,000	1.67	3,683,100,000	19.60	3.4%	105.88%	
UGI Corp	ugi	45.91	1.05	B++	35.49	4.34	2.96	1.35	25.27	209,840,000	1.82	6,416,000,000	12.60	3.7%	107.11%	

Average

Harmonic Mean

Median

17.97

17.17

16.95

Value Line 2/25/2022

			Projected (Next Year) 2022										Longer Term Forecasts		Income Statement	
Payout Ratio	All Div'ds to Net Profits	Rtn on Shrhldrs Equity	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Bk Value Per Share	All Div'ds to Net Profits	Rtn on Shrhldrs Equity	CF Projection 25-27	Earnings Projection 25-27	Earnings Growth 25-27	Dividends Growth 25-27	Operating Income	Current Assets	
Formula	V L	V L	V L	V L	V L	V L	V L	VL	V L	V L	V L	VL	VL	Morningstar	Morningstar	
	49%	49%	8.4%	26.45	9.30	5.50	2.72	64.35	49.0%	8.5%	11.95	7.30	7.5%	7.0%	904,998,000	2,838,715,000
	39%	39%	10.5%	35.15	9.50	4.95	2.00	48.65	40.0%	10.0%	12.55	6.50	8.0%	8.0%	131,112,000	173,135,000
	63%	56%	12.7%	24.65	3.65	2.30	1.45	18.70	63.0%	12.5%	4.20	2.70	4.5%	5.0%	288,350,000	634,274,000
	65%	71%	8.5%	13.50	3.30	1.50	0.94	13.80	68.0%	9.5%	4.45	2.40	10.5%	4.5%	1,014,600,000	1,920,800,000
	77%	77%	7.5%	27.75	6.10	2.70	1.93	36.05	72.0%	7.5%	7.25	3.35	6.0%	0.5%	163,117,000	437,276,000
	74%	76%	10.0%	17.40	2.90	1.75	1.25	16.95	74.0%	10.0%	4.25	2.70	10.0%	3.5%	349,120,000	638,962,000
	63%	64%	7.5%	67.45	10.80	4.50	2.48	52.00	56.0%	8.5%	15.85	6.75	8.0%	5.0%	369,540,000	1,614,767,000
	52%	54%	10.2%	38.95	7.75	3.40	2.74	51.25	90.0%	6.5%	10.90	5.50	9.0%	5.0%	450,200,000	1,316,500,000
	60%	61%	8.5%	34.20	8.20	4.05	2.48	49.50	62.0%	8.0%	10.55	5.30	6.0%	6.5%	310,258,000	2,224,564,000
	46%	45%	11.4%	40.00	5.20	2.90	1.38	27.75	47.0%	10.5%	6.55	3.90	7.0%	3.5%	2,317,000,000	3,270,000,000
	59.2%	9.5%							62.1%	9.2%	8.85					
	56.5%	9.3%							58.9%	8.9%	7.13					
	58.5%	9.3%							62.5%	9.0%	8.90					

Balance Sheet				Cash Flow Statement	Other Financials	
PP & E Gross	Intangibles (excl. GW)	Current Liabilities	Long Term Debt Less Current Maturities	Depreciation & Amortization	Carrying Value Debt	Fair Value Debt
Morningstar	Morningstar	Morningstar	Morningstar	Morningstar	10-K	10-K
18,107,544,000		3,510,355,000	4,911,918,000	477,977,000	7,960,000,000	8,653,665,000
2,172,496,000	19,967,000	376,433,000	549,903,000	72,889,000	568,800,000	523,000,000
5,170,977,000	10,611,000	1,051,410,000	2,162,164,000	111,387,000	2,202,845,000	2,373,791,000
25,171,300,000		2,746,200,000	9,183,400,000	748,400,000	9,241,500,000	10,415,700,000
4,211,287,000		724,765,000	1,044,587,000	113,534,000	986,495,000	1,110,741,000
5,923,308,000		955,682,000	3,189,009,000	211,652,000	3,255,085,000	3,653,868,000
12,820,580,000		3,112,049,000	4,115,684,000	371,041,000	2,440,603,000	2,942,000,000
7,728,200,000		1,608,300,000	2,939,100,000	213,100,000	3,238,000,000	3,594,400,000
7,274,268,000		980,493,000	3,683,378,000	207,233,000	3,683,378,000	3,900,000,000
11,508,000,000	1,190,000,000	2,297,000,000	6,339,000,000	502,000,000	6,580,000,000	7,048,000,000

STOCK PRICE

Washington State Department of Revenue
 2022 Assessment Year
 Natural Gas Distribution

								64.96
								Year End
Atmos Energy Corp ato								
	Date	Open	High	Low	Close	Adj Close*	Volume	104.100
12/31/2021	104.4	105.1	103.6	104.8	104.1	651,600		
Chesapeake Util cpk								
	Date	Open	High	Low	Close	Adj Close*	Volume	145.810
12/31/2021	144.00	146.07	143.97	145.81	145.81	33,500		
New Jersey Resources njr								
	Date	Open	High	Low	Close	Adj Close*	Volume	41.060
12/31/2021	41.05	41.24	40.67	41.06	41.06	286,900		
Nisource Inc ni								
	Date	Open	High	Low	Close	Adj Close*	Volume	27.390
12/31/2021	27.54	27.75	27.47	27.61	27.39	2,686,700		
NW Natural Gas nwn								
	Date	Open	High	Low	Close	Adj Close*	Volume	48.280
12/31/2021	48.7	49	48.41	48.78	48.28	92,500		
South Jersey Industries sji								
	Date	Open	High	Low	Close	Adj Close*	Volume	26.120
12/31/2021	26.11	26.28	25.87	26.12	26.12	467,400		
Southwest Gas Corp swx								
	Date	Open	High	Low	Close	Adj Close*	Volume	69.430
12/31/2021	69.57	70.46	69.29	70.05	69.43	160,600		
Spire Inc sr								
	Date	Open	High	Low	Close	Adj Close*	Volume	64.570
12/31/2021	65.07	65.52	64.81	65.22	64.57	123,800		
UGI Corp ugi								
	Date	Open	High	Low	Close	Adj Close*	Volume	45.910
12/31/2021	45.89	46.11	45.6	45.91	45.91	531,400		
One Gas Inc ogs								
	Date	Open	High	Low	Close	Adj Close*	Volume	76.960
12/31/2021	77.36	78.01	76.96	77.59	76.96	179,800		

Source:
 finance.yahoo.com
 Historical Stock Quotes

Three Stage Free Cash Flow to Equity Discount Model

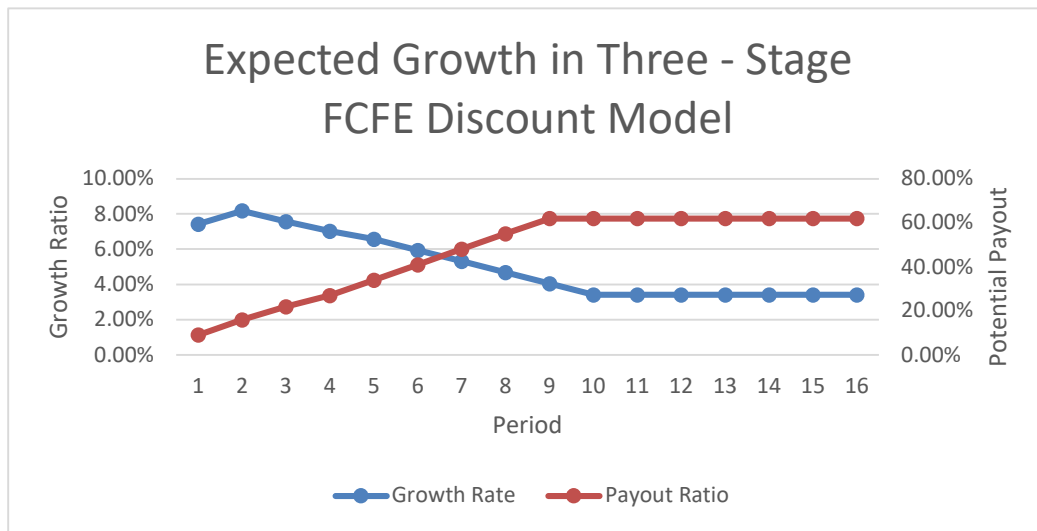
Company **Atmos Energy Corp**

Ticker **ato**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		82.47%	17.53%	5.12			(104.10)
	1	7.42%	90.91%	9.09%	5.50	0.50		0.50
	2	8.18%	84.03%	15.97%	5.95	0.95		0.95
Stage 1	3	7.56%	78.13%	21.88%	6.40	1.40		1.40
	4	7.03%	72.99%	27.01%	6.85	1.85		1.85
	5	6.57%	65.99%	34.01%	7.30	2.48		2.48
	6	5.94%	59.00%	41.00%	7.73	3.17		3.17
	7	5.31%	52.00%	48.00%	8.14	3.91		3.91
Stage 2	8	4.68%	45.00%	55.00%	8.53	4.69		4.69
	9	4.05%	38.00%	62.00%	8.87	5.50		5.50
	10	3.42%	38.00%	62.00%	9.17	5.69	175.52	181.21
Stage 3	11+	3.42%	38.00%	62.00%	9.49	5.88		

$K_e = 7.42\%$



Three Stage Free Cash Flow to Equity Discount Model

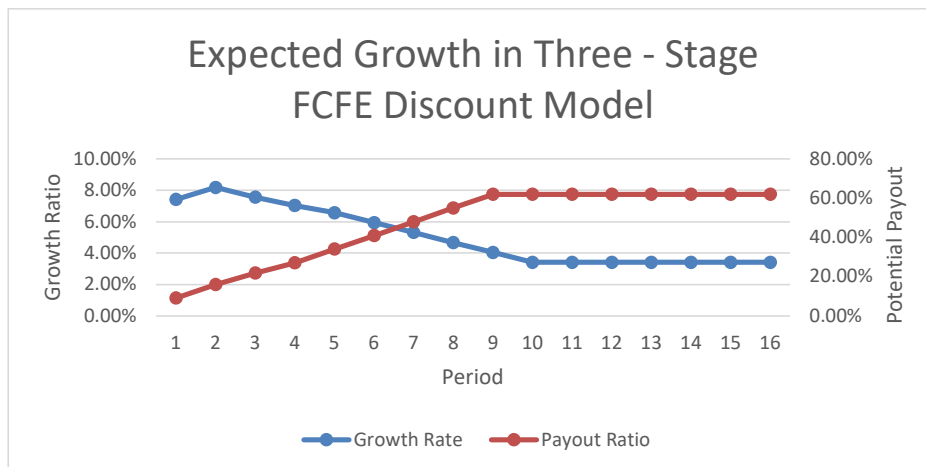
Company **Chesapeake Utilities**

Ticker **cpk**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		59.10%	40.90%	4.70			(145.81)
	1	5.32%	86.98%	13.02%	4.95	0.64		0.64
	2	7.83%	80.67%	19.33%	5.34	1.03		1.03
Stage 1	3	7.26%	75.21%	24.79%	5.73	1.42		1.42
	4	6.77%	70.44%	29.56%	6.11	1.81		1.81
	5	6.34%	63.95%	36.05%	6.50	2.34		2.34
	6	5.76%	57.46%	42.54%	6.87	2.92		2.92
	7	5.17%	50.98%	49.02%	7.23	3.54		3.54
Stage 2	8	4.59%	44.49%	55.51%	7.56	4.20		4.20
	9	4.00%	38.00%	62.00%	7.86	4.88		4.88
	10	3.42%	38.00%	62.00%	8.13	5.04	155.61	160.65
Stage 3	11+	3.42%	38.00%	62.00%	8.41	5.21		

$K_e = 2.44\%$



Three Stage Free Cash Flow to Equity Discount Model

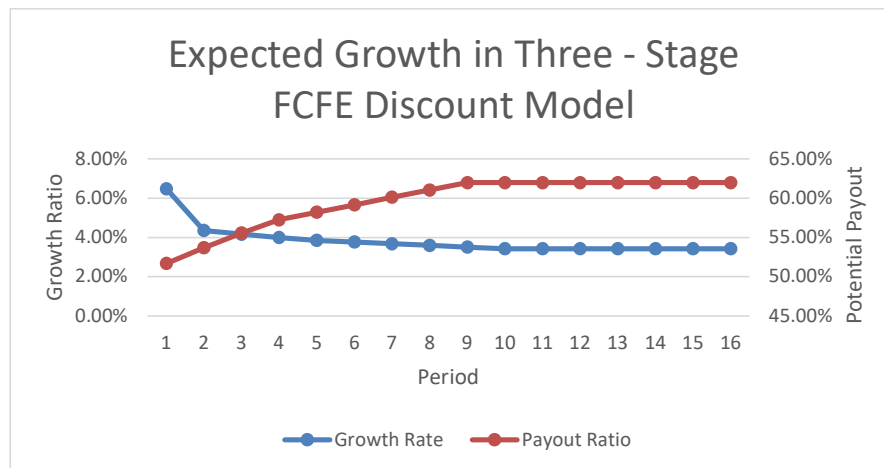
Company **New Jersey Resources**

Ticker **njr**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		72.02%	27.98%	2.16			(41.06)
	1	6.48%	48.31%	51.69%	2.30	1.19		1.19
	2	4.35%	46.30%	53.70%	2.40	1.29		1.29
Stage 1	3	4.17%	44.44%	55.56%	2.50	1.39		1.39
	4	4.00%	42.74%	57.26%	2.60	1.49		1.49
	5	3.85%	41.79%	58.21%	2.70	1.57		1.57
	6	3.76%	40.84%	59.16%	2.80	1.66		1.66
	7	3.68%	39.89%	60.11%	2.90	1.75		1.75
Stage 2	8	3.59%	38.95%	61.05%	3.01	1.84		1.84
	9	3.51%	38.00%	62.00%	3.11	1.93		1.93
	10	3.42%	38.00%	62.00%	3.22	2.00	61.62	63.62
Stage 3	11+	3.42%	38.00%	62.00%	3.33	2.07		

$K_e = 7.36\%$



Three Stage Free Cash Flow to Equity Discount Model

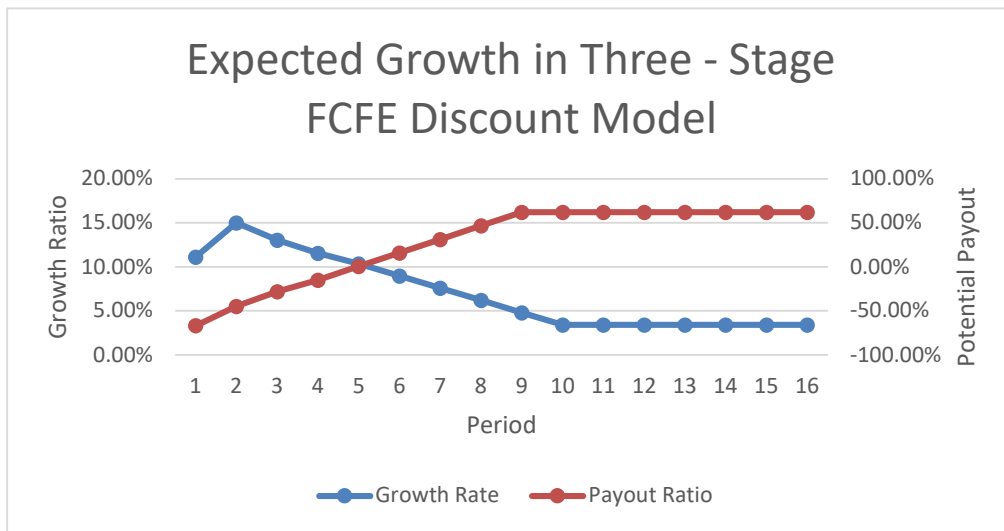
Company **Nisource Inc**

Ticker **ni**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		123.46%	-23.46%	1.35			(27.39)
Stage 1	1	11.11%	166.67%	-66.67%	1.50	(1.00)		-1.00
	2	15.00%	144.93%	-44.93%	1.73	(0.78)		-0.78
	3	13.04%	128.21%	-28.21%	1.95	(0.55)		-0.55
	4	11.54%	114.94%	-14.94%	2.18	(0.32)		-0.32
	5	10.34%	99.55%	0.45%	2.40	0.01		0.01
Stage 2	6	8.96%	84.17%	15.83%	2.62	0.41		0.41
	7	7.57%	68.78%	31.22%	2.81	0.88		0.88
	8	6.19%	53.39%	46.61%	2.99	1.39		1.39
	9	4.80%	38.00%	62.00%	3.13	1.94		1.94
	10	3.42%	38.00%	62.00%	3.24	2.01	61.95	63.96
Stage 3	11+	3.42%	38.00%	62.00%	3.35	2.08		

$K_e = 8.90\%$



Three Stage Free Cash Flow to Equity Discount Model

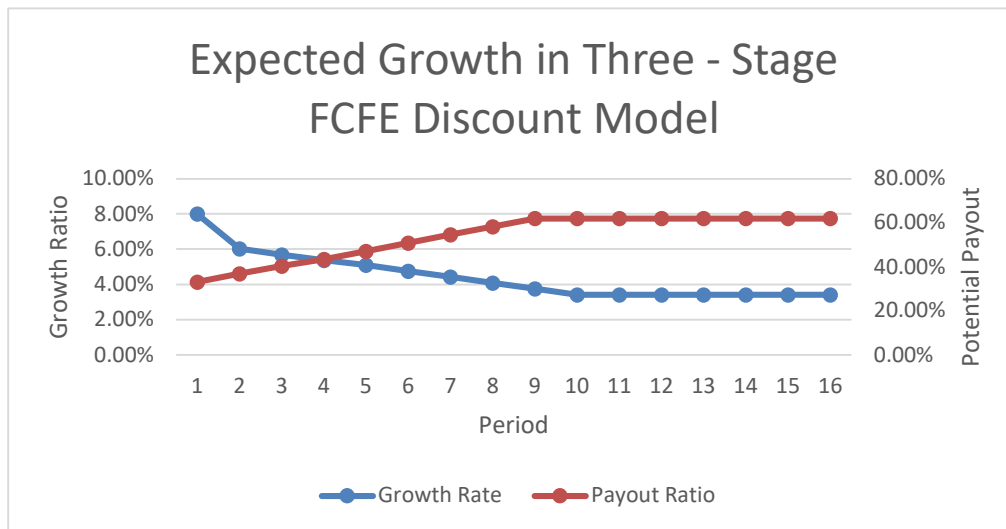
Company **NW Nat'l Gas**

Ticker **nwn**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		88.89%	11.11%	2.50			(48.28)
	1	8.00%	66.87%	33.13%	2.70	0.89		0.89
	2	6.02%	63.08%	36.92%	2.86	1.06		1.06
Stage 1	3	5.68%	59.69%	40.31%	3.03	1.22		1.22
	4	5.37%	56.64%	43.36%	3.19	1.38		1.38
	5	5.10%	52.92%	47.08%	3.35	1.58		1.58
	6	4.76%	49.19%	50.81%	3.51	1.78		1.78
	7	4.43%	45.46%	54.54%	3.66	2.00		2.00
Stage 2	8	4.09%	41.73%	58.27%	3.81	2.22		2.22
	9	3.76%	38.00%	62.00%	3.96	2.45		2.45
	10	3.42%	38.00%	62.00%	4.09	2.54	78.32	80.86
Stage 3	11+	3.42%	38.00%	62.00%	4.23	2.62		

Ke = 7.67%



Three Stage Free Cash Flow to Equity Discount Model

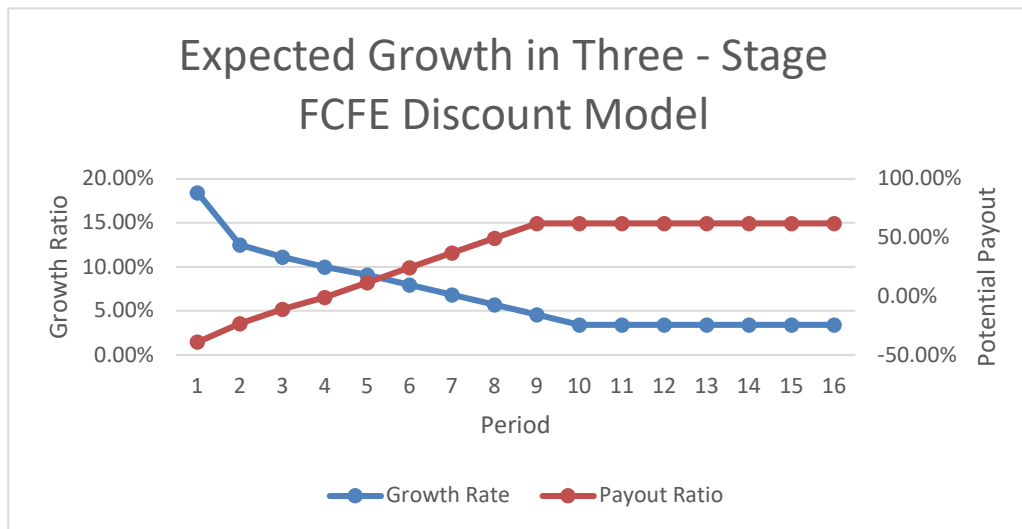
Company **Southwest Gas**

Ticker **SWX**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		204.68%	-104.68%	3.80			(69.43)
	1	18.42%	138.89%	-38.89%	4.50	(1.75)		-1.75
	2	12.50%	123.46%	-23.46%	5.06	(1.19)		-1.19
Stage 1	3	11.11%	111.11%	-11.11%	5.63	(0.63)		-0.63
	4	10.00%	101.01%	-1.01%	6.19	(0.06)		-0.06
	5	9.09%	88.41%	11.59%	6.75	0.78		0.78
	6	7.96%	75.81%	24.19%	7.29	1.76		1.76
	7	6.82%	63.20%	36.80%	7.78	2.86		2.86
Stage 2	8	5.69%	50.60%	49.40%	8.23	4.06		4.06
	9	4.55%	38.00%	62.00%	8.60	5.33		5.33
	10	3.42%	38.00%	62.00%	8.90	5.52	170.20	175.72
Stage 3	11+	3.42%	38.00%	62.00%	9.20	5.70		

$K_e = 10.36\%$



Three Stage Free Cash Flow to Equity Discount Model

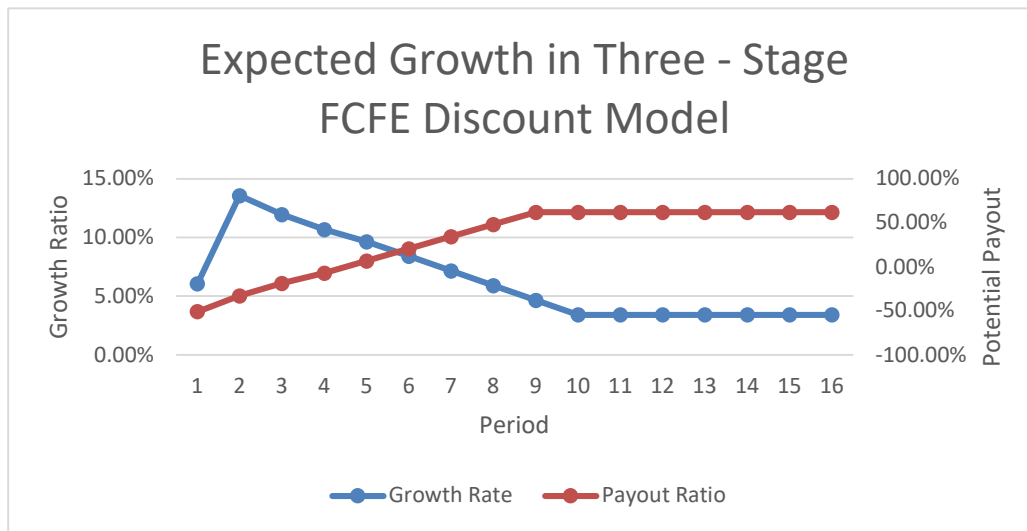
Company **South Jersey Industries**

Ticker **sjj**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		67.34%	32.66%	1.65			(26.12)
	1	6.06%	150.79%	-50.79%	1.75	(0.89)		-0.89
	2	13.57%	132.77%	-32.77%	1.99	(0.65)		-0.65
Stage 1	3	11.95%	118.60%	-18.60%	2.23	(0.41)		-0.41
	4	10.67%	107.16%	-7.16%	2.46	(0.18)		-0.18
	5	9.64%	93.33%	6.67%	2.70	0.18		0.18
	6	8.40%	79.50%	20.50%	2.93	0.60		0.60
	7	7.15%	65.67%	34.33%	3.14	1.08		1.08
Stage 2	8	5.91%	51.83%	48.17%	3.32	1.60		1.60
	9	4.66%	38.00%	62.00%	3.48	2.16		2.16
	10	3.42%	38.00%	62.00%	3.60	2.23	68.79	71.02
Stage 3	11+	3.42%	38.00%	62.00%	3.72	2.31		

$K_e = 10.85\%$



Three Stage Free Cash Flow to Equity Discount Model

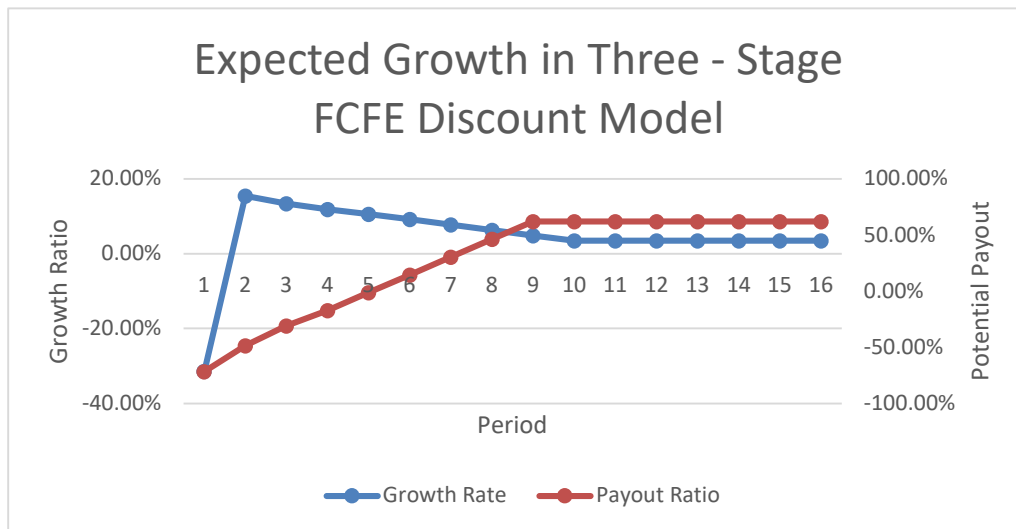
Company **Spire Inc**

Ticker **sr**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-349.46%	449.46%	4.96			(65.22)
	1	-31.45%	171.57%	-71.57%	3.40	####		-2.43
	2	15.44%	148.62%	-48.62%	3.93	####		-1.91
Stage 1	3	13.38%	131.09%	-31.09%	4.45	####		-1.38
	4	11.80%	117.25%	-17.25%	4.98	####		-0.86
	5	10.55%	101.40%	-1.40%	5.50	####		-0.08
	6	9.13%	85.55%	14.45%	6.00	0.87		0.87
	7	7.70%	69.70%	30.30%	6.46	1.96		1.96
Stage 2	8	6.27%	53.85%	46.15%	6.87	3.17		3.17
	9	4.85%	38.00%	62.00%	7.20	4.47		4.47
	10	3.42%	38.00%	62.00%	7.45	4.62	142.52	147.13
Stage 3	11+	3.42%	38.00%	62.00%	7.70	4.78		

$K_e = 8.45\%$



Three Stage Free Cash Flow to Equity Discount Model

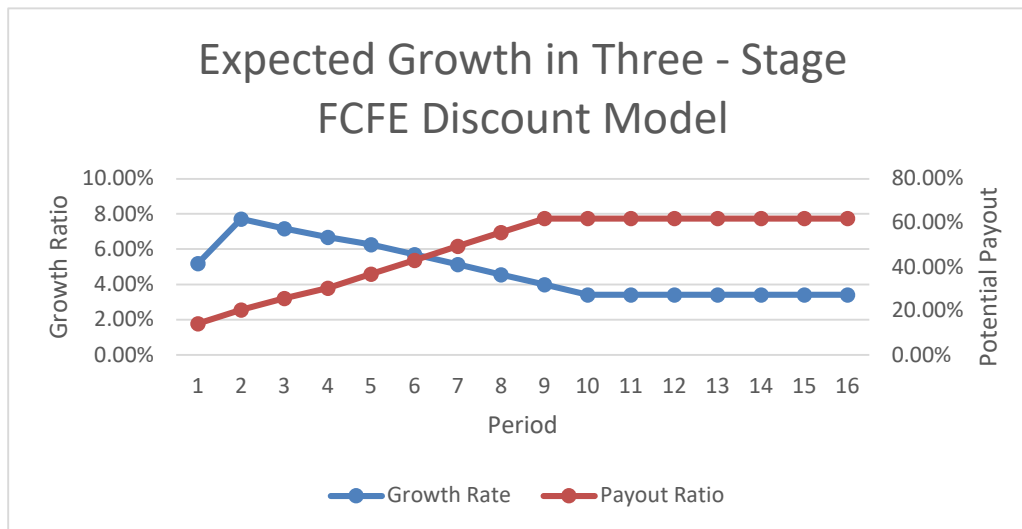
Company **ONE Gas Inc**

Ticker **ogs**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		57.72%	42.28%	3.85			(76.96)
	1	5.19%	85.73%	14.27%	4.05	0.58		0.58
	2	7.72%	79.59%	20.41%	4.36	0.89		0.89
Stage 1	3	7.16%	74.27%	25.73%	4.68	1.20		1.20
	4	6.68%	69.62%	30.38%	4.99	1.52		1.52
	5	6.27%	63.29%	36.71%	5.30	1.95		1.95
	6	5.70%	56.97%	43.03%	5.60	2.41		2.41
	7	5.13%	50.65%	49.35%	5.89	2.91		2.91
Stage 2	8	4.56%	44.32%	55.68%	6.16	3.43		3.43
	9	3.99%	38.00%	62.00%	6.40	3.97		3.97
	10	3.42%	38.00%	62.00%	6.62	4.11	126.70	130.81
Stage 3	11+	3.42%	38.00%	62.00%	6.85	4.25		

$K_e = 7.29\%$



Three Stage Free Cash Flow to Equity Discount Model

Company **UGI Corp**

Ticker **ugi**

4.14% GDP
 18.5 Industry P/E
 62.0% Target Dividend Payout Ratio
 9.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-22.52%	122.52%	2.96			(45.91)
	1	-2.03%	95.79%	4.21%	2.90	0.12		0.12
	2	8.62%	88.18%	11.82%	3.15	0.37		0.37
Stage 1	3	7.94%	81.70%	18.30%	3.40	0.62		0.62
	4	7.35%	76.10%	23.90%	3.65	0.87		0.87
	5	6.85%	68.48%	31.52%	3.90	1.23		1.23
	6	6.16%	60.86%	39.14%	4.14	1.62		1.62
	7	5.48%	53.24%	46.76%	4.37	2.04		2.04
Stage 2	8	4.79%	45.62%	54.38%	4.58	2.49		2.49
	9	4.11%	38.00%	62.00%	4.76	2.95		2.95
	10	3.42%	38.00%	62.00%	4.93	3.05	94.27	97.33
Stage 3	11+	3.42%	38.00%	62.00%	5.10	3.16		

$K_e = 9.54%$

