

# COST OF CAPITAL STUDY

**YIELD CAPITALIZATION**

**2023 Assessment Year**

APPENDIX C

## Electric Industry

<b>EQUITY RATE</b>						<b>8.75%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>							PAGE
	CAPM Ex Ante		8.94%				4
<b>DIVIDEND GROWTH MODELS Single Stage</b>							
	Value Line, based on Dividends Growth		8.75%				6
	Value Line, based on Earnings Growth		8.70%				7
	Value Line, based on Return on Equity		7.50%				8
<b>FCFE GROWTH MODEL Multi Stage</b>							9
			7.25%				
				<b>RANGE</b>	7.25% - 8.9425%		
<b>DEBT RATE</b>						<b>5.75%</b>	10
<b>MARKET CAPITAL STRUCTURE</b>							
	Equity	60%	x	8.75%	=	5.25%	3
	Debt	40%	x	5.75%	=	2.30%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	2.30%	<u>1.75%</u>
<b>WEIGHTED AVERAGE COST OF CAPITAL</b>						<b>7.00%</b>	

# SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

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
Alliant Energy Corp	Int	0.85	A	21.0	3.1%	6,287,550,000	41.1%	400,000,000	2.6%	8,611,000,000	56.3%	15,298,550,000
Ameren Corp	ae	0.85	A	22.0	2.7%	10,552,500,000	43.5%	142,000,000	0.6%	13,577,000,000	55.9%	24,271,500,000
Avangrid Inc	agr	0.85	B++	17.8	4.1%	19,330,000,000	71.3%			7,764,000,000	28.7%	27,094,000,000
Avista Corp	ava	0.90	B++	24.2	4.0%	2,302,050,000	50.2%			2,281,800,000	49.8%	4,583,850,000
Black Hills	bkh	0.95	A	18.0	3.5%	2,926,000,000	41.5%			4,131,000,000	58.5%	7,057,000,000
CMS Energy Corp	cms	0.80	A	22.9	2.9%	7,032,500,000	35.2%	37,000,000	0.2%	12,909,000,000	64.6%	19,978,500,000
CenterPoint Energy Inc	cnp	1.10	B++	27.3	2.4%	9,292,500,000	36.7%	1,778,000,000	7.0%	14,225,000,000	56.2%	25,295,500,000
Consolidated Edison	ed	0.80	A+	20.1	3.3%	20,732,000,000	48.1%			22,350,000,000	51.9%	43,082,000,000
Dominion Energy	D	0.80	B++	15.8	4.4%	27,095,750,000	39.5%	1,596,000,000	2.3%	39,945,000,000	58.2%	68,636,750,000
DTE Energy Co	dte	0.95	A	20.0	3.1%	10,362,750,000	37.3%			17,442,000,000	62.7%	27,804,750,000
Duke Energy Corp	duk	0.85	A	19.7	3.9%	48,317,500,000	41.2%	973,000,000	0.8%	68,022,000,000	58.0%	117,312,500,000
Entergy Corp	etr	0.95	B++	18.1	3.7%	12,360,000,000	33.0%	254,400,000	0.7%	24,889,400,000	66.4%	37,503,800,000
Eversource Energy	es	0.90	A	19.9	3.1%	15,394,860,000	42.8%	155,600,000	0.4%	20,397,600,000	56.7%	35,948,060,000
FirstEnergy Corp	fe	0.85	B+	17.0	3.8%	9,009,000,000	29.4%	707,000,000	2.3%	20,905,000,000	68.3%	30,621,000,000
Idacorp Inc	ida	0.80	A+	21.9	2.8%	2,813,850,000	57.6%			2,071,400,000	42.4%	4,885,250,000
NorthWestern Corp	nwe	0.90	B++	18.9	4.2%	2,586,800,000	51.7%			2,418,600,000	48.3%	5,005,400,000
OGE Energy Corp	oge	1.00	A	17.5	4.2%	4,254,250,000	54.5%			3,548,000,000	45.5%	7,802,250,000
Otter Tail Corp	ottr	0.85	A	8.2	2.8%	1,150,212,500	58.3%			823,800,000	41.7%	1,974,012,500
PNM Resources Inc	pnm	0.90	B++	17.9	2.9%	2,376,000,000	37.8%	11,500,000	0.2%	3,905,000,000	62.1%	6,292,500,000
Portland General Electric	por	0.85	B++	17.9	3.7%	2,799,555,000	43.9%			3,582,000,000	56.1%	6,381,555,000
Public Service Enterprise G	peg	0.90	A++	17.4	3.6%	13,273,400,000	45.1%			16,150,000,000	54.9%	29,423,400,000
Sempra Energy	sre	0.95	A	17.4	3.0%	26,255,250,000	49.3%	2,278,000,000	4.3%	24,719,000,000	46.4%	53,252,250,000
WEC Energy Group Inc	wec	0.80	A+	22.3	3.1%	11,323,937,000	43.1%	30,400,000	0.1%	14,941,100,000	56.8%	26,295,437,000
Xcel Energy Inc	xel	0.80	A+	23.5	2.8%	16,507,125,000	41.5%			23,309,000,000	58.5%	39,816,125,000
<b>Mean</b>		<b>0.88</b>		<b>19.4</b>	<b>3.4%</b>	<b>11,847,305,813</b>	<b>44.7%</b>		<b>1.8%</b>	<b>15,538,237,500</b>	<b>54.4%</b>	
<b>Harmonic Mean</b>		<b>0.88</b>					<b>43.1%</b>		<b>0.4%</b>		<b>52.6%</b>	
<b>Weighted Mean</b>						<b>284,335,339,500</b>	<b>42.7%</b>	<b>8,362,900,000</b>	<b>1.3%</b>	<b>372,917,700,000</b>	<b>56.0%</b>	<b>665,615,939,500</b>
<b>Median</b>		<b>0.85</b>			<b>3.2%</b>		<b>42.9%</b>		<b>0.8%</b>		<b>56.3%</b>	

# SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Alliant Energy Corp	Int	54.75	251,000,000	13,742,250,000	64.0%	400,000,000	1.9%	7,339,000,000	34.2%	21,481,250,000
Ameren Corp	ae	88.92	262,500,000	23,341,500,000	65.0%	142,000,000	0.4%	12,453,000,000	34.7%	35,936,500,000
Avangrid Inc	agr	42.51	386,600,000	16,434,366,000	67.3%	-	-	7,991,000,000	32.7%	24,425,366,000
Avista Corp	ava	43.83	74,500,000	3,265,335,000	62.8%	-	-	1,932,897,000	37.2%	5,198,232,000
Black Hills	bkh	69.65	66,500,000	4,631,725,000	55.2%	-	-	3,760,848,000	44.8%	8,392,573,000
CMS Energy Corp	cms	62.82	290,000,000	18,217,800,000	59.5%	37,000,000	0.1%	12,384,000,000	40.4%	30,638,800,000
CenterPoint Energy	cnp	29.80	630,000,000	18,774,000,000	52.8%	1,778,000,000	5.0%	14,990,000,000	42.2%	35,542,000,000
Consolidated Edison	ed	94.48	355,000,000	33,540,400,000	64.8%	-	-	18,234,000,000	35.2%	51,774,400,000
Dominion Energy	D	60.57	835,000,000	50,575,950,000	57.1%	1,596,000,000	1.8%	36,426,000,000	41.1%	88,597,950,000
DTE Energy Co	dte	117.53	205,000,000	24,093,650,000	60.1%	-	-	15,993,000,000	39.9%	40,086,650,000
Duke Energy Corp	duk	101.95	770,000,000	78,501,500,000	54.9%	973,000,000	0.7%	63,454,000,000	44.4%	142,928,500,000
Entergy Corp	etr	111.36	206,000,000	22,940,160,000	50.1%	254,400,000	0.6%	22,573,837,000	49.3%	45,768,397,000
Eversource Energy	es	83.09	348,300,000	28,940,247,000	60.3%	155,600,000	0.3%	18,891,300,000	39.4%	47,987,147,000
FirstEnergy Corp	fe	41.53	572,000,000	23,755,160,000	53.7%	707,000,000	1.6%	19,784,000,000	44.7%	44,246,160,000
Idacorp Inc	ida	107.07	50,700,000	5,428,449,000	73.5%	-	-	1,953,470,000	26.5%	7,381,919,000
NorthWestern Corp	nwe	59.34	58,000,000	3,441,720,000	59.8%	-	-	2,316,700,000	40.2%	5,758,420,000
OGE Energy Corp	oge	39.13	200,200,000	7,833,826,000	69.3%	-	-	3,477,100,000	30.7%	11,310,926,000
Otter Tail Corp	ottr	58.31	41,750,000	2,434,442,500	78.1%	-	-	681,615,000	21.9%	3,116,057,500
PNM Resources Inc	pnm	48.43	88,000,000	4,261,840,000	70.3%	11,500,000	0.2%	1,789,186,000	29.5%	6,062,526,000
Portland General Ele	por	49.00	89,300,000	4,375,700,000	57.4%	-	-	3,245,000,000	42.6%	7,620,700,000
Public Service Enter	peg	60.68	499,000,000	30,279,320,000	65.2%	-	-	16,164,000,000	34.8%	46,443,320,000
Sempra Energy	sre	154.54	315,000,000	48,680,100,000	67.1%	2,278,000,000	3.1%	21,549,000,000	29.7%	72,507,100,000
WEC Energy Group	wec	92.98	315,430,000	29,328,681,400	67.8%	30,400,000	0.1%	13,921,300,000	32.2%	43,280,381,400
Xcel Energy Inc	xel	70.11	547,500,000	38,385,225,000	64.7%	-	-	20,897,000,000	35.3%	59,282,225,000
<b>Mean</b>					<b>62.5%</b>		<b>1.3%</b>		<b>36.8%</b>	
<b>Harmonic Mean</b>					<b>61.8%</b>		<b>0.3%</b>		<b>35.6%</b>	
<b>Weighted Mean</b>				<b>535,203,346,900</b>	<b>60.4%</b>	<b>8,362,900,000</b>	<b>0.9%</b>	<b>342,201,253,000</b>	<b>38.6%</b>	<b>885,767,499,900</b>
<b>Median</b>					<b>63.4%</b>		<b>0.6%</b>		<b>36.2%</b>	
<b>Std Dev</b>					<b>6.9%</b>		<b>1.5%</b>		<b>6.6%</b>	
<b>Coefficient of Variation</b>					<b>11.0%</b>		<b>114.0%</b>		<b>17.8%</b>	
<b>Target</b>					<b>60%</b>				<b>40%</b>	<b>100%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2023 Assessment Year

## Ex Ante

$$K_e = R_f + B (R_p)$$

<b>Ke = Cost of Equity</b>	<b>8.94%</b>
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Rm =	rate of return	9.82%
Rf =	risk free rate	3.97%
Rp =	risk premium	5.85%
B =	Beta	0.85

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<b>Rp = Risk Premium</b>	<b>5.85%</b>
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to above

<b>Shannon Pratt and Roger Grabowski</b>	3.50% - 6.00%	
Cost of Capital, App and Exam, 5th Ed, 2014		
<b>Dr. Aswath Damodaran</b>	5.94%	chart page 15
<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a>	5.85%	adjusted for Rf
2022 Implied Premium		

<b>Rf = Risk Free Rate</b>	<b>3.97%</b>
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### Value Line Investment Survey, Selected Yields January 6, 2023, page 1465 as of 12-27-22

US Treasury Securities year end data	
5 year	3.94%
10 year	3.84%
30 year	3.93%
30 year Zero	3.81%

### Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>) As of 12-30-22

Treasury Constant Maturities	
5 year	3.99%
10 year	3.88%
20 year	4.14%
30 year	3.97%
20 year TIPS	1.62%
30 year TIPS	1.67%

<b>Inflation</b>	<b>2.30%</b>
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### Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>) As of 12-30-22

Inflation Indication from Treasury Inflation-Protected Securities	
20 year	2.52%
30 year	2.30%

### Federal Reserve Bank of Philadelphia

The Livingston Survey December 16, 2022, page 8	
Inflation median (measured by the CPI) over next 10 years	2.50%
<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>	

<b>Gross Domestic Product (GDP) Nominal</b>	<b>4.10%</b>
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real GDP + inflation est

### Federal Reserve Projected Long Run Real GDP Growth

Median Projection Value From Dec 14, 2022 Report	1.80%
<a href="https://www.federalreserve.gov/monetarypolicy/files/fomcproptabl20221214.pdf">https://www.federalreserve.gov/monetarypolicy/files/fomcproptabl20221214.pdf</a>	

### Congressional Budget Office Real GDP Economic Projections

The Budget and Economic Outlook 2023-2033		Table 2.3, pg 49
Average Percentage Change Year To Year	2023-2027	1.80%
<a href="https://www.cbo.gov/system/files/2023-02/58848-">https://www.cbo.gov/system/files/2023-02/58848-</a>	2028-2033	1.80%

### Federal Reserve Bank of Philadelphia

The Livingston Survey, December 16, 2022, page 8	1.97%
Average Annual Real GDP Growth Rate for Next 10 Years	
<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>	

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue  
2023 Assessment Year  
Electric Industry

### Based on Dividend 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 Dividend (D1)	Dividend Yield (D1/Po)	Dividend Growth (G)	Ke with Short Term Growth
Alliant Energy Corp	Int	54.75	1.81	3.31%	6.00%	9.31%
Ameren Corp	aee	88.92	2.52	2.83%	7.00%	9.83%
Avangrid Inc	agr	42.51	1.76	4.14%	1.50%	5.64%
Avista Corp	ava	43.83	1.83	4.18%	4.00%	8.18%
Black Hills	bkh	69.65	2.53	3.63%	5.50%	9.13%
CMS Energy Corp	cms	62.82	1.94	3.09%	6.00%	9.09%
CenterPoint Energy Inc	cnp	29.80	0.77	2.58%	2.50%	5.08%
Consolidated Edison	ed	94.48	3.24	3.43%	3.00%	6.43%
Dominion Energy	D	60.57	2.75	4.54%	0.50%	5.04%
DTE Energy Co	dte	117.53	3.84	3.27%	4.50%	7.77%
Duke Energy Corp	duk	101.95	4.06	3.98%	2.00%	5.98%
Entergy Corp	etr	111.36	4.30	3.86%	5.00%	8.86%
Eversource Energy	es	83.09	2.71	3.26%	6.50%	9.76%
FirstEnergy Corp	fe	41.53	1.56	3.76%	3.00%	6.76%
Idacorp Inc	ida	107.07	3.25	3.04%	6.50%	9.54%
NorthWestern Corp	nwe	59.34	2.56	4.31%	2.00%	6.31%
OGE Energy Corp	oge	39.13	1.70	4.34%	3.00%	7.34%
Otter Tail Corp	ottr	58.31	1.76	3.02%	7.00%	10.02%
PNM Resources Inc	pnm	48.43	1.49	3.08%	6.00%	9.08%
Portland General Electric	por	49.00	1.88	3.84%	6.00%	9.84%
Public Service Enterprise Group	peg	60.68	2.28	3.76%	5.00%	8.76%
Sempra Energy	sre	154.54	4.80	3.11%	6.00%	9.11%
WEC Energy Group Inc	wec	92.98	3.11	3.34%	7.00%	10.34%
Xcel Energy Inc	xel	70.11	2.07	2.95%	6.50%	9.45%
<b>Mean</b>						<b>8.19%</b>
<b>Harmonic Mean</b>						<b>7.80%</b>
<b>Median</b>						<b>8.97%</b>
<b>Max</b>						<b>10.34%</b>
<b>Min</b>						<b>5.04%</b>
<b>Std Dev</b>						<b>1.68%</b>
<b>Coefficient of Variation</b>						
<b>Say</b>						<b>8.75%</b>

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

### 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 Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Ke with Short Term Growth
Alliant Energy Corp	Int	54.75	1.81	3.31%	6.00%	9.31%
Ameren Corp	aee	88.92	2.52	2.83%	6.50%	9.33%
Avangrid Inc	agr	42.51	1.76	4.14%	4.00%	8.14%
Avista Corp	ava	43.83	1.83	4.18%	3.50%	7.68%
Black Hills	bkh	69.65	2.53	3.63%	6.00%	9.63%
CMS Energy Corp	cms	62.82	1.94	3.09%	6.50%	9.59%
CenterPoint Energy	cnp	29.80	0.77	2.58%	6.50%	9.08%
Consolidated Edison	ed	94.48	3.24	3.43%	4.50%	7.93%
Dominion Energy	D	60.57	2.75	4.54%	4.00%	8.54%
DTE Energy Co	dte	117.53	3.84	3.27%	4.50%	7.77%
Duke Energy Corp	duk	101.95	4.06	3.98%	5.00%	8.98%
Entergy Corp	etr	111.36	4.30	3.86%	4.00%	7.86%
Eversource Energy	es	83.09	2.71	3.26%	6.50%	9.76%
FirstEnergy Corp	fe	41.53	1.56	3.76%	3.00%	6.76%
Idacorp Inc	ida	107.07	3.25	3.04%	4.50%	7.54%
NorthWestern Corp	nwe	59.34	2.56	4.31%	3.50%	7.81%
OGE Energy Corp	oge	39.13	1.70	4.34%	6.50%	10.84%
Otter Tail Corp	ottr	58.31	1.76	3.02%	4.50%	7.52%
PNM Resources Inc	pnm	48.43	1.49	3.08%	5.00%	8.08%
Portland General El	por	49.00	1.88	3.84%	5.00%	8.84%
Public Service Enter	peg	60.68	2.28	3.76%	4.50%	8.26%
Sempra Energy	sre	154.54	4.80	3.11%	7.50%	10.61%
WEC Energy Group	wec	92.98	3.11	3.34%	6.00%	9.34%
Xcel Energy Inc	xel	70.11	2.07	2.95%	6.00%	8.95%
<b>Mean</b>						<b>8.67%</b>
<b>Harmonic Mean</b>						<b>8.56%</b>
<b>Median</b>						<b>8.69%</b>
<b>Max</b>						<b>10.84%</b>
<b>Min</b>						<b>6.76%</b>
<b>Std Dev</b>						<b>1.02%</b>
<b>Coefficient of Variation</b>						<b>11.77%</b>
<b>Say</b>						<b>8.70%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

## DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

**Based on Return on Equity**  $K_e = (D1 / P_o) + G$

**$K_e$**  = Cost of Equity

**D1** = Expected Dividends

**E1** = Expected Earnings

**P<sub>o</sub>** = Current Price

**G** = Sustainable Growth

**b** = Retained Earnings % = (1 - Payout Ratio)

**ROE** = Return on Equity = (E1 / P<sub>o</sub>)

Company	Ticker	Stock Price (P <sub>o</sub> )	Expected Dividend (D1)	Expected Earnings (E1)	Dividend Yield (D1/P <sub>o</sub> )	Retained Earnings (b)	ROE (E1/P <sub>o</sub> )	Growth (b*ROE)	$K_e$ Dividends	$K_e$ Earnings
Alliant Energy Corp	Int	54.75	1.81	2.95	3.31%	39.0%	5.39%	2.10%	5.41%	7.49%
Ameren Corp	aee	88.92	2.52	4.35	2.83%	42.0%	4.89%	2.05%	4.89%	6.95%
Avangrid Inc	agr	42.51	1.76	2.25	4.14%	25.0%	5.29%	1.32%	5.46%	6.62%
Avista Corp	ava	43.83	1.83	2.35	4.18%	7.0%	5.36%	0.38%	4.55%	5.74%
Black Hills	bkh	69.65	2.53	4.20	3.63%	40.0%	6.03%	2.41%	6.04%	8.44%
CMS Energy Corp	cms	62.82	1.94	3.10	3.09%	36.0%	4.93%	1.78%	4.86%	6.71%
CenterPoint Energy Inc	cnp	29.80	0.77	1.50	2.58%	48.0%	5.03%	2.42%	5.00%	7.45%
Consolidated Edison	ed	94.48	3.24	4.80	3.43%	31.0%	5.08%	1.57%	5.00%	6.66%
Dominion Energy	D	60.57	2.75	4.20	4.54%	34.0%	6.93%	2.36%	6.90%	9.29%
DTE Energy Co	dte	117.53	3.84	6.20	3.27%	24.0%	5.28%	1.27%	4.53%	6.54%
Duke Energy Corp	duk	101.95	4.06	5.75	3.98%	24.0%	5.64%	1.35%	5.34%	6.99%
Entergy Corp	etr	111.36	4.30	6.80	3.86%	38.0%	6.11%	2.32%	6.18%	8.43%
Eversource Energy	es	83.09	2.71	4.40	3.26%	38.0%	5.30%	2.01%	5.27%	7.31%
FirstEnergy Corp	fe	41.53	1.56	2.55	3.76%	37.0%	6.14%	2.27%	6.03%	8.41%
Idacorp Inc	ida	107.07	3.25	5.20	3.04%	40.0%	4.86%	1.94%	4.98%	6.80%
NorthWestern Corp	nwe	59.34	2.56	3.55	4.31%	25.0%	5.98%	1.50%	5.81%	7.48%
OGE Energy Corp	oge	39.13	1.70	2.10	4.34%	27.0%	5.37%	1.45%	5.79%	6.82%
Otter Tail Corp	ottr	58.31	1.76	4.75	3.02%	69.0%	8.15%	5.62%	8.64%	13.77%
PNM Resources Inc	pnm	48.43	1.49	2.70	3.08%	47.0%	5.58%	2.62%	5.70%	8.20%
Portland General Electric	por	49.00	1.88	2.95	3.84%	36.0%	6.02%	2.17%	6.00%	8.19%
Public Service Enterprise Group	peg	60.68	2.28	3.50	3.76%	38.0%	5.77%	2.19%	5.95%	7.96%
Sempra Energy	sre	154.54	4.80	9.30	3.11%	NMF	6.02%	NMF	NMF	NMF
WEC Energy Group Inc	wec	92.98	3.11	4.70	3.34%	34.0%	5.05%	1.72%	5.06%	6.77%
Xcel Energy Inc	xel	70.11	2.07	3.35	2.95%	38.0%	4.78%	1.82%	4.77%	6.59%
<b>Mean</b>									<b>5.57%</b>	<b>7.63%</b>
<b>Harmonic Mean</b>									<b>5.46%</b>	<b>7.41%</b>
<b>Median</b>									<b>5.41%</b>	<b>7.31%</b>
<b>Std Dev</b>									<b>0.89%</b>	<b>1.58%</b>
<b>Coefficient of Variation</b>									<b>16.05%</b>	<b>20.69%</b>

say **7.50%**

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

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
Alliant Energy Corp	Int	54.75	2.95	18.56	61.00%	11.50%	6.99%
Ameren Corp	aee	88.92	4.35	20.44	58.00%	10.00%	5.96%
Avangrid Inc	agr	42.51	2.25	18.89	78.00%	4.50%	5.99%
Avista Corp	ava	43.83	2.35	18.65	78.00%	7.50%	7.09%
Black Hills	bkh	69.65	4.20	16.58	60.00%	8.00%	8.72%
CMS Energy Corp	cms	62.82	3.10	20.26	63.00%	12.00%	6.08%
CenterPoint Energy	cnp	29.80	1.50	19.87	53.00%	9.50%	6.25%
Consolidated Edison	ed	94.48	4.80	19.68	68.00%	8.00%	6.48%
Dominion Energy	D	60.57	4.20	14.42	66.00%	11.50%	10.28%
DTE Energy Co	dte	117.53	6.20	18.96	60.00%	11.50%	6.87%
Duke Energy Corp	duk	101.95	5.75	17.73	73.00%	9.00%	7.53%
Entergy Corp	etr	111.36	6.80	16.38	64.00%	10.50%	8.87%
Eversource Energy	es	83.09	4.40	18.88	62.00%	9.50%	7.29%
FirstEnergy Corp	fe	41.53	2.55	16.29	61.00%	15.00%	8.76%
Idacorp Inc	ida	107.07	5.20	20.59	63.00%	9.00%	5.65%
NorthWestern Corp	nwe	59.34	3.55	16.72	72.00%	7.50%	7.93%
OGE Energy Corp	oge	39.13	2.10	18.63	81.00%	12.00%	8.77%
Otter Tail Corp	ottr	58.31	4.75	12.28	44.00%	13.50%	10.28%
PNM Resources Inc	pnm	48.43	2.70	17.94	55.00%	9.50%	7.18%
Portland General El	por	49.00	2.95	16.61	64.00%	8.50%	8.36%
Public Service Enter	peg	60.68	3.50	17.34	65.00%	12.50%	8.37%
Sempra Energy	sre	154.54	9.30	16.62	52.00%	10.50%	8.48%
WEC Energy Group	wec	92.98	4.70	19.78	66.00%	12.50%	6.11%
Xcel Energy Inc	xel	70.11	3.35	20.93	62.00%	10.50%	5.59%
<b>Mean</b>				<b>18.04</b>	<b>63.71%</b>	<b>10.17%</b>	<b>7.49%</b>
<b>Harmonic Mean</b>				<b>17.78</b>	<b>62.57%</b>	<b>9.57%</b>	<b>7.26%</b>
<b>Median</b>				<b>18.60</b>	<b>63.00%</b>	<b>10.25%</b>	<b>7.23%</b>
<b>Industry Summary</b>				<b>18.00</b>	<b>63.00%</b>	<b>10.00%</b>	

**Say 7.25%**



## SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
Alliant Energy Corp	Int	Baa2	A-
Ameren Corp	aee	Baa1	BBB+
Avangrid Inc	agr	Baa2	BBB+
Avista Corp	ava	Baa2	BBB
Black Hills	bkh	Baa2	BBB+
CMS Energy Corp	cms	Baa2	BBB+
CenterPoint Energy Inc	cnp	A3	BBB+
Consolidated Edison	ed	Baa1	A-
Dominion Energy	D	Baa2	BBB+
DTE Energy Co	dte	Baa2	BBB+
Duke Energy Corp	duk	Baa2	BBB+
Entergy Corp	etr	Baa2	BBB+
Eversource Energy	es	Baa1	A-
FirstEnergy Corp	fe	Ba1	BBB-
Idacorp Inc	ida	Baa1	BBB
NorthWestern Corp	nwe	Baa2	BBB
OGE Energy Corp	oge	Baa1	BBB+
Otter Tail Corp	ottr	Baa2	BBB
PNM Resources Inc	pnm	Baa3	BBB
Portland General Electric	por	A3	BBB+
Public Service Enterprise Group	peg	Baa2	BBB+
Sempra Energy	sre	Baa2	BBB+
WEC Energy Group Inc	wec	Baa1	A-
Xcel Energy Inc	xel	Baa1	A-
<b>Overall Average Debt Rating</b>		<b>Baa2</b>	<b>BBB+</b>

### Mergent's Bond Record January 2023, page 81

Corporate	Aaa	Aa	A	Baa
October	5.10%	5.40%	5.74%	6.26%
November	4.90%	5.23%	5.58%	6.07%
December	4.43%	4.77%	5.12%	5.59%
<b>4th Qtr Average</b>	<b>4.81%</b>	<b>5.13%</b>	<b>5.48%</b>	<b>5.97%</b>

Public Utilities	Aaa	Aa	A	Baa
October		5.68%	5.88%	6.18%
November		5.54%	5.75%	6.05%
December		5.06%	5.28%	5.57%
<b>4th Qtr Average</b>		<b>5.43%</b>	<b>5.64%</b>	<b>5.93%</b>

Industrials	Aaa	Aa	A	Baa
October	5.10%	5.11%	5.59%	6.33%
November	4.90%	4.92%	5.40%	6.08%
December	4.43%	4.48%	4.94%	5.61%
<b>4th Qtr Average</b>	<b>4.81%</b>	<b>4.84%</b>	<b>5.31%</b>	<b>6.01%</b>

Bloomberg S&P Bond Yields	20Y	25Y	30Y
December 2022: BBB+	5.72%	5.55%	5.43%

<b>Debt Yield Rate</b>	<b>5.75%</b>
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## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2023 Assessment Year

Electric Industry

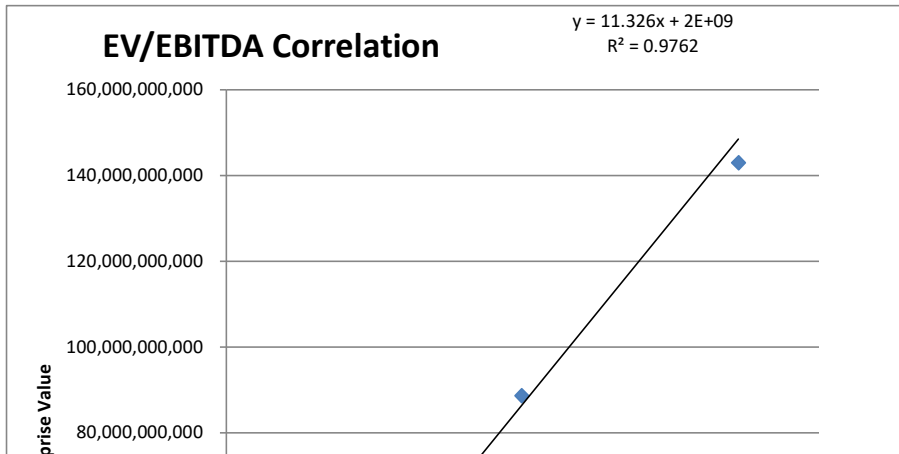
Company	Ticker	Stock Price	2022		2023		2022		2023	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
Alliant Energy Corp	int	54.75	2.70	4.9%	2.95	5.4%	5.50	10.0%	5.75	10.5%
Ameren Corp	aee	88.92	4.10	4.6%	4.35	4.9%	9.50	10.7%	10.05	11.3%
Avangrid Inc	agr	42.51	2.35	5.5%	2.25	5.3%	5.10	12.0%	5.10	12.0%
Avista Corp	ava	43.83	1.90	4.3%	2.35	5.4%	5.25	12.0%	5.80	13.2%
Black Hills	bkh	69.65	4.05	5.8%	4.20	6.0%	7.80	11.2%	8.15	11.7%
CMS Energy Corp	cms	62.82	2.90	4.6%	3.10	4.9%	7.00	11.1%	7.45	11.9%
CenterPoint Energy Inc	cnp	29.80	1.40	4.7%	1.50	5.0%	3.65	12.2%	3.85	12.9%
Consolidated Edison	ed	94.48	4.55	4.8%	4.80	5.1%	10.55	11.2%	11.10	11.7%
Dominion Energy	D	60.57	4.10	6.8%	4.20	6.9%	7.70	12.7%	8.00	13.2%
DTE Energy Co	dte	117.53	5.50	4.7%	6.20	5.3%	12.65	10.8%	14.10	12.0%
Duke Energy Corp	duk	101.95	5.30	5.2%	5.75	5.6%	13.25	13.0%	14.00	13.7%
Entergy Corp	etr	111.36	6.65	6.0%	6.80	6.1%	17.75	15.9%	17.95	16.1%
Eversource Energy	es	83.09	4.10	4.9%	4.40	5.3%	8.10	9.7%	8.55	10.3%
FirstEnergy Corp	fe	41.53	2.45	5.9%	2.55	6.1%	5.00	12.0%	5.25	12.6%
Idacorp Inc	ida	107.07	5.10	4.8%	5.20	4.9%	8.70	8.1%	9.00	8.4%
NorthWestern Corp	nwe	59.34	3.35	5.6%	3.55	6.0%	6.70	11.3%	6.85	11.5%
OGE Energy Corp	oge	39.13	2.25	5.8%	2.10	5.4%	4.45	11.4%	4.40	11.2%
Otter Tail Corp	ottr	58.31	6.60	11.3%	4.75	8.1%	7.75	13.3%	6.60	11.3%
PNM Resources Inc	pnm	48.43	2.65	5.5%	2.70	5.6%	6.50	13.4%	6.65	13.7%
Portland General Electric	por	49.00	2.80	5.7%	2.95	6.0%	7.65	15.6%	7.75	15.8%
Public Service Enterprise	peg	60.68	3.45	5.7%	3.50	5.8%	6.40	10.5%	6.55	10.8%
Sempra Energy	sre	154.54	8.85	5.7%	9.30	6.0%	15.20	9.8%	16.60	10.7%
WEC Energy Group Inc	wec	92.98	4.40	4.7%	4.70	5.1%	8.10	8.7%	8.60	9.2%
Xcel Energy Inc	xel	70.11	3.15	4.5%	3.35	4.8%	7.75	11.1%	8.25	11.8%
		<b>Mean</b>		<b>5.5%</b>		<b>5.6%</b>		<b>11.6%</b>		<b>12.0%</b>
		<b>Harmonic Mean</b>		<b>5.3%</b>		<b>5.5%</b>		<b>11.3%</b>		<b>11.7%</b>
		<b>Median</b>		<b>5.3%</b>		<b>5.4%</b>		<b>11.2%</b>		<b>11.8%</b>
		<b>Max</b>		<b>11.3%</b>		<b>8.1%</b>		<b>15.9%</b>		<b>16.1%</b>
		<b>Min</b>		<b>4.3%</b>		<b>4.8%</b>		<b>8.1%</b>		<b>8.4%</b>
		<b>Std Dev</b>		<b>1.4%</b>		<b>0.8%</b>		<b>1.8%</b>		<b>1.8%</b>
		<b>Coefficient of Variation</b>		<b>25.1%</b>		<b>13.4%</b>		<b>15.9%</b>		<b>14.8%</b>
		<b>Say</b>		<b>5.3%</b>		<b>5.5%</b>		<b>11.3%</b>		<b>11.7%</b>

Source: Value Line / yr end stock price

# SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

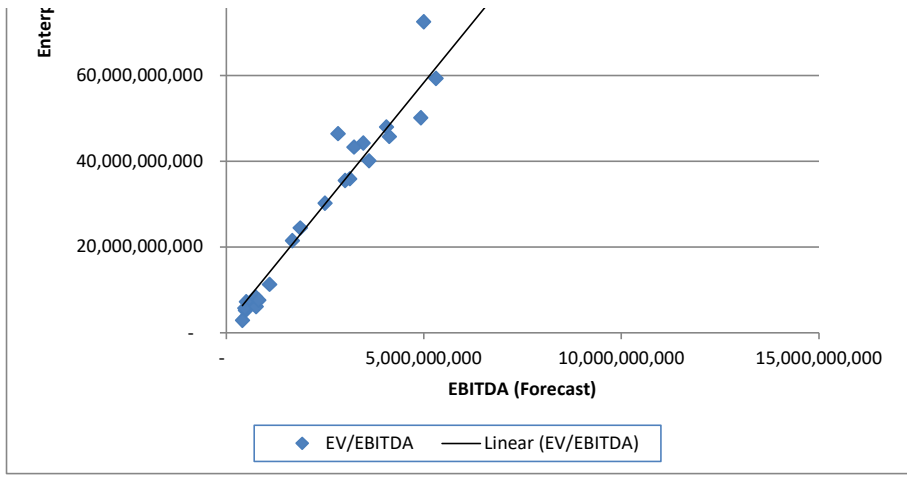
2023 Assessment Year

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast	Revenue Forecast	EV / Sales Forecast	CF Forecast	Debt Svc	EV/CF Forecast	
Alliant Energy Corp	int	54.75	21,481,250,000	1,599,000,000	4.55%	1,671,681,818	12.85	4,241,900,000	5.06	1,443,250,000	421,992,500	11.52	
Ameren Corp	aee	88.92	35,936,500,000	2,953,000,000	5.79%	3,123,963,158	11.50	7,376,250,000	4.87	2,638,125,000	716,047,500	10.71	
Avangrid Inc	agr	42.51	24,425,366,000	1,872,000,000	0.00%	1,872,000,000	13.05	7,983,290,000	3.06	1,971,660,000	459,482,500	10.05	
Avista Corp	ava	43.83	5,198,232,000	443,384,000	10.48%	489,833,752	10.61	1,549,600,000	3.35	432,100,000	111,141,578	9.57	
Black Hills	bkh	69.65	8,392,573,000	706,153,000	4.49%	737,839,353	11.37	2,187,850,000	3.84	541,975,000	216,248,760	11.07	
CMS Energy Corp	cms	62.82	30,190,800,000	2,350,000,000	6.43%	2,501,071,429	12.07	8,207,000,000	3.68	2,160,500,000	712,080,000	10.51	
CenterPoint Energy	cnp	29.80	35,542,000,000	2,854,000,000	5.48%	3,010,383,562	11.81	9,387,000,000	3.79	2,425,500,000	861,925,000	10.81	
Consolidated Edison	ed	94.48	50,138,400,000	4,680,000,000	5.21%	4,923,981,043	10.18	15,744,250,000	3.18	3,940,500,000	1,048,455,000	10.05	
Dominion Energy	D	60.57	88,597,950,000	7,198,000,000	3.90%	7,478,441,558	11.85	17,117,500,000	5.18	6,680,000,000	2,094,495,000	10.10	
DTE Energy Co	dte	117.53	40,086,650,000	3,240,000,000	11.46%	3,611,383,399	11.10	18,501,250,000	2.17	2,890,500,000	919,597,500	10.52	
Duke Energy Corp	duk	101.95	142,928,500,000	12,267,000,000	5.66%	12,961,358,491	11.03	27,758,500,000	5.15	10,780,000,000	3,648,605,000	9.91	
Entergy Corp	etr	111.36	45,768,397,000	4,077,682,000	1.13%	4,123,627,713	11.10	11,628,700,000	3.94	3,697,700,000	1,297,995,628	9.16	
Eversource Energy	es	83.09	47,987,147,000	3,841,292,000	5.56%	4,054,697,111	11.83	12,625,875,000	3.80	2,977,965,000	1,086,249,750	11.81	
FirstEnergy Corp	fe	41.53	44,246,160,000	3,299,000,000	5.00%	3,463,950,000	12.77	12,441,000,000	3.56	3,003,000,000	1,137,580,000	10.69	
Idacorp Inc	ida	107.07	7,236,831,000	491,537,000	3.45%	508,486,552	14.23	1,521,000,000	4.76	456,300,000	112,324,525	12.73	
NorthWestern Corp	nwe	59.34	5,758,420,000	458,099,000	2.24%	468,354,948	12.29	1,365,900,000	4.22	397,300,000	133,210,250	10.85	
OGE Energy Corp	oge	39.13	11,310,926,000	1,110,400,000	-1.12%	1,097,923,596	10.30	3,303,300,000	3.42	880,880,000	199,933,250	10.47	
Otter Tail Corp	ottr	58.31	2,900,941,500	483,036,000	-14.84%	411,359,690	7.05	1,225,362,500	2.37	275,550,000	39,192,863	9.22	
PNM Resources Inc	pnm	48.43	6,062,526,000	735,715,000	2.31%	752,693,038	8.05	2,076,800,000	2.92	585,200,000	102,878,195	8.81	
Portland General Electric	por	49.00	7,620,700,000	814,000,000	1.31%	824,640,523	9.24	2,549,515,000	2.99	692,075,000	186,587,500	8.67	
Public Service Enterprise Group	peg	60.68	46,443,320,000	2,760,000,000	2.34%	2,824,687,500	16.44	9,680,600,000	4.80	3,268,450,000	929,430,000	11.06	
Sempra Energy	sre	154.54	72,507,100,000	4,576,000,000	9.21%	4,997,473,684	14.51	15,592,500,000	4.65	5,229,000,000	1,239,067,500	11.21	
WEC Energy Group	wec	92.98	43,280,381,400	3,046,800,000	6.17%	3,234,874,074	13.38	9,305,185,000	4.65	2,712,698,000	800,474,750	12.32	
Xcel Energy Inc	xel	70.11	59,282,225,000	4,982,000,000	6.45%	5,303,419,355	11.18	14,426,625,000	4.11	4,516,875,000	1,201,577,500	10.37	
<b>24</b>							<b>11.66</b>		<b>3.90</b>			<b>10.51</b>	
<b>Harmonic Mean</b>							<b>11.30</b>		<b>3.69</b>				<b>10.41</b>
<b>Median</b>							<b>11.65</b>		<b>3.82</b>				<b>10.52</b>
<b>Std Dev</b>							<b>2.00</b>		<b>0.87</b>				<b>1.02</b>
<b>Say</b>							<b>11.50</b>		<b>3.75</b>				<b>10.50</b>



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast		
Otter Tail Corp	7.05		
PNM Resources Inc	8.05		
Portland General Electric	9.24		
Consolidated Edison	10.18		
OGE Energy Corp	10.30		
Avista Corp	10.61		
Duke Energy Corp	11.03		
Entergy Corp	11.10		
DTE Energy Co	11.10		
Xcel Energy Inc	11.18	<b>10.23</b>	<b>Low Average</b>
Black Hills	11.37	<b>10.82</b>	<b>Low Median</b>
Ameren Corp	11.50	<b>10.50</b>	<b>Say</b>
CenterPoint Energy Inc	11.81	<b>13.09</b>	<b>High Average</b>
Eversource Energy	11.83	<b>12.81</b>	<b>High Median</b>



Dominion Energy	11.85	<b>13.00</b> <b>Say</b>
CMS Energy Corp	12.07	
NorthWestern Corp	12.29	
FirstEnergy Corp	12.77	
Alliant Energy Corp	12.85	
Avangrid Inc	13.05	
WEC Energy Group Inc	13.38	
Idacorp Inc	14.23	
Sempra Energy	14.51	
Public Service Enterprise Group	16.44	

## STOCK PRICE

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

73.38

2022 Year End

Alliant Energy Corp	Int								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	56.03	56.29	54.74	55.21	54.75	1,022,300			<b>54.75</b>
Ameren Corp	aee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	90.13	90.35	88.16	88.92	88.92	716,500			<b>88.92</b>
Avangrid	agr								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	43.54	43.66	42.63	42.98	42.51	437,900			<b>42.51</b>
Avista	ava								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	44.73	44.85	44.08	44.34	43.83	563,700			<b>43.83</b>
Black Hills	bkh								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	71.04	71.08	69.91	70.34	69.65	338,700			<b>69.65</b>
CMS Energy Corp	cms								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	64.1	64.24	62.83	63.33	62.82	913,600			<b>62.82</b>
CenterPoint Energy	cnp								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	30.45	30.51	29.72	29.99	29.8	2,908,400			<b>29.80</b>
Consolidated Edison	ed								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	96.62	96.75	94.55	95.31	94.48	1,224,400			<b>94.48</b>
Dominion Energy	D								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	61.74	61.88	60.48	61.32	60.57	3,553,600			<b>60.57</b>
DTE Energy	dte								
Date	Open	High	Low	Close	Adj Close	Volume			
12/30/2022	119.07	119.16	116.51	117.53	117.53	550,500			<b>117.53</b>
Duke Energy	duk								

Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	103.88	104	101.99	102.99	101.95	2,055,600	<b>101.95</b>
Entergy Corp	etr						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	114.14	114.29	111.49	112.5	111.36	906,400	<b>111.36</b>
Eversource Energy	es						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	85.1	85.32	83.11	83.84	83.09	1,050,900	<b>83.09</b>
FirstEnergy Corp	fe						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	42.2	42.31	41.59	41.94	41.53	1,670,000	<b>41.53</b>
Idacorp	ida						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	108.9	108.9	107.24	107.85	107.07	199,000	<b>107.07</b>
NorthWestern Corp	new						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	59.6	59.77	58.81	59.34	59.34	393,000	<b>59.34</b>
OGE Energy Corp	oge						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	40.17	40.19	39.23	39.55	39.13	826,100	<b>39.13</b>
<b>Ottertail</b>	<b>ottr</b>						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	59.37	59.37	58.18	58.71	58.31	162,200	<b>58.31</b>
PNM Resources Inc	pnm						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	48.95	49	48.79	48.79	48.43	433,200	<b>48.43</b>
Portland General	por						
Date	Open	High	Low	Close	Adj Close	Volume	
12/30/2022	49.88	49.98	48.63	49	49	540,500	<b>49.00</b>

P.S. Enterprise	peg								
Date	Open	High	Low	Close	Adj Close		Volume		
12/30/2022	61.86	61.89	60.68	61.27		60.68	1,815,300		<b>60.68</b>
Sempra	sre								
Date	Open	High	Low	Close	Adj Close		Volume		
12/30/2022	155.75	156.37	153.18	154.54		154.54	1,072,600		<b>154.54</b>
WEC Energy	wec								
Date	Open	High	Low	Close	Adj Close		Volume		
12/30/2022	95.46	95.8	93.05	93.76		92.98	1,228,200		<b>92.98</b>
Xcel energy	xel								
Date	Open	High	Low	Close	Adj Close		Volume		
12/30/2022	70.9	71.07	69.51	70.11		70.11	1,597,000		<b>70.11</b>

Source:  
finance.yahoo.com  
Historical Stock Quotes

# IMPLIED PREMIUMS FOR US MARKET

Updated January 2023

These implied premiums are calculated using the S&P 500.

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Rebonds + Buybacks	Increase in Earnings	Increase in Dividends	T.Bill Rate	T.Bond Rate	Bond-Bill	Boothed Growth	Premium	Real Growth	Real Premium	Implied Premium	ERP/Riskfree Rate
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%	5.51%	6.12%	5.16%	2.70
2016	4.86%	2.01%	2238.83	108.86	45.03	108.67	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%	5.69%	4.50%	2.32
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%	5.08%	4.75%	2.11
2018	5.92%	2.14%	2506.85	148.34	53.61	136.65	18.73%	7.80%	2.37%	2.68%	0.31%	3.24%	2.50%	4.12%	5.96%	5.55%	2.22
2019	5.03%	1.82%	3230.78	162.35	58.80	150.50	9.44%	9.68%	1.55%	1.92%	0.37%	2.57%	3.96%	5.20%	5.06%	2.71	
2020	3.68%	0.02	3756.07	138.12	56.70	12778.00%	-14.92%	-3.57%	0.09%	0.93%	0.84%	0.74%	1.65%	5.42%	4.72%	4.94%	5.08
2021	4.33%	1.24%	4766.18	206.38	59.20	147.24	47.67%	4.41%	0.06%	1.51%	1.45%	1.71%	1.72%	6.47%	4.24%	4.90%	2.81
2022	5.72%	1.78%	3839.50	219.49	68.34	181.99	6.35%	15.44%	4.42%	3.88%	-0.54%	5.59%	2.16%	6.41%	5.94%	5.11%	1.53

<http://pages.stern.nyu.edu/~adamodar/>



# DATA INPUT

Washington State Department of Revenue

2023 Assessment Year

Electric Industry

Guideline Companies		Historic Figures (2022)															
		Stock Price 12/31/22	Beta Levered	Fin'l Strength	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Bk Value Per Share	Mkt/Bk	Common Shares	LTD (BV)	Trailing P/E Ratio	Div Yield	Calculated Debt		
Name	Ticker	Yahoo	VL	VL	VL	VL	VL	VL	VL	Formula	VL	VL	VL	VL	Formula		
Alliant Energy Corp	Int	54.75	0.85	A	16.35	5.50	2.70	1.71	25.05	2.19	251,000,000	8,611,000,000	21.0	3.2%	90.87%		
Ameren Corp	aee	88.92	0.85	A	27.25	9.50	4.10	2.36	40.20	2.21	262,500,000	13,577,000,000	22.0	2.8%	88.79%		
Avangrid Inc	agr	42.51	0.85	B++	19.80	5.10	2.35	1.76	50.00	0.85	386,600,000	7,764,000,000	17.8	4.2%	92.63%		
Avista Corp	ava	43.83	0.90	B++	20.80	5.25	1.90	1.76	30.90	1.42	74,500,000	2,281,800,000	24.2	4.1%	80.18%		
Black Hills	bkh	69.65	0.95	A	33.10	7.80	4.05	2.41	44.00	1.58	66,500,000	4,131,000,000	18.0	3.5%	91.01%		
CMS Energy Corp	cms	62.82	0.80	A	27.60	7.00	2.90	1.84	24.25	2.59	290,000,000	12,909,000,000	22.9	3.0%	87.14%		
CenterPoint Energy Inc	cnp	29.80	1.10	B++	14.30	3.65	1.40	0.71	14.75	2.02	630,000,000	14,225,000,000	27.3	2.3%	91.75%		
Consolidated Edison	ed	94.48	0.80	A+	42.70	10.55	4.55	3.16	58.40	1.62	355,000,000	22,350,000,000	20.1	3.4%	87.68%		
Dominion Energy	D	60.57	0.80	B++	19.70	7.70	4.10	2.67	32.45	1.87	835,000,000	39,945,000,000	15.8	4.4%	91.80%		
DTE Energy Co	dte	117.53	0.95	A	87.80	12.65	5.50	3.68	50.55	2.33	205,000,000	17,442,000,000	20.0	3.3%	88.96%		
Duke Energy Corp	duk	101.95	0.85	A	35.70	13.25	5.30	3.98	62.75	1.62	770,000,000	68,022,000,000	19.7	4.0%	89.10%		
Entergy Corp	etr	111.36	0.95	B++	63.10	17.75	6.65	4.10	60.00	1.86	206,000,000	24,889,400,000	18.1	3.8%	87.05%		
Eversource Energy	es	83.09	0.90	A	34.45	8.10	4.10	2.55	44.20	1.88	348,300,000	20,397,600,000	19.9	3.3%	89.77%		
FirstEnergy Corp	fe	41.53	0.85	B+	21.00	5.00	2.45	1.56	15.75	2.64	572,000,000	20,905,000,000	17.0	3.8%	91.42%		
Idacorp Inc	ida	107.07	0.80	A+	29.60	8.70	5.10	3.04	55.50	1.93	50,700,000	2,071,400,000	21.9	2.9%	89.03%		
NorthWestern Corp	nwe	59.34	0.90	B++	24.30	6.70	3.35	2.52	44.60	1.33	58,000,000	2,418,600,000	18.9	4.4%	88.46%		
OGE Energy Corp	oge	39.13	1.00	A	16.00	4.45	2.25	1.64	21.25	1.84	200,200,000	3,548,000,000	17.5	4.2%	90.22%		
Otter Tail Corp	ottr	58.31	0.85	A	35.45	7.75	6.60	1.65	27.55	2.12	41,750,000	823,800,000	8.2	2.9%	82.74%		
PNM Resources Inc	pnm	48.43	0.90	B++	23.60	6.50	2.65	1.41	27.00	1.79	88,000,000	3,905,000,000	17.9	3.0%	89.42%		
Portland General Electric	por	49.00	0.85	B++	29.00	7.65	2.80	1.79	31.35	1.56	89,300,000	3,582,000,000	17.9	3.8%	88.69%		
Public Service Enterprise Group	peg	60.68	0.90	A++	17.75	6.40	3.45	2.16	26.60	2.28	499,000,000	16,150,000,000	17.4	3.7%	89.45%		
Sempra Energy	sre	154.54	0.95	A	47.00	15.20	8.85	4.58	83.35	1.85	315,000,000	24,719,000,000	17.4	3.1%	87.91%		
WEC Energy Group Inc	wec	92.98	0.80	A+	29.20	8.10	4.40	2.91	35.90	2.59	315,430,000	14,941,100,000	22.3	3.0%	90.02%		
Xcel Energy Inc	xel	70.11	0.80	A+	26.20	7.75	3.15	1.95	30.15	2.33	547,500,000	23,309,000,000	23.5	2.9%	87.20%		
<b>Average</b>																19.4	
<b>Harmonic Mean</b>																	18.5
<b>Median</b>																	19.3

			Projected (Next Year) 2023									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	CP Projection 26-28	Earnings Projection 26-28	Earnings Growth 26-28	Dividend Growth 26-28	Operating Income	Current Assets	PP & E Gross
Formula	V L	V L	V L	V L	V L	V L	V L	VL	V L	V L	VL	VL	VL	Yahoo	Yahoo	Yahoo
63.33%	61%	11.0%	16.90	5.75	2.95	1.81	26.25	61%	11.5%	6.75	3.50	6.0%	6.0%	928,000,000	1,250,000,000	22,277,000,000
57.56%	58%	10.0%	28.10	10.05	4.35	2.52	42.90	58%	10.0%	11.75	5.25	6.5%	7.0%	1,515,000,000	2,668,000,000	45,727,000,000
74.89%	75%	4.5%	20.65	5.10	2.25	1.76	50.50	78%	4.5%	5.45	2.40	4.0%	1.5%	852,000,000	3,210,000,000	42,695,000,000
92.63%	93%	6.5%	20.80	5.80	2.35	1.83	31.80	78%	7.5%	6.75	2.85	3.5%	4.0%	190,242,000	721,802,000	7,859,530,000
59.51%	60%	8.0%	32.90	8.15	4.20	2.53	45.95	60%	8.0%	9.85	5.25	6.0%	5.5%	455,244,000	1,071,708,000	8,374,790,000
63.45%	64%	11.5%	28.30	7.45	3.10	1.94	25.50	63%	12.0%	8.75	3.75	6.5%	6.0%	1,224,000,000	3,433,000,000	31,673,000,000
50.71%	52%	9.5%	14.90	3.85	1.50	0.77	15.50	53%	9.5%	4.50	1.80	6.5%	2.5%	1,566,000,000	4,699,000,000	36,371,000,000
69.45%	69%	8.0%	44.35	11.10	4.80	3.24	60.00	68%	8.0%	13.50	5.85	4.5%	3.0%	2,624,000,000	12,972,000,000	60,426,000,000
65.12%	66%	11.5%	20.50	8.00	4.20	2.75	34.25	66%	11.5%	9.35	5.10	4.0%	0.5%	4,085,000,000	9,850,000,000	91,202,000,000
66.91%	76%	9.0%	90.25	14.10	6.20	3.84	52.95	60%	11.5%	17.00	7.50	4.5%	4.5%	1,772,000,000	4,180,000,000	39,435,000,000
75.09%	76%	8.5%	36.05	14.00	5.75	4.06	64.50	73%	9.0%	16.00	6.80	5.0%	2.0%	6,424,000,000	13,222,000,000	164,890,000,000
61.65%	62%	9.5%	56.45	17.95	6.80	4.30	63.55	64%	10.5%	20.50	8.50	4.0%	5.0%	1,887,311,000	4,095,026,000	68,233,835,000
62.20%	62%	9.0%	36.25	8.55	4.40	2.71	46.50	62%	9.5%	10.70	5.60	6.5%	6.5%	2,198,154,000	4,223,198,000	45,986,300,000
63.67%	63%	15.5%	21.75	5.25	2.55	1.56	16.85	61%	15.0%	6.35	3.10	3.0%	3.0%	1,982,000,000	2,415,000,000	49,543,000,000
59.61%	60%	9.5%	30.00	9.00	5.20	3.25	58.75	63%	9.0%	10.40	6.10	4.5%	6.5%	317,982,000	693,653,000	7,638,249,000
75.22%	75%	7.5%	23.55	6.85	3.55	2.56	46.30	72%	7.5%	8.00	4.00	3.5%	2.0%	263,079,000	538,824,000	7,843,783,000
72.89%	73%	12.0%	16.50	4.40	2.10	1.70	22.25	81%	12.0%	6.25	3.25	6.5%	3.0%	649,500,000	1,340,800,000	15,237,100,000
25.00%	31%	19.5%	29.35	6.60	4.75	1.76	29.80	44%	13.5%	6.75	3.75	4.5%	7.0%	390,439,000	452,752,000	3,267,409,000
53.21%	53%	9.5%	23.60	6.65	2.70	1.49	28.60	55%	9.5%	8.10	3.10	5.0%	6.0%	394,592,000	410,978,000	9,759,583,000
63.93%	64%	9.0%	28.55	7.75	2.95	1.88	33.00	64%	8.5%	8.95	3.50	5.0%	6.0%	397,000,000	1,210,000,000	12,888,000,000
62.61%	62%	13.0%	19.40	6.55	3.50	2.28	27.80	65%	12.5%	8.00	4.50	4.5%	5.0%	1,477,000,000	4,303,000,000	46,100,000,000
51.75%	52%	10.5%	49.50	16.60	9.30	4.80	92.15	52%	10.5%	20.15	11.25	7.5%	6.0%	2,557,000,000	5,912,000,000	64,548,000,000
66.14%	66%	12.0%	29.50	8.60	4.70	3.11	37.35	66%	12.5%	10.25	5.50	6.0%	7.0%	1,924,200,000	3,187,700,000	38,612,300,000
61.90%	62%	10.5%	26.35	8.25	3.35	2.07	31.65	62%	10.5%	10.00	4.00	6.0%	6.5%	2,428,000,000	5,144,000,000	70,560,000,000
	64.0%	10.2%							63.7%	10.17%	<b>10.17</b>					
	61.5%	9.4%							62.6%	9.57%	<b>8.75</b>					
	62.5%	9.5%							63.0%	10.25%	<b>9.15</b>					

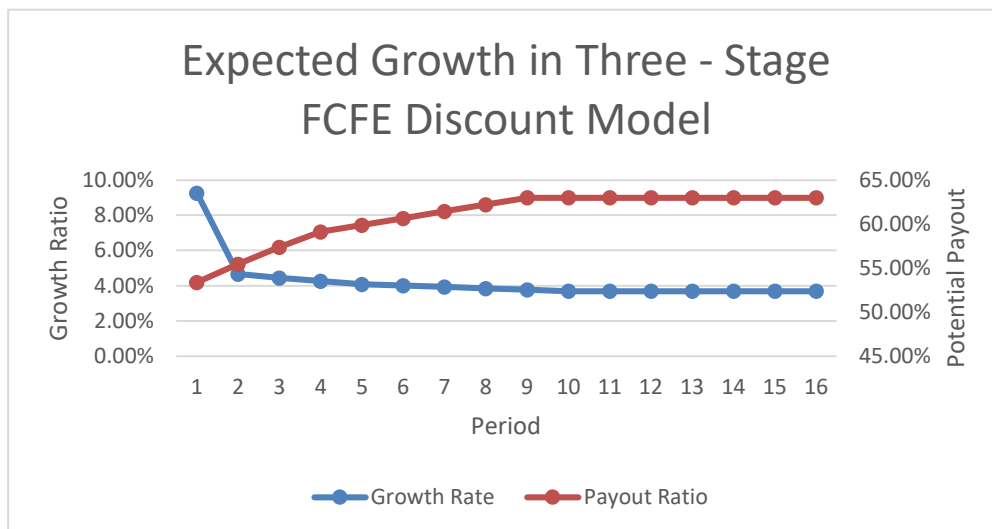
Balance Sheet			Cash Flow Statement	Other Financials	
Intangibles (excl. GW)	Current Liabilities	Long Term Debt Less Current Maturities	Depreciation & Amortization	Carrying Value Debt	Fair Value Debt
Yahoo	Yahoo	Yahoo	Yahoo	10-K	10-K
	2,363,000,000	7,668,000,000	671,000,000	8,076,000,000	7,339,000,000
	3,366,000,000	13,685,000,000	1,438,000,000	14,025,000,000	12,453,000,000
281,000,000	4,416,000,000	8,223,000,000	1,020,000,000	8,627,000,000	7,991,000,000
-	964,534,000	2,332,560,000	253,142,000	2,410,777,000	1,932,897,000
9,589,000	1,666,690,000	3,607,340,000	250,909,000	4,132,340,000	3,760,848,000
-	2,985,000,000	13,122,000,000	1,126,000,000	14,212,000,000	12,384,000,000
38,000,000	5,113,000,000	14,836,000,000	1,288,000,000	16,338,000,000	14,990,000,000
-	11,336,000,000	20,147,000,000	2,056,000,000	20,796,000,000	18,234,000,000
868,000,000	13,450,000,000	38,914,000,000	3,113,000,000	39,680,000,000	36,426,000,000
166,000,000	5,173,000,000	16,862,000,000	1,468,000,000	17,978,000,000	15,993,000,000
	18,873,000,000	67,061,000,000	5,843,000,000	71,215,000,000	63,454,000,000
	6,369,447,000	23,623,512,000	2,190,371,000	25,932,549,000	22,573,837,000
	6,799,283,000	20,134,486,000	1,643,138,000	21,044,100,000	18,891,300,000
	3,958,000,000	21,203,000,000	1,317,000,000	21,641,000,000	19,784,000,000
	548,565,000	2,194,145,000	173,555,000	2,194,145,000	1,953,470,000
	620,845,000	2,474,357,000	195,020,000	2,618,882,000	2,316,700,000
	1,802,200,000	3,548,700,000	460,900,000	3,854,200,000	3,477,100,000
7,943,000	237,636,000	823,821,000	92,597,000	823,821,000	681,615,000
	890,370,000	3,892,594,000	341,123,000	2,000,900,000	1,789,186,000
	1,496,000,000	3,386,000,000	417,000,000	3,659,000,000	3,245,000,000
14,000,000	6,680,000,000	16,495,000,000	1,283,000,000	18,070,000,000	16,164,000,000
344,000,000	9,899,000,000	24,548,000,000	2,019,000,000	24,513,000,000	21,549,000,000
	4,611,000,000	14,655,700,000	1,122,600,000	15,464,200,000	13,921,300,000
	6,078,000,000	22,813,000,000	2,554,000,000	23,964,000,000	20,897,000,000

### Three Stage Free Cash Flow to Equity Discount Model

Company Alliant Energy C 4.10% GDP  
 Ticker Int 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		92.59%	7.41%	2.70			(54.75)
	1	9.26%	46.61%	53.39%	2.95	1.58		1.58
	2	4.66%	44.53%	55.47%	3.09	1.71		1.71
Stage 1	3	4.45%	42.64%	57.36%	3.23	1.85		1.85
	4	4.26%	40.89%	59.11%	3.36	1.99		1.99
	5	4.09%	40.11%	59.89%	3.50	2.10		2.10
	6	4.01%	39.34%	60.66%	3.64	2.21		2.21
	7	3.93%	38.56%	61.44%	3.78	2.32		2.32
Stage 2	8	3.86%	37.78%	62.22%	3.93	2.44		2.44
	9	3.78%	37.00%	63.00%	4.08	2.57		2.57
	10	3.70%	37.00%	63.00%	4.23	2.66	78.93	81.60
Stage 3	11+	3.70%	37.00%	63.00%	4.39	2.76		

**$K_e = 6.99%$**

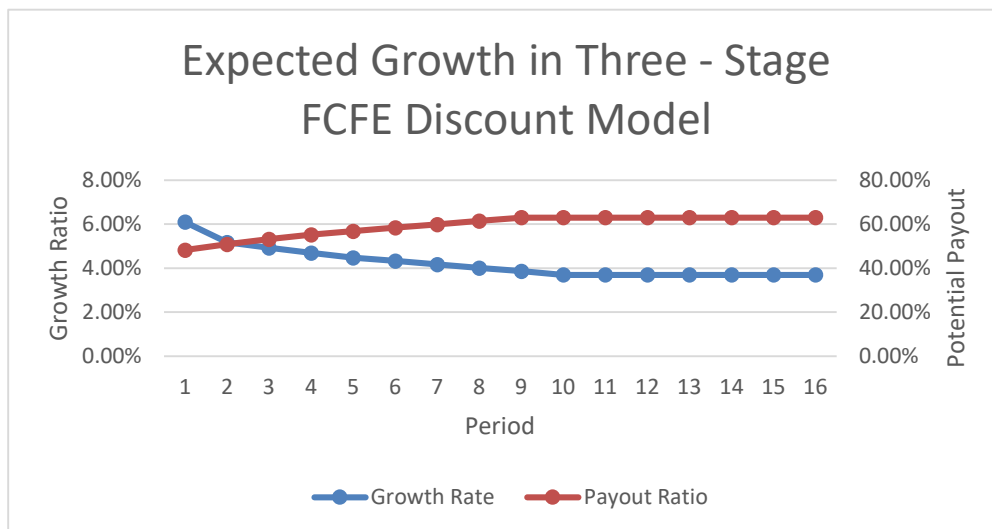


### Three Stage Free Cash Flow to Equity Discount Model

Company **Ameren Corp** 4.10% GDP  
 Ticker **ae** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		60.98%	39.02%	4.10			(88.92)
	1	6.10%	51.72%	48.28%	4.35	2.10		2.10
	2	5.17%	49.18%	50.82%	4.58	2.33		2.33
Stage 1	3	4.92%	46.88%	53.13%	4.80	2.55		2.55
	4	4.69%	44.78%	55.22%	5.03	2.77		2.77
	5	4.48%	43.22%	56.78%	5.25	2.98		2.98
	6	4.32%	41.67%	58.33%	5.48	3.19		3.19
	7	4.17%	40.11%	59.89%	5.71	3.42		3.42
Stage 2	8	4.01%	38.56%	61.44%	5.93	3.65		3.65
	9	3.86%	37.00%	63.00%	6.16	3.88		3.88
	10	3.70%	37.00%	63.00%	6.39	4.03	119.29	123.32
Stage 3	11+	3.70%	37.00%	63.00%	6.63	4.18		

**$K_e = 5.96\%$**

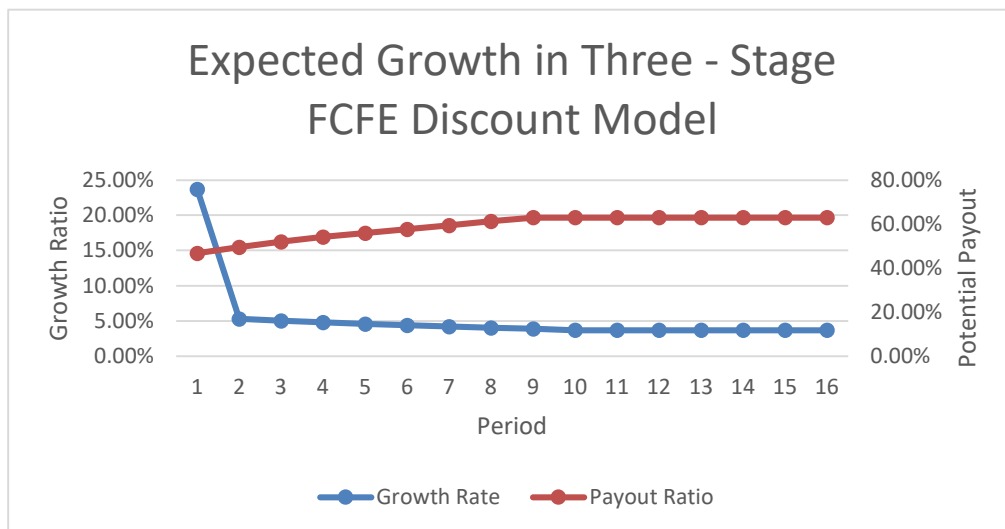


### Three Stage Free Cash Flow to Equity Discount Model

Company Avangrid Inc 4.10% GDP  
 Ticker agr 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-42.55%	142.55%	2.35			(42.51)
	1	-4.26%	16.67%	83.33%	2.25	1.88		1.88
	2	1.67%	16.39%	83.61%	2.29	1.91		1.91
Stage 1	3	1.64%	16.13%	83.87%	2.33	1.95		1.95
	4	1.61%	15.87%	84.13%	2.36	1.99		1.99
	5	1.59%	20.10%	79.90%	2.40	1.92		1.92
	6	2.01%	24.32%	75.68%	2.45	1.85		1.85
	7	2.43%	28.55%	71.45%	2.51	1.79		1.79
Stage 2	8	2.85%	32.77%	67.23%	2.58	1.73		1.73
	9	3.28%	37.00%	63.00%	2.66	1.68		1.68
	10	3.70%	37.00%	63.00%	2.76	1.74	51.56	53.30
Stage 3	11+	3.70%	37.00%	63.00%	2.86	1.80		

**$K_e = 5.99%$**

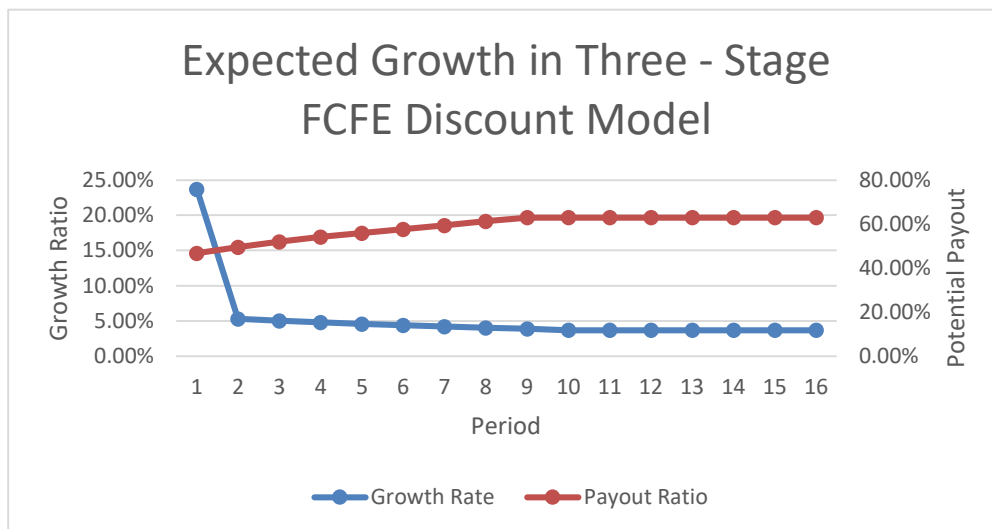


### Three Stage Free Cash Flow to Equity Discount Model

Company **Avista Corp**      4.10% GDP  
 Ticker **ava**                      18.0 Industry P/E  
     63.0% Target Dividend Payout Ratio  
     10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		236.84%	-136.84%	1.90			(43.83)
Stage 1	1	23.68%	53.19%	46.81%	2.35	1.10		1.10
	2	5.32%	50.51%	49.49%	2.48	1.23		1.23
	3	5.05%	48.08%	51.92%	2.60	1.35		1.35
	4	4.81%	45.87%	54.13%	2.73	1.48		1.48
	5	4.59%	44.10%	55.90%	2.85	1.59		1.59
Stage 2	6	4.41%	42.32%	57.68%	2.98	1.72		1.72
	7	4.23%	40.55%	59.45%	3.10	1.84		1.84
	8	4.05%	38.77%	61.23%	3.23	1.98		1.98
	9	3.88%	37.00%	63.00%	3.35	2.11		2.11
	10	3.70%	37.00%	63.00%	3.48	2.19	64.89	67.08
Stage 3	11+	3.70%	37.00%	63.00%	3.61	2.27		

**$K_e = 7.09%$**

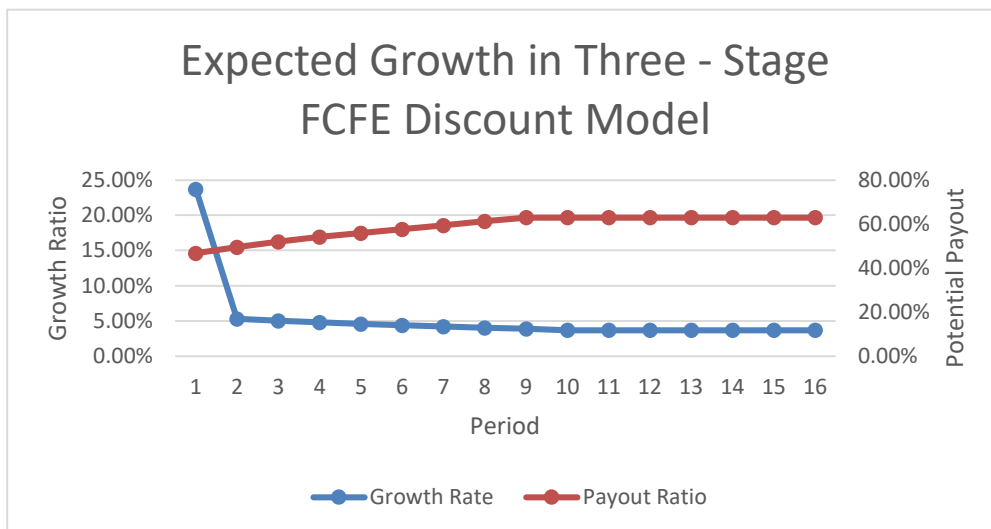


### Three Stage Free Cash Flow to Equity Discount Model

Company **Black Hills** 4.10% GDP  
 Ticker **bkh** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		37.04%	62.96%	4.05			(69.65)
	1	3.70%	62.50%	37.50%	4.20	1.58		1.58
	2	6.25%	58.82%	41.18%	4.46	1.84		1.84
Stage 1	3	5.88%	55.56%	44.44%	4.73	2.10		2.10
	4	5.56%	52.63%	47.37%	4.99	2.36		2.36
	5	5.26%	49.51%	50.49%	5.25	2.65		2.65
	6	4.95%	46.38%	53.62%	5.51	2.95		2.95
	7	4.64%	43.25%	56.75%	5.77	3.27		3.27
Stage 2	8	4.33%	40.13%	59.87%	6.01	3.60		3.60
	9	4.01%	37.00%	63.00%	6.26	3.94		3.94
	10	3.70%	37.00%	63.00%	6.49	4.09	121.10	125.19
Stage 3	11+	3.70%	37.00%	63.00%	6.73	4.24		

**$K_e = 8.72\%$**



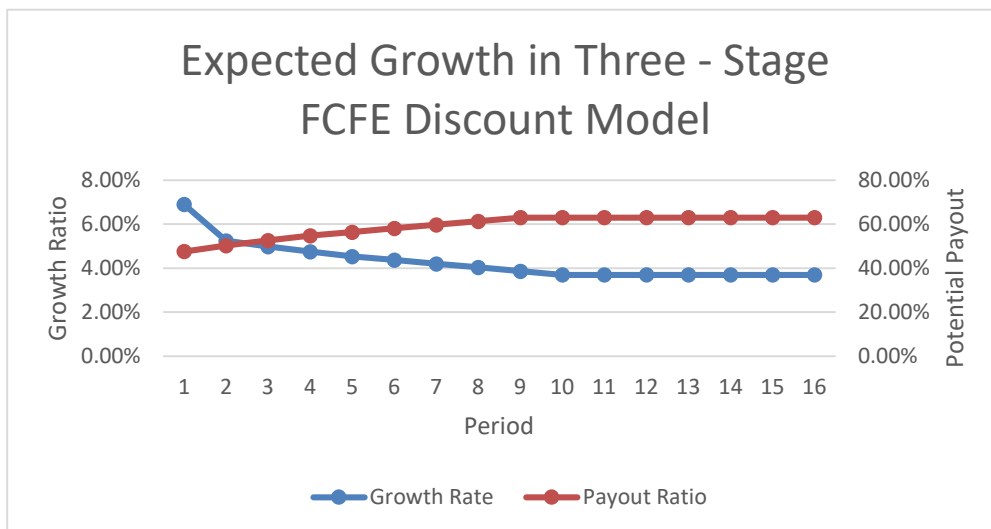


### Three Stage Free Cash Flow to Equity Discount Model

Company **CMS Energy Co** 4.10% GDP  
 Ticker **cms** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		68.97%	31.03%	2.90			(62.82)
Stage 1	1	6.90%	52.42%	47.58%	3.10	1.48		1.48
	2	5.24%	49.81%	50.19%	3.26	1.64		1.64
	3	4.98%	47.45%	52.55%	3.43	1.80		1.80
	4	4.74%	45.30%	54.70%	3.59	1.96		1.96
	5	4.53%	43.64%	56.36%	3.75	2.11		2.11
Stage 2	6	4.36%	41.98%	58.02%	3.91	2.27		2.27
	7	4.20%	40.32%	59.68%	4.08	2.43		2.43
	8	4.03%	38.66%	61.34%	4.24	2.60		2.60
	9	3.87%	37.00%	63.00%	4.41	2.78		2.78
	10	3.70%	37.00%	63.00%	4.57	2.88	85.29	88.17
Stage 3	11+	3.70%	37.00%	63.00%	4.74	2.99		

**$K_e = 6.08\%$**

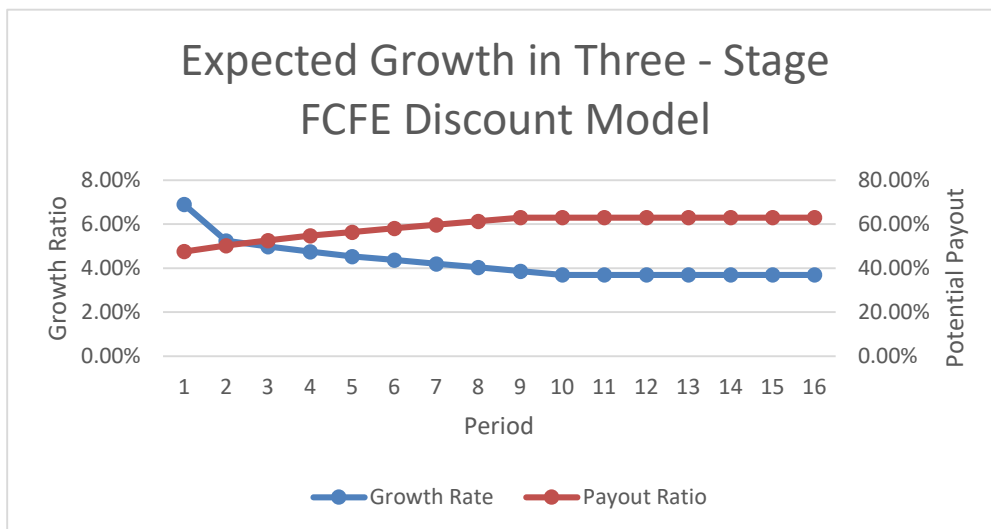


### Three Stage Free Cash Flow to Equity Discount Model

Company **CenterPoint Energy** 4.10% GDP  
 Ticker **cnp** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		71.43%	28.57%	1.40			(29.80)
	1	7.14%	50.00%	50.00%	1.50	0.75		0.75
	2	5.00%	47.62%	52.38%	1.58	0.82		0.82
Stage 1	3	4.76%	45.45%	54.55%	1.65	0.90		0.90
	4	4.55%	43.48%	56.52%	1.73	0.97		0.97
	5	4.35%	42.18%	57.82%	1.80	1.04		1.04
	6	4.22%	40.89%	59.11%	1.88	1.11		1.11
	7	4.09%	39.59%	60.41%	1.95	1.18		1.18
Stage 2	8	3.96%	38.30%	61.70%	2.03	1.25		1.25
	9	3.83%	37.00%	63.00%	2.11	1.33		1.33
	10	3.70%	37.00%	63.00%	2.19	1.38	40.80	42.17
Stage 3	11+	3.70%	37.00%	63.00%	2.27	1.43		

**$K_e = 6.25%$**

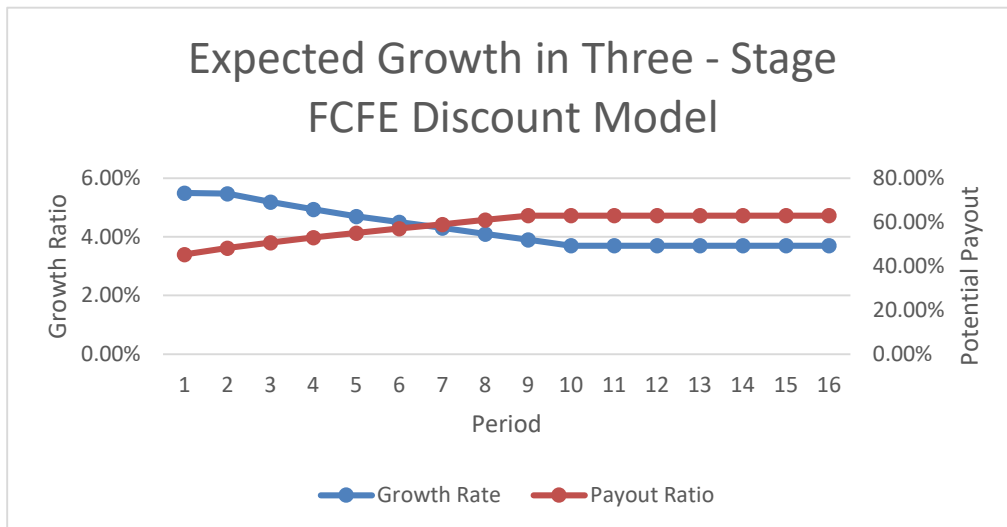


### Three Stage Free Cash Flow to Equity Discount Model

Company Consolidated Earnings 4.10% GDP  
 Ticker ed 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		54.95%	45.05%	4.55			(94.48)
	1	5.49%	54.69%	45.31%	4.80	2.18		2.18
	2	5.47%	51.85%	48.15%	5.06	2.44		2.44
Stage 1	3	5.19%	49.30%	50.70%	5.33	2.70		2.70
	4	4.93%	46.98%	53.02%	5.59	2.96		2.96
	5	4.70%	44.98%	55.02%	5.85	3.22		3.22
	6	4.50%	42.99%	57.01%	6.11	3.49		3.49
	7	4.30%	40.99%	59.01%	6.38	3.76		3.76
Stage 2	8	4.10%	39.00%	61.00%	6.64	4.05		4.05
	9	3.90%	37.00%	63.00%	6.90	4.34		4.34
	10	3.70%	37.00%	63.00%	7.15	4.51	133.49	137.99
Stage 3	11+	3.70%	37.00%	63.00%	7.42	4.67		

**$K_e = 6.48\%$**

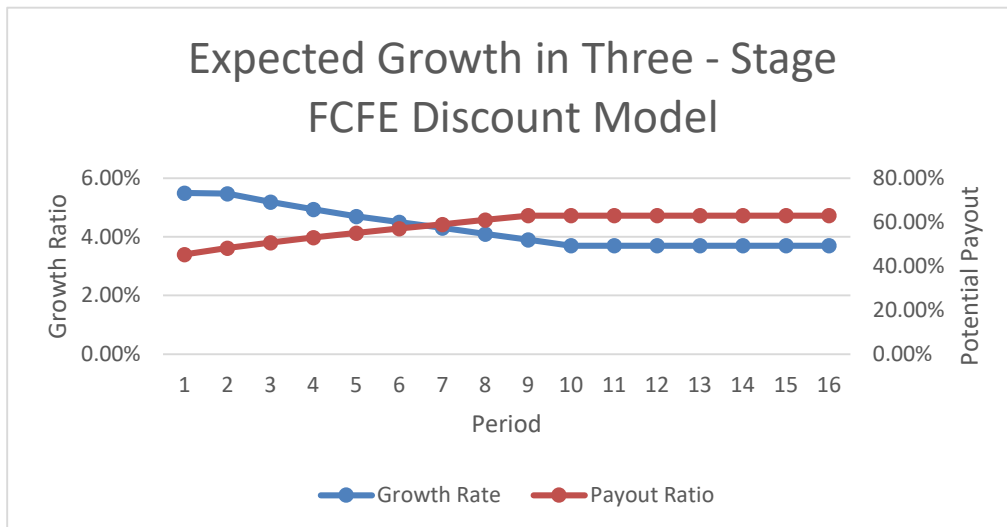


### Three Stage Free Cash Flow to Equity Discount Model

Company **Dominion Energy** 4.10% GDP  
 Ticker **D** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		24.39%	75.61%	4.10			(60.57)
	1	2.44%	53.57%	46.43%	4.20	1.95		1.95
	2	5.36%	50.85%	49.15%	4.43	2.18		2.18
Stage 1	3	5.08%	48.39%	51.61%	4.65	2.40		2.40
	4	4.84%	46.15%	53.85%	4.88	2.63		2.63
	5	4.62%	44.32%	55.68%	5.10	2.84		2.84
	6	4.43%	42.49%	57.51%	5.33	3.06		3.06
	7	4.25%	40.66%	59.34%	5.55	3.29		3.29
Stage 2	8	4.07%	38.83%	61.17%	5.78	3.53		3.53
	9	3.88%	37.00%	63.00%	6.00	3.78		3.78
	10	3.70%	37.00%	63.00%	6.22	3.92	116.19	120.11
Stage 3	11+	3.70%	37.00%	63.00%	6.45	4.07		

**$K_e = 10.28\%$**

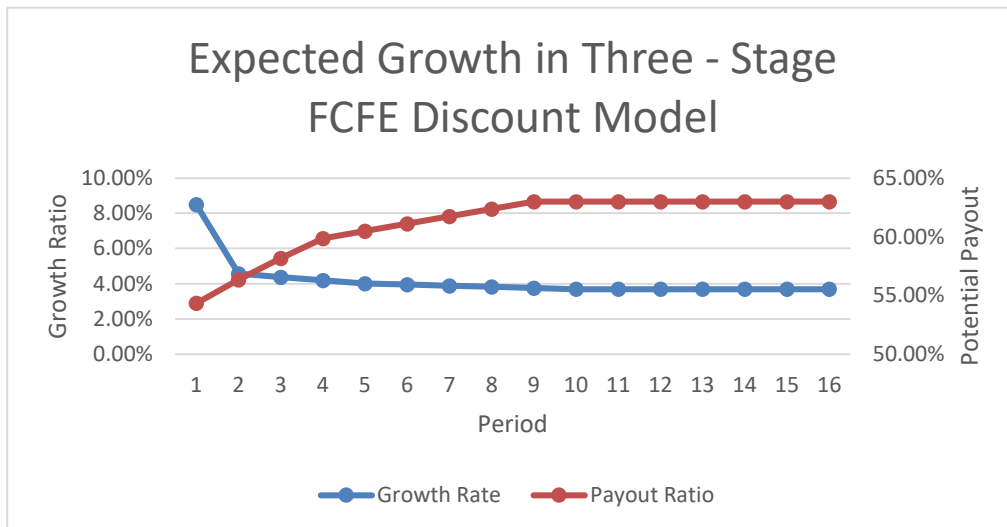


### Three Stage Free Cash Flow to Equity Discount Model

Company **DTE Energy Co** 4.10% GDP  
 Ticker **dte** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		127.27%	-27.27%	5.50			(117.53)
Stage 1	1	12.73%	52.42%	47.58%	6.20	2.95		2.95
	2	5.24%	49.81%	50.19%	6.53	3.28		3.28
	3	4.98%	47.45%	52.55%	6.85	3.60		3.60
	4	4.74%	45.30%	54.70%	7.18	3.93		3.93
	5	4.53%	43.64%	56.36%	7.50	4.23		4.23
Stage 2	6	4.36%	41.98%	58.02%	7.83	4.54		4.54
	7	4.20%	40.32%	59.68%	8.16	4.87		4.87
	8	4.03%	38.66%	61.34%	8.48	5.20		5.20
	9	3.87%	37.00%	63.00%	8.81	5.55		5.55
	10	3.70%	37.00%	63.00%	9.14	5.76	170.58	176.34
Stage 3	11+	3.70%	37.00%	63.00%	9.48	5.97		

**$K_e = 6.87\%$**

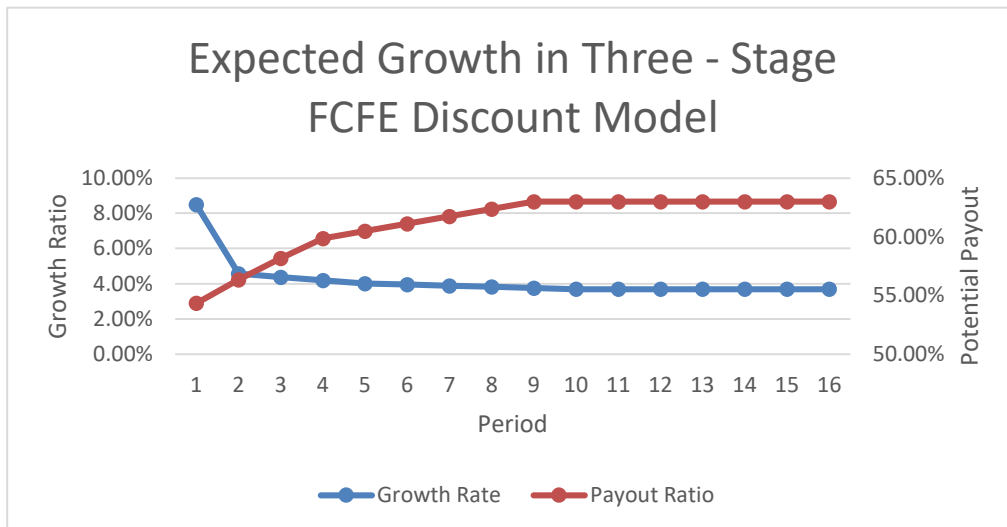


### Three Stage Free Cash Flow to Equity Discount Model

Company **Duke Energy Co** 4.10% GDP  
 Ticker **duk** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		84.91%	15.09%	5.30			(101.95)
	1	8.49%	45.65%	54.35%	5.75	3.13		3.13
	2	4.57%	43.66%	56.34%	6.01	3.39		3.39
Stage 1	3	4.37%	41.83%	58.17%	6.28	3.65		3.65
	4	4.18%	40.15%	59.85%	6.54	3.91		3.91
	5	4.02%	39.52%	60.48%	6.80	4.11		4.11
	6	3.95%	38.89%	61.11%	7.07	4.32		4.32
	7	3.89%	38.26%	61.74%	7.34	4.53		4.53
Stage 2	8	3.83%	37.63%	62.37%	7.62	4.76		4.76
	9	3.76%	37.00%	63.00%	7.91	4.98		4.98
	10	3.70%	37.00%	63.00%	8.20	5.17	153.14	158.31
Stage 3	11+	3.70%	37.00%	63.00%	8.51	5.36		

**$K_e = 7.53\%$**



### Three Stage Free Cash Flow to Equity Discount Model

Company	Entergy Corp	4.10%	GDP
Ticker	etr	18.0	Industry P/E
		63.0%	Target Dividend Payout Ratio
		10.0%	Target ROE

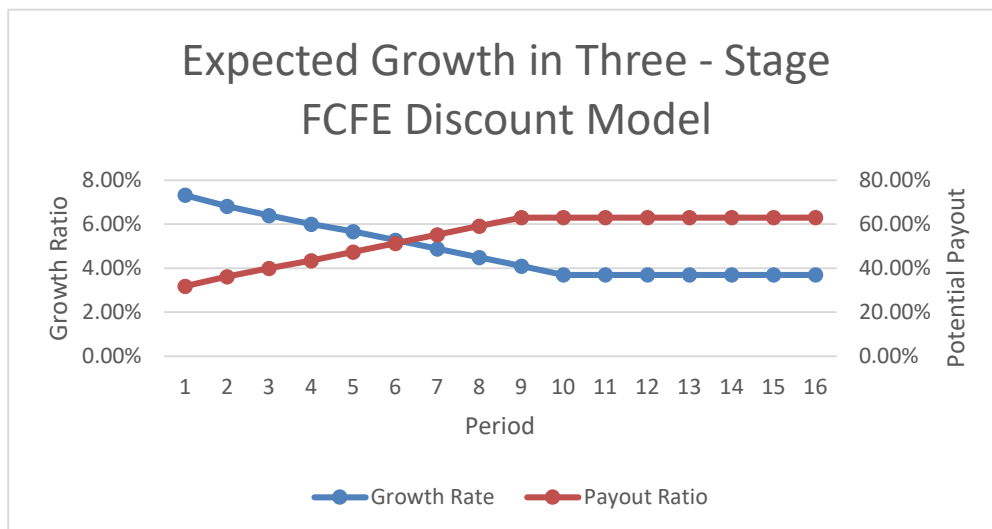
	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		22.56%	77.44%	6.65			(111.36)
	1	2.26%	62.50%	37.50%	6.80	2.55		2.55
	2	6.25%	58.82%	41.18%	7.23	2.98		2.98
Stage 1	3	5.88%	55.56%	44.44%	7.65	3.40		3.40
	4	5.56%	52.63%	47.37%	8.08	3.82		3.82
	5	5.26%	49.51%	50.49%	8.50	4.29		4.29
	6	4.95%	46.38%	53.62%	8.92	4.78		4.78
	7	4.64%	43.25%	56.75%	9.33	5.30		5.30
Stage 2	8	4.33%	40.13%	59.87%	9.74	5.83		5.83
	9	4.01%	37.00%	63.00%	10.13	6.38		6.38
	10	3.70%	37.00%	63.00%	10.50	6.62	196.06	202.68
Stage 3	11+	3.70%	37.00%	63.00%	10.89	6.86		
							<b><math>K_e =</math></b>	<b>8.87%</b>

### Three Stage Free Cash Flow to Equity Discount Model

Company **Eversource Energy** 4.10% GDP  
 Ticker **ES** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		73.17%	26.83%	4.10			(83.09)
	1	7.32%	68.18%	31.82%	4.40	1.40		1.40
	2	6.82%	63.83%	36.17%	4.70	1.70		1.70
Stage 1	3	6.38%	60.00%	40.00%	5.00	2.00		2.00
	4	6.00%	56.60%	43.40%	5.30	2.30		2.30
	5	5.66%	52.68%	47.32%	5.60	2.65		2.65
	6	5.27%	48.76%	51.24%	5.90	3.02		3.02
Stage 2	7	4.88%	44.84%	55.16%	6.18	3.41		3.41
	8	4.48%	40.92%	59.08%	6.46	3.82		3.82
	9	4.09%	37.00%	63.00%	6.72	4.24		4.24
	10	3.70%	37.00%	63.00%	6.97	4.39	130.15	134.55
Stage 3	11+	3.70%	37.00%	63.00%	7.23	4.56		

**$K_e = 7.29%$**



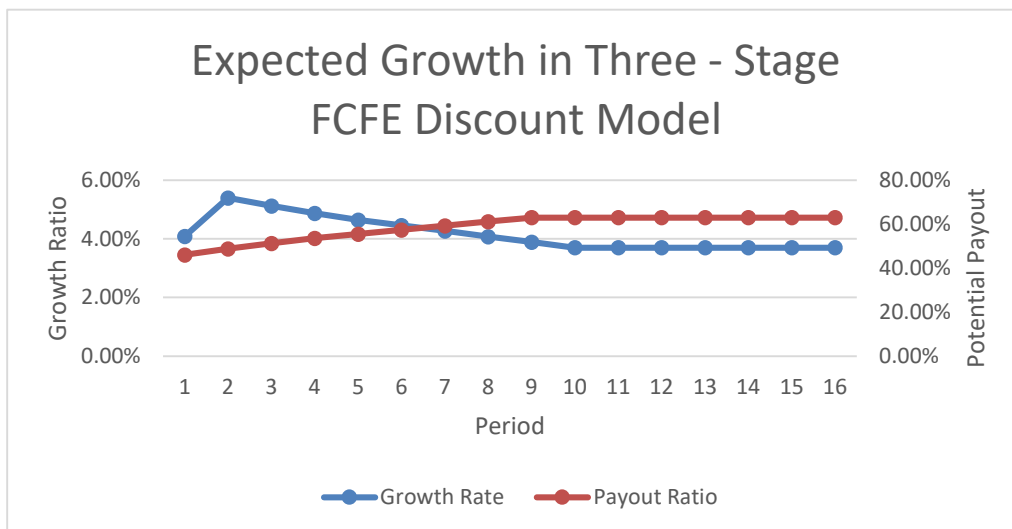


### Three Stage Free Cash Flow to Equity Discount Model

Company **FirstEnergy Corp** **4.10%** GDP  
 Ticker **fe** **18.0** Industry P/E  
**63.0%** Target Dividend Payout Ratio  
**10.0%** Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		40.82%	59.18%	<b>2.45</b>			<b>(41.53)</b>
	1	4.08%	53.92%	46.08%	<b>2.55</b>	1.18		1.18
	2	5.39%	51.16%	48.84%	2.69	1.31		1.31
Stage 1	3	5.12%	48.67%	51.33%	2.83	1.45		1.45
	4	4.87%	46.41%	53.59%	2.96	1.59		1.59
	5	4.64%	44.53%	55.47%	<b>3.10</b>	1.72		1.72
	6	4.45%	42.65%	57.35%	3.24	1.86		1.86
	7	4.26%	40.77%	59.23%	3.38	2.00		2.00
Stage 2	8	4.08%	38.88%	61.12%	3.51	2.15		2.15
	9	3.89%	37.00%	63.00%	3.65	2.30		2.30
	10	3.70%	37.00%	63.00%	3.79	2.38	70.66	73.04
Stage 3	11+	3.70%	37.00%	63.00%	3.93	2.47		

**K<sub>e</sub> = 8.76%**

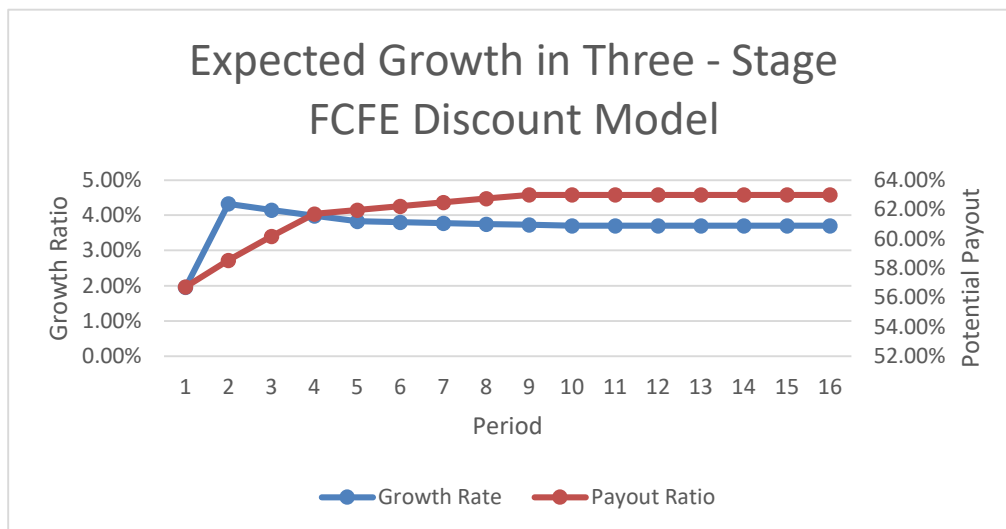


### Three Stage Free Cash Flow to Equity Discount Model

Company	Idacorp Inc	4.10%	GDP
Ticker	ida	18.0	Industry P/E
		63.0%	Target Dividend Payout Ratio
		10.0%	Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		19.61%	80.39%	5.10			(107.07)
	1	1.96%	43.27%	56.73%	5.20	2.95		2.95
	2	4.33%	41.47%	58.53%	5.43	3.18		3.18
Stage 1	3	4.15%	39.82%	60.18%	5.65	3.40		3.40
	4	3.98%	38.30%	61.70%	5.88	3.62		3.62
	5	3.83%	38.04%	61.96%	6.10	3.78		3.78
	6	3.80%	37.78%	62.22%	6.33	3.94		3.94
	7	3.78%	37.52%	62.48%	6.57	4.11		4.11
Stage 2	8	3.75%	37.26%	62.74%	6.82	4.28		4.28
	9	3.73%	37.00%	63.00%	7.07	4.46		4.46
	10	3.70%	37.00%	63.00%	7.33	4.62	136.89	141.51
Stage 3	11+	3.70%	37.00%	63.00%	7.60	4.79		

**$K_e = 5.65\%$**

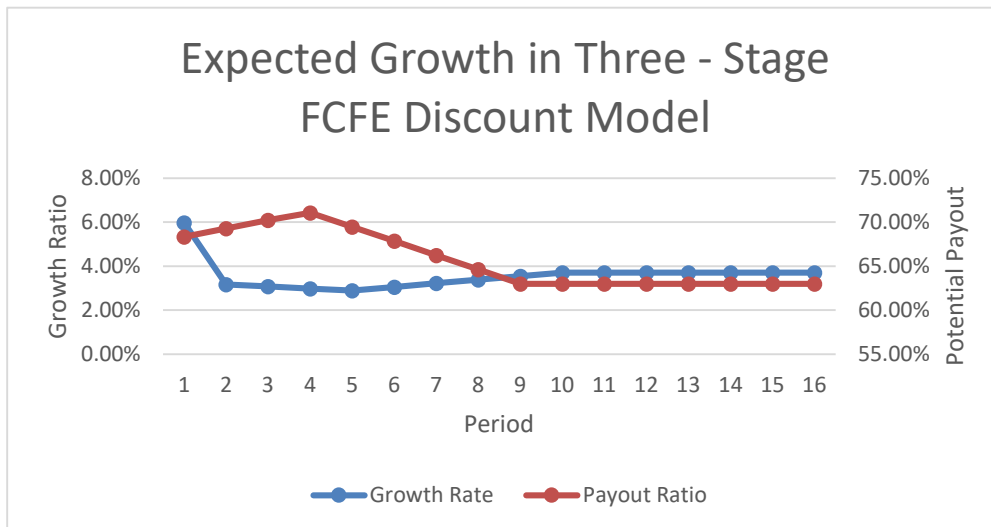


### Three Stage Free Cash Flow to Equity Discount Model

Company **NorthWestern** ( ) 4.10% GDP  
 Ticker **nwe** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		59.70%	40.30%	3.35			(59.34)
	1	5.97%	31.69%	68.31%	3.55	2.43		2.43
	2	3.17%	30.72%	69.28%	3.66	2.54		2.54
Stage 1	3	3.07%	29.80%	70.20%	3.78	2.65		2.65
	4	2.98%	28.94%	71.06%	3.89	2.76		2.76
	5	2.89%	30.55%	69.45%	4.00	2.78		2.78
	6	3.06%	32.16%	67.84%	4.12	2.80		2.80
	7	3.22%	33.78%	66.22%	4.25	2.82		2.82
Stage 2	8	3.38%	35.39%	64.61%	4.40	2.84		2.84
	9	3.54%	37.00%	63.00%	4.55	2.87		2.87
	10	3.70%	37.00%	63.00%	4.72	2.98	88.15	91.13
Stage 3	11+	3.70%	37.00%	63.00%	4.90	3.09		

**$K_e = 7.93%$**

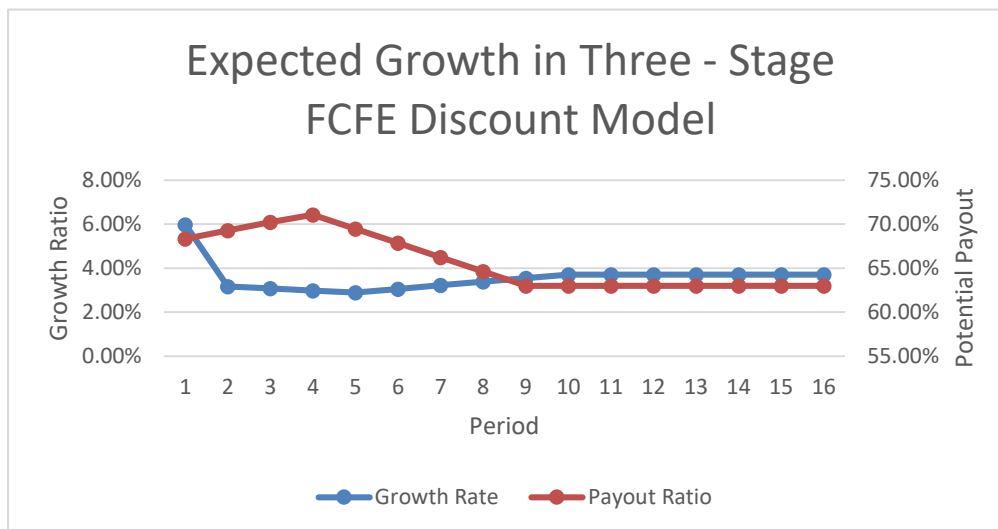


### Three Stage Free Cash Flow to Equity Discount Model

Company **OGE Energy Cor** 4.10% GDP  
 Ticker **oge** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-66.67%	166.67%	2.25			(39.13)
	1	-6.67%	136.90%	-36.90%	2.10	(0.77)		-0.77
	2	13.69%	120.42%	-20.42%	2.39	(0.49)		-0.49
Stage 1	3	12.04%	107.48%	-7.48%	2.68	(0.20)		-0.20
	4	10.75%	97.05%	2.95%	2.96	0.09		0.09
	5	9.70%	85.04%	14.96%	3.25	0.49		0.49
	6	8.50%	73.03%	26.97%	3.53	0.95		0.95
	7	7.30%	61.02%	38.98%	3.78	1.48		1.48
Stage 2	8	6.10%	49.01%	50.99%	4.01	2.05		2.05
	9	4.90%	37.00%	63.00%	4.21	2.65		2.65
	10	3.70%	37.00%	63.00%	4.37	2.75	81.52	84.27
Stage 3	11+	3.70%	37.00%	63.00%	4.53	2.85		

**$K_e = 8.77\%$**

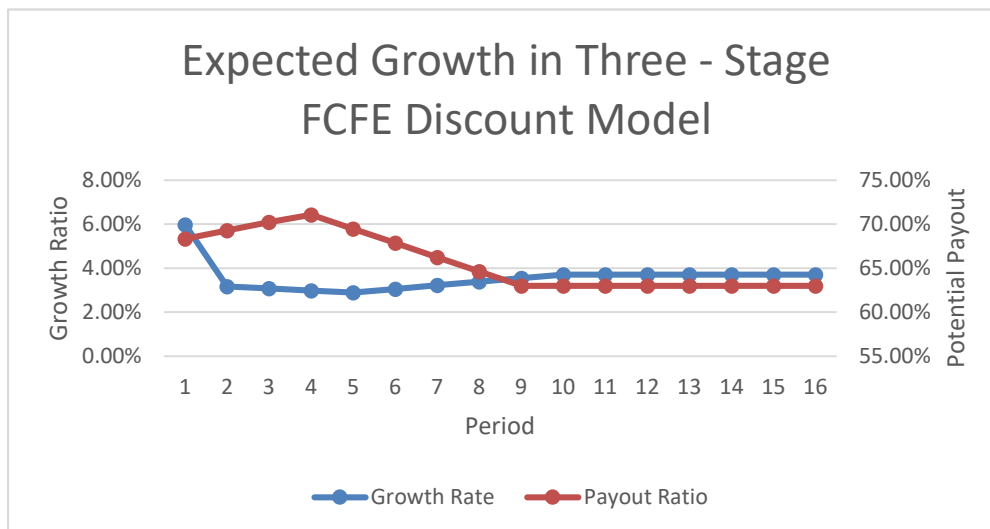


### Three Stage Free Cash Flow to Equity Discount Model

Company **Otter Tail Corp** 4.10% GDP  
 Ticker **ottr** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-280.30%	380.30%	6.60			(58.31)
	1	-28.03%	-52.63%	152.63%	4.75	7.25		7.25
	2	-5.26%	-55.56%	155.56%	4.50	7.00		7.00
Stage 1	3	-5.56%	-58.82%	158.82%	4.25	6.75		6.75
	4	-5.88%	-62.50%	162.50%	4.00	6.50		6.50
	5	-6.25%	-42.60%	142.60%	3.75	5.35		5.35
	6	-4.26%	-22.70%	122.70%	3.59	4.41		4.41
	7	-2.27%	-2.80%	102.80%	3.51	3.61		3.61
Stage 2	8	-0.28%	17.10%	82.90%	3.50	2.90		2.90
	9	1.71%	37.00%	63.00%	3.56	2.24		2.24
	10	3.70%	37.00%	63.00%	3.69	2.32	68.89	71.21
Stage 3	11+	3.70%	37.00%	63.00%	3.83	2.41		

**$K_e = 10.28\%$**

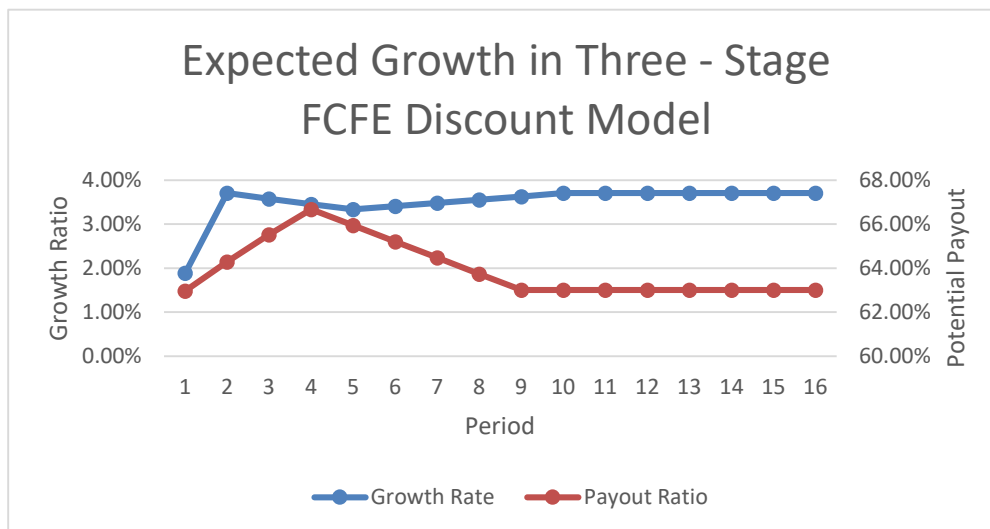


### Three Stage Free Cash Flow to Equity Discount Model

Company **PNM Resources** 4.10% GDP  
 Ticker **pnm** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		18.87%	81.13%	2.65			(48.43)
	1	1.89%	37.04%	62.96%	2.70	1.70		1.70
	2	3.70%	35.71%	64.29%	2.80	1.80		1.80
Stage 1	3	3.57%	34.48%	65.52%	2.90	1.90		1.90
	4	3.45%	33.33%	66.67%	3.00	2.00		2.00
	5	3.33%	34.07%	65.93%	3.10	2.04		2.04
	6	3.41%	34.80%	65.20%	3.21	2.09		2.09
	7	3.48%	35.53%	64.47%	3.32	2.14		2.14
Stage 2	8	3.55%	36.27%	63.73%	3.44	2.19		2.19
	9	3.63%	37.00%	63.00%	3.56	2.24		2.24
	10	3.70%	37.00%	63.00%	3.69	2.33	68.90	71.23
Stage 3	11+	3.70%	37.00%	63.00%	3.83	2.41		

**$K_e = 7.18\%$**

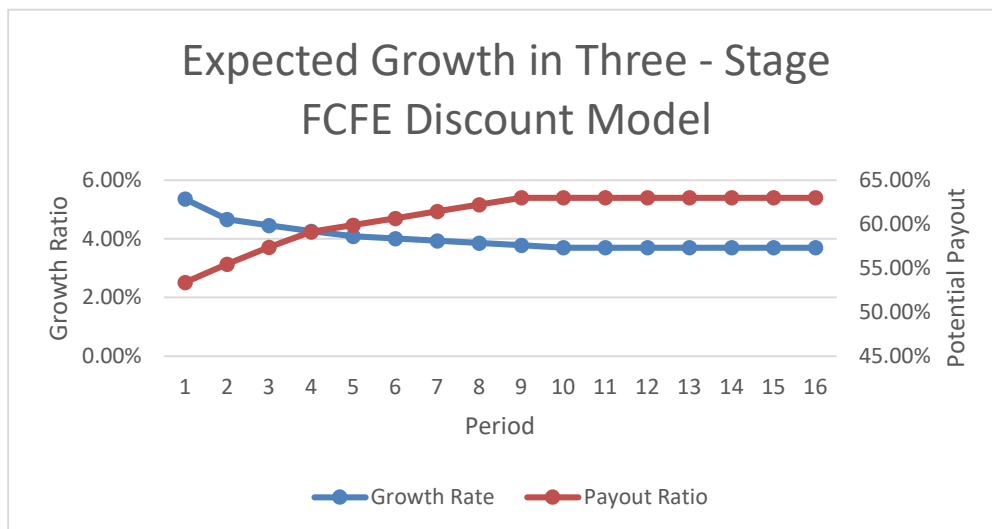


### Three Stage Free Cash Flow to Equity Discount Model

Company **Portland General** 4.10% GDP  
 Ticker **por** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		53.57%	46.43%	2.80			(49.00)
Stage 1	1	5.36%	46.61%	53.39%	2.95	1.58		1.58
	2	4.66%	44.53%	55.47%	3.09	1.71		1.71
	3	4.45%	42.64%	57.36%	3.23	1.85		1.85
	4	4.26%	40.89%	59.11%	3.36	1.99		1.99
	5	4.09%	40.11%	59.89%	3.50	2.10		2.10
Stage 2	6	4.01%	39.34%	60.66%	3.64	2.21		2.21
	7	3.93%	38.56%	61.44%	3.78	2.32		2.32
	8	3.86%	37.78%	62.22%	3.93	2.44		2.44
	9	3.78%	37.00%	63.00%	4.08	2.57		2.57
	10	3.70%	37.00%	63.00%	4.23	2.66	78.93	81.60
Stage 3	11+	3.70%	37.00%	63.00%	4.39	2.76		

**$K_e = 8.36\%$**

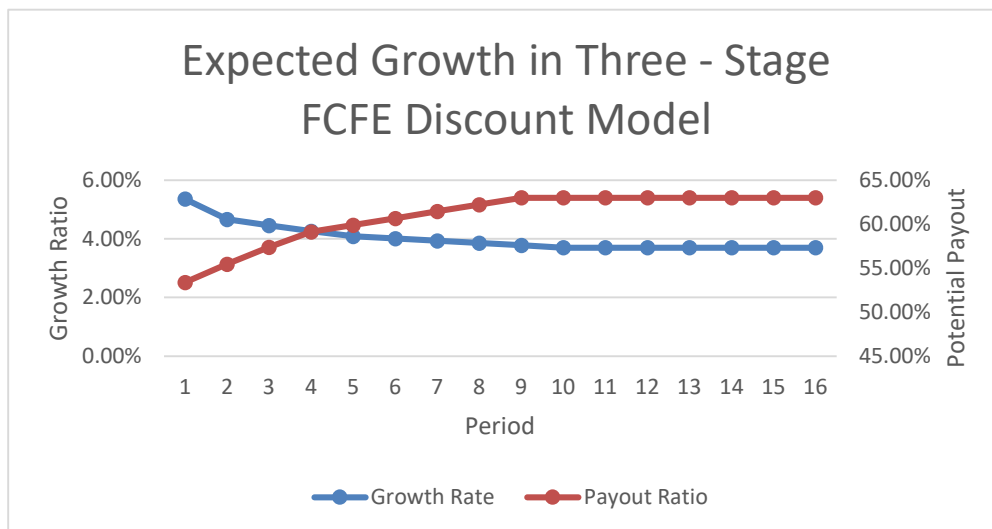


### Three Stage Free Cash Flow to Equity Discount Model

Company **Public Service E** 4.10% GDP  
 Ticker **peg** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		14.49%	85.51%	3.45			(60.68)
Stage 1	1	1.45%	71.43%	28.57%	3.50	1.00		1.00
	2	7.14%	66.67%	33.33%	3.75	1.25		1.25
	3	6.67%	62.50%	37.50%	4.00	1.50		1.50
	4	6.25%	58.82%	41.18%	4.25	1.75		1.75
	5	5.88%	54.46%	45.54%	4.50	2.05		2.05
Stage 2	6	5.45%	50.09%	49.91%	4.75	2.37		2.37
	7	5.01%	45.73%	54.27%	4.98	2.70		2.70
	8	4.57%	41.36%	58.64%	5.21	3.06		3.06
	9	4.14%	37.00%	63.00%	5.43	3.42		3.42
	10	3.70%	37.00%	63.00%	5.63	3.54	105.03	108.58
Stage 3	11+	3.70%	37.00%	63.00%	5.84	3.68		

**$K_e = 8.37%$**



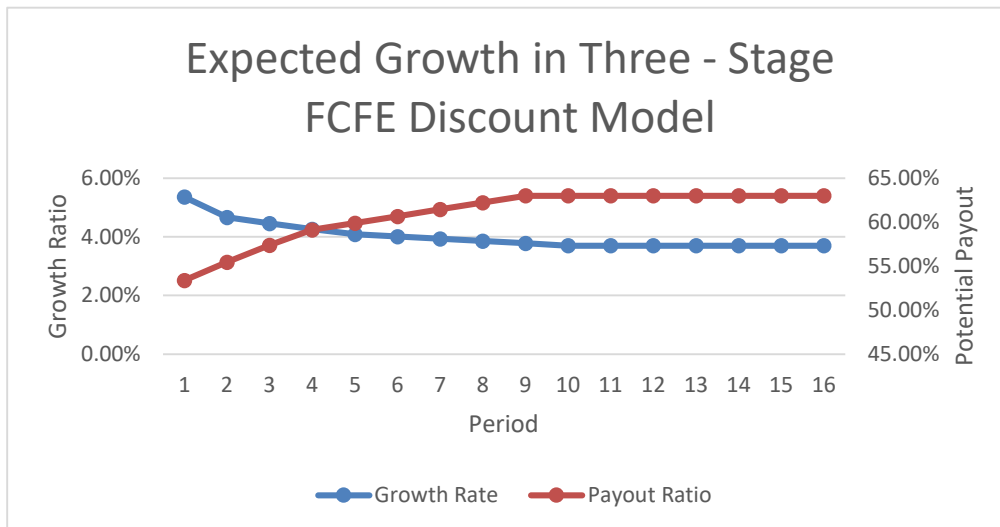


### Three Stage Free Cash Flow to Equity Discount Model

Company **Sempra Energy** 4.10% GDP  
 Ticker **sre** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		50.85%	49.15%	8.85			(154.54)
	1	5.08%	52.42%	47.58%	9.30	4.42		4.42
	2	5.24%	49.81%	50.19%	9.79	4.91		4.91
Stage 1	3	4.98%	47.45%	52.55%	10.28	5.40		5.40
	4	4.74%	45.30%	54.70%	10.76	5.89		5.89
	5	4.53%	43.64%	56.36%	11.25	6.34		6.34
	6	4.36%	41.98%	58.02%	11.74	6.81		6.81
	7	4.20%	40.32%	59.68%	12.23	7.30		7.30
Stage 2	8	4.03%	38.66%	61.34%	12.73	7.81		7.81
	9	3.87%	37.00%	63.00%	13.22	8.33		8.33
	10	3.70%	37.00%	63.00%	13.71	8.64	255.88	264.51
Stage 3	11+	3.70%	37.00%	63.00%	14.22	8.96		

**$K_e = 8.48\%$**

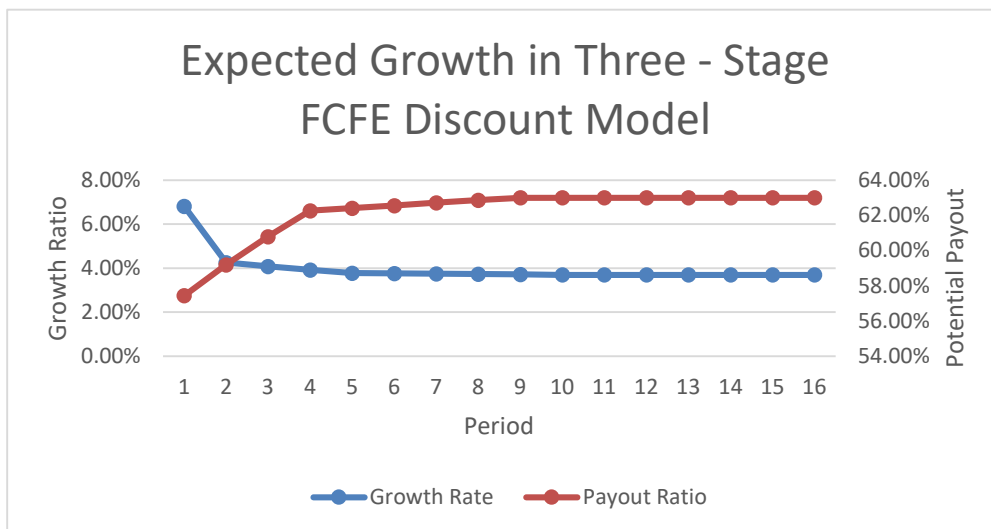


### Three Stage Free Cash Flow to Equity Discount Model

Company **WEC Energy Group** 4.10% GDP  
 Ticker **wec** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		68.18%	31.82%	4.40			(92.98)
	1	6.82%	42.55%	57.45%	4.70	2.70		2.70
	2	4.26%	40.82%	59.18%	4.90	2.90		2.90
Stage 1	3	4.08%	39.22%	60.78%	5.10	3.10		3.10
	4	3.92%	37.74%	62.26%	5.30	3.30		3.30
	5	3.77%	37.59%	62.41%	5.50	3.43		3.43
	6	3.76%	37.44%	62.56%	5.71	3.57		3.57
	7	3.74%	37.29%	62.71%	5.92	3.71		3.71
Stage 2	8	3.73%	37.15%	62.85%	6.14	3.86		3.86
	9	3.71%	37.00%	63.00%	6.37	4.01		4.01
	10	3.70%	37.00%	63.00%	6.60	4.16	123.29	127.45
Stage 3	11+	3.70%	37.00%	63.00%	6.85	4.32		

**$K_e = 6.11\%$**



### Three Stage Free Cash Flow to Equity Discount Model

Company **Xcel Energy Inc** 4.10% GDP  
 Ticker **xel** 18.0 Industry P/E  
 63.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		63.49%	36.51%	3.15			(70.11)
	1	6.35%	48.51%	51.49%	3.35	1.73		1.73
	2	4.85%	46.26%	53.74%	3.51	1.89		1.89
Stage 1	3	4.63%	44.22%	55.78%	3.68	2.05		2.05
	4	4.42%	42.35%	57.65%	3.84	2.21		2.21
	5	4.23%	41.28%	58.72%	4.00	2.35		2.35
	6	4.13%	40.21%	59.79%	4.17	2.49		2.49
	7	4.02%	39.14%	60.86%	4.33	2.64		2.64
Stage 2	8	3.91%	38.07%	61.93%	4.50	2.79		2.79
	9	3.81%	37.00%	63.00%	4.67	2.94		2.94
	10	3.70%	37.00%	63.00%	4.85	3.05	90.46	93.52
Stage 3	11+	3.70%	37.00%	63.00%	5.03	3.17		

**$K_e = 5.59%$**

