

# COST OF CAPITAL STUDY

**YIELD CAPITALIZATION**

**2022 Assessment Year**

APPENDIX C

## Electric Industry

<b>EQUITY RATE</b>						<b>8.50%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>							PAGE
	CAPM Ex Ante		5.18%				4
<b>DIVIDEND GROWTH MODELS Single Stage</b>							
	Value Line, based on Dividends Growth		8.50%				6
	Value Line, based on Earnings Growth		8.75%				7
	Value Line, based on Return on Equity		6.75%				8
<b>FCFE GROWTH MODEL Multi Stage</b>							9
					<b>RANGE</b>	<b>5.18-8.75%</b>	
<b>DEBT RATE</b>						<b>3.30%</b>	10
<b>MARKET CAPITAL STRUCTURE</b>							
	Equity	60%	x	8.50%	=	5.10%	3
	Debt	40%	x	3.30%	=	1.32%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	1.32%	<u>1.00%</u>
<b>WEIGHTED AVERAGE COST OF CAPITAL</b>						<b>6.10%</b>	

# SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2022 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	22.3	2.6%	5,988,737,700	45.6%	400,000,000	3.0%	6,735,000,000	51.3%	13,123,737,700
Ameren Corp	aee	0.80	A	22.4	2.5%	9,699,828,000	43.3%	142,000,000	0.6%	12,562,000,000	56.1%	22,403,828,000
Avangrid Inc	agr	0.85	B++	21.3	3.6%	19,340,640,000	72.1%			7,486,000,000	27.9%	26,826,640,000
Avista Corp	ava	0.95	B++	19.3	4.0%	2,145,000,000	52.4%			1,949,800,000	47.6%	4,094,800,000
Black Hills	bkh	1.00	A	17.9	3.3%	2,787,487,500	40.3%			4,125,600,000	59.7%	6,913,087,500
CMS Energy Corp	cms	0.80	B++	24.8	2.7%	6,406,593,600	34.6%	37,000,000	0.2%	12,092,000,000	65.2%	18,535,593,600
CenterPoint Energy Inc	cnp	1.15	B+	29.1	2.4%	8,616,204,000	33.2%	1,778,000,000	6.9%	15,558,000,000	59.9%	25,952,204,000
Chesapeake Utilities	cpk	0.80	A	28.5	1.3%	798,300,000	61.2%			505,500,000	38.8%	1,303,800,000
Consolidated Edison	ed	0.75	A+	19.4	3.7%	20,018,700,000	47.8%			21,841,000,000	52.2%	41,859,700,000
Dominion Energy	D	0.85	B++	25.4	3.2%	24,624,000,000	40.4%	1,596,000,000	2.6%	34,775,000,000	57.0%	60,995,000,000
DTE Energy Co	dte	0.95	A	29.7	3.2%	8,705,187,500	37.5%			14,531,000,000	62.5%	23,236,187,500
Duke Energy Corp	duk	0.85	A	27.1	3.8%	46,893,000,000	44.3%	973,000,000	0.9%	57,929,000,000	54.8%	105,795,000,000
Entergy Corp	etr	0.95	B++	15.3	3.5%	11,636,163,000	31.7%	254,400,000	0.7%	24,842,000,000	67.6%	36,732,563,000
Eversource Energy	es	0.90	A	26.0	2.7%	14,643,400,000	44.8%	155,600,000	0.5%	17,874,000,000	54.7%	32,673,000,000
Exelon Corp	exc	0.95	B++	NMF	3.7%	33,369,000,000	48.3%			35,659,000,000	51.7%	69,028,000,000
FirstEnergy Corp	fe	0.85	B+	18.2	3.8%	8,607,000,000	27.1%	707,000,000	2.2%	22,503,000,000	70.7%	31,817,000,000
Fortis Inc	fts.to	0.75	B++	22.3	4.3%	17,667,308,000	40.8%	1,623,000,000	3.7%	24,040,000,000	55.5%	43,330,308,000
Hawaiian Electric	he	0.85	A	19.3	3.3%	2,425,425,000	51.6%	34,300,000	0.7%	2,244,800,000	47.7%	4,704,525,000
Idacorp Inc	ida	0.80	A+	22.8	2.6%	2,663,760,000	57.1%			2,000,600,000	42.9%	4,664,360,000
MGE Energy Inc	mgee	0.75	A+	24.6	1.9%	1,027,305,600	61.9%			631,500,000	38.1%	1,658,805,600
NorthWestern Corp	nwe	0.95	B++	15.4	4.3%	2,340,775,000	48.2%			2,516,700,000	51.8%	4,857,475,000
OGE Energy Corp	oge	1.05	A	16.0	4.3%	4,056,027,000	90.0%			449,640,000	10.0%	4,505,667,000
Otter Tail Corp	ottr	0.85	A	14.6	2.2%	990,552,000	57.4%			734,000,000	42.6%	1,724,552,000
PNM Resources Inc	pnm	0.95	B++	23.8	2.8%	2,167,207,500	38.9%	11,500,000	0.2%	3,396,000,000	60.9%	5,574,707,500
Portland General Electric	por	0.90	B++	20.8	3.2%	2,707,430,000	45.2%			3,285,000,000	54.8%	5,992,430,000
Public Service Enterprise G	peg	0.90	A++	26.4	3.1%	13,955,600,000	49.2%			14,425,000,000	50.8%	28,380,600,000
Sempra Energy	sre	0.95	A	39.6	3.3%	23,870,100,000	51.7%	2,278,000,000	4.9%	20,042,000,000	43.4%	46,190,100,000
WEC Energy Group Inc	wec	0.80	A+	22.1	2.8%	10,913,878,000	44.6%	30,400,000	0.1%	13,524,000,000	55.3%	24,468,278,000
Xcel Energy Inc	xel	0.80	A+	23.9	2.7%	15,363,000,000	42.3%			20,979,000,000	57.7%	36,342,000,000
<b>Mean</b>		<b>0.88</b>		<b>22.8</b>	<b>3.1%</b>	<b>11,187,158,945</b>	<b>47.7%</b>		<b>2.0%</b>	<b>13,766,763,448</b>	<b>51.4%</b>	
<b>Harmonic Mean</b>		<b>0.87</b>					<b>45.0%</b>		<b>0.5%</b>		<b>44.6%</b>	
<b>Weighted Mean</b>						<b>324,427,609,400</b>	<b>44.2%</b>	<b>10,020,200,000</b>	<b>1.4%</b>	<b>399,236,140,000</b>	<b>54.4%</b>	<b>733,683,949,400</b>
<b>Median</b>		<b>0.85</b>			<b>3.2%</b>		<b>45.2%</b>		<b>0.8%</b>		<b>54.7%</b>	

# SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2022 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Alliant Energy Corp	Int	61.02	250,470,000	15,283,679,400	63.6%	400,000,000	1.7%	8,330,000,000	34.7%	24,013,679,400
Ameren Corp	aee	89.01	257,700,000	22,937,877,000	61.0%	142,000,000	0.4%	14,521,000,000	38.6%	37,600,877,000
Avangrid Inc	agr	49.39	387,200,000	19,123,808,000	67.6%	-		9,155,000,000	32.4%	28,278,808,000
Avista Corp	ava	42.05	71,500,000	3,006,575,000	53.4%	-		2,621,569,000	46.6%	5,628,144,000
Black Hills	bkh	69.94	64,750,000	4,528,615,000	49.8%	-		4,570,619,000	50.2%	9,099,234,000
CMS Energy Corp	cms	64.59	289,760,000	18,715,598,400	57.5%	37,000,000	0.1%	13,800,000,000	42.4%	32,552,598,400
CenterPoint Energy	cnp	27.73	628,920,000	17,439,951,600	47.6%	1,778,000,000	4.9%	17,385,000,000	47.5%	36,602,951,600
Chesapeake Utilities	cpk	145.81	18,000,000	2,624,580,000	81.5%	-		597,200,000	18.5%	3,221,780,000
Consolidated Edison	ed	84.51	354,000,000	29,916,540,000	53.2%	-		26,287,000,000	46.8%	56,203,540,000
Dominion Energy	D	77.91	810,000,000	63,107,100,000	51.2%	1,596,000,000	1.3%	58,438,000,000	47.5%	123,141,100,000
DTE Energy Co	dte	119.54	193,750,000	23,160,875,000	55.0%	-		18,916,000,000	45.0%	42,076,875,000
Duke Energy Corp	duk	103.86	770,000,000	79,972,200,000	53.1%	973,000,000	0.6%	69,683,000,000	46.3%	150,628,200,000
Entergy Corp	etr	111.63	202,650,000	22,621,819,500	45.3%	254,400,000	0.5%	27,061,171,000	54.2%	49,937,390,500
Eversource Energy	es	90.26	347,000,000	31,320,220,000	61.3%	155,600,000	0.3%	19,636,300,000	38.4%	51,112,120,000
Exelon Corp	exc	40.86	980,000,000	40,042,800,000	47.9%	-		43,592,000,000	52.1%	83,634,800,000
FirstEnergy Corp	fe	41.21	570,000,000	23,489,700,000	45.8%	707,000,000	1.4%	27,043,000,000	52.8%	51,239,700,000
Fortis Inc	fts.to	47.83	474,800,000	22,709,684,000	47.9%	1,623,000,000	3.4%	23,040,000,000	48.6%	47,372,684,000
Hawaiian Electric	he	41.14	109,500,000	4,504,830,000	70.1%	34,300,000	0.5%	1,890,490,000	29.4%	6,429,620,000
Idacorp Inc	ida	112.52	50,450,000	5,676,634,000	70.4%	-		2,381,172,000	29.6%	8,057,806,000
MGE Energy Inc	mgee	81.81	36,160,000	2,958,249,600	80.2%	-		729,914,000	19.8%	3,688,163,600
NorthWestern Corp	nwe	57.16	54,500,000	3,115,220,000	52.4%	-		2,827,336,000	47.6%	5,942,556,000
OGE Energy Corp	oge	37.96	200,100,000	7,595,796,000	63.0%	-		4,460,200,000	37.0%	12,055,996,000
Otter Tail Corp	ottr	70.93	41,550,000	2,947,141,500	77.0%	-		878,272,000	23.0%	3,825,413,500
PNM Resources Inc	pnm	45.26	85,830,000	3,884,665,800	49.7%	11,500,000	0.1%	3,915,010,000	50.1%	7,811,175,800
Portland General El	por	52.92	89,650,000	4,744,278,000	55.3%	-		3,831,000,000	44.7%	8,575,278,000
Public Service Enter	peg	66.73	502,000,000	33,498,460,000	65.6%	-		17,546,000,000	34.4%	51,044,460,000
Sempra Energy	sre	132.28	317,000,000	41,932,760,000	63.2%	2,278,000,000	3.4%	22,126,000,000	33.4%	66,336,760,000
WEC Energy Group	wec	96.30	315,430,000	30,375,909,000	67.2%	30,400,000	0.1%	14,819,400,000	32.8%	45,225,709,000
Xcel Energy Inc	xel	67.70	540,000,000	36,558,000,000	59.2%	-		25,232,000,000	40.8%	61,790,000,000
<b>Mean</b>					<b>59.2%</b>		<b>1.3%</b>		<b>40.2%</b>	
<b>Harmonic Mean</b>					<b>57.6%</b>		<b>0.3%</b>		<b>37.1%</b>	
<b>Weighted Mean</b>				<b>617,793,566,800</b>	<b>55.5%</b>	<b>10,020,200,000</b>	<b>0.9%</b>	<b>485,313,653,000</b>	<b>43.6%</b>	<b>1,113,127,419,800</b>
<b>Median</b>					<b>57.5%</b>		<b>0.6%</b>		<b>42.4%</b>	
<b>Std Dev</b>					<b>10.2%</b>		<b>1.5%</b>		<b>9.9%</b>	
<b>Coefficient of Variation</b>					<b>17.3%</b>		<b>112.6%</b>		<b>24.7%</b>	
<b>Target</b>					<b>60%</b>				<b>40%</b>	<b>100%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2022 Assessment Year

## Ex Ante

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

<b>Ke = Cost of Equity</b>			<b>5.18%</b>
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to page 1

Rm =	rate of return	5.76%
Rf =	risk free rate	1.90%
Rp =	risk premium	3.86%
B =	Beta	0.85

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<b>Rp = Risk Premium</b>			<b>3.86%</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>	4.24%	chart page 15
<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a>	3.86%	adjusted for Rf
2021 Implied Premium		

<b>Rf = Risk Free Rate</b>			<b>1.90%</b>
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### 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%

<b>Inflation</b>			<b>2.34%</b>
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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%
<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>4.14%</b>
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real GDP + inflation est

### Federal Reserve Projected Long Run Real GDP Growth

Median Projection Value From Dec 15, 202 Report	1.80%
<a href="https://www.federalreserve.gov/monetarypolicy/files/fomcprotabl20211215.pdf">https://www.federalreserve.gov/monetarypolicy/files/fomcprotabl20211215.pdf</a>	

### Congressional Budget Office Real GDP Economic Projections

The Budget and Economic Outlook 2021-2031	2021-2025	1.90%	Table 2.3, pg 15
Average Percentage Change Year to Year	2026-2031	1.70%	
<a href="https://www.cbo.gov/system/files/2021-02/56970-">https://www.cbo.gov/system/files/2021-02/56970-</a>			

### 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	
<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

2022 Assessment Year

Electric Industry

### Based on Dividend Growth

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

$K_e$  = Cost of Equity  
 $D_1$  = Expected Dividends  
 $P_0$  = 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	61.02	1.71	2.80%	6.00%	8.80%
Ameren Corp	aee	89.01	2.36	2.65%	7.00%	9.65%
Avangrid Inc	agr	49.39	1.76	3.56%	1.00%	4.56%
Avista Corp	ava	42.05	1.76	4.19%	4.50%	8.69%
Black Hills	bkh	69.94	2.41	3.45%	5.50%	8.95%
CMS Energy Corp	cms	64.59	1.84	2.85%	6.00%	8.85%
CenterPoint Energy In	cnp	27.73	0.71	2.56%	2.50%	5.06%
Chesapeake Utilities	cpk	145.81	2.00	1.37%	8.00%	9.37%
Consolidated Edison	ed	84.51	3.16	3.74%	2.50%	6.24%
Dominion Energy	D	77.91	2.67	3.43%	-0.50%	2.93%
DTE Energy Co	dte	119.54	3.60	3.01%	3.00%	6.01%
Duke Energy Corp	duk	103.86	3.98	3.83%	2.00%	5.83%
Energys Corp	etr	111.63	4.09	3.66%	5.00%	8.66%
Eversource Energy	es	90.26	2.56	2.84%	6.00%	8.84%
Exelon Corp	exc	40.86	1.35	3.30%	NMF	NMF
FirstEnergy Corp	fe	41.21	1.56	3.79%	3.00%	6.79%
Fortis Inc	fts.to	47.83	2.21	4.62%	6.00%	10.62%
Hawaiian Electric	he	41.14	1.40	3.40%	3.00%	6.40%
Idacorp Inc	ida	112.52	3.05	2.71%	6.50%	9.21%
MGE Energy Inc	mgee	81.81	1.59	1.94%	4.50%	6.44%
NorthWestern Corp	nwe	57.16	2.52	4.41%	2.50%	6.91%
OGE Energy Corp	oge	37.96	1.66	4.37%	3.00%	7.37%
Otter Tail Corp	ottr	70.93	1.65	2.33%	6.00%	8.33%
PNM Resources Inc	pnm	45.26	1.64	3.62%	6.50%	10.12%
Portland General Elect	por	52.92	1.80	3.40%	5.50%	8.90%
Public Service Enterpr	peg	66.73	2.16	3.24%	5.00%	8.24%
Sempra Energy	sre	132.28	4.62	3.49%	6.00%	9.49%
WEC Energy Group In	wec	96.30	2.91	3.02%	7.00%	10.02%
Xcel Energy Inc	xel	67.70	1.94	2.87%	6.00%	8.87%
<b>Mean</b>						<b>7.86%</b>
<b>Harmonic Mean</b>						<b>7.25%</b>
<b>Median</b>						<b>8.67%</b>
<b>Max</b>						<b>10.62%</b>
<b>Min</b>						<b>2.93%</b>
<b>Std Dev</b>						<b>1.87%</b>
<b>Coefficient of Variation</b>						

**Say 8.50%**

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2022 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	61.02	1.71	2.80%	4.50%	7.30%
Ameren Corp	aee	89.01	2.36	2.65%	6.50%	9.15%
Avangrid Inc	agr	49.39	1.76	3.56%	3.00%	6.56%
Avista Corp	ava	42.05	1.76	4.19%	3.00%	7.19%
Black Hills	bkh	69.94	2.41	3.45%	5.00%	8.45%
CMS Energy Corp	cms	64.59	1.84	2.85%	6.50%	9.35%
CenterPoint Energy	cnp	27.73	0.71	2.56%	5.00%	7.56%
Chesapeake Utilities	cpk	145.81	2.00	1.37%	8.50%	9.87%
Consolidated Edison	ed	84.51	3.16	3.74%	3.50%	7.24%
Dominion Energy	D	77.91	2.67	3.43%	11.50%	14.93%
DTE Energy Co	dte	119.54	3.60	3.01%	4.50%	7.51%
Duke Energy Corp	duk	103.86	3.98	3.83%	7.00%	10.83%
Entergy Corp	etr	111.63	4.09	3.66%	3.00%	6.66%
Eversource Energy	es	90.26	2.56	2.84%	5.50%	8.34%
Exelon Corp	exc	40.86	1.35	3.30%	NMF	NMF
FirstEnergy Corp	fe	41.21	1.56	3.79%	10.00%	13.79%
Fortis Inc	fts.to	47.83	2.21	4.62%	5.00%	9.62%
Hawaiian Electric	he	41.14	1.40	3.40%	3.00%	6.40%
Idacorp Inc	ida	112.52	3.05	2.71%	4.00%	6.71%
MGE Energy Inc	mgee	81.81	1.59	1.94%	4.50%	6.44%
NorthWestern Corp	nwe	57.16	2.52	4.41%	2.00%	6.41%
OGE Energy Corp	oge	37.96	1.66	4.37%	6.50%	10.87%
Otter Tail Corp	ottr	70.93	1.65	2.33%	4.50%	6.83%
PNM Resources Inc	pnm	45.26	1.64	3.62%	6.50%	10.12%
Portland General Ele	por	52.92	1.80	3.40%	7.00%	10.40%
Public Service Enter	peg	66.73	2.16	3.24%	4.00%	7.24%
Sempra Energy	sre	132.28	4.62	3.49%	10.00%	13.49%
WEC Energy Group	wec	96.30	2.91	3.02%	6.00%	9.02%
Xcel Energy Inc	xel	67.70	1.94	2.87%	6.00%	8.87%
<b>Mean</b>						<b>8.83%</b>
<b>Harmonic Mean</b>						<b>8.33%</b>
<b>Median</b>						<b>8.39%</b>
<b>Max</b>						<b>14.93%</b>
<b>Min</b>						<b>6.40%</b>
<b>Std Dev</b>						<b>2.34%</b>
<b>Coefficient of Variation</b>						<b>26.48%</b>
<b>Say</b>						<b>8.75%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

## DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2022 Assessment Year

Electric Industry

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

**K<sub>e</sub>** = 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 <sub>e</sub> Dividends	K <sub>e</sub> Earnings
Alliant Energy Corp	Int	61.02	1.71	2.75	2.80%	38.0%	4.51%	1.71%	4.51%	6.22%
Ameren Corp	aee	89.01	2.36	4.10	2.65%	43.0%	4.61%	1.98%	4.63%	6.59%
Avangrid Inc	agr	49.39	1.76	1.95	3.56%	17.0%	3.95%	0.67%	4.23%	4.62%
Avista Corp	ava	42.05	1.76	2.05	4.19%	18.0%	4.88%	0.88%	5.06%	5.75%
Black Hills	bkh	69.94	2.41	4.05	3.45%	41.0%	5.79%	2.37%	5.82%	8.16%
CMS Energy Corp	cms	64.59	1.84	2.85	2.85%	32.0%	4.41%	1.41%	4.26%	5.82%
CenterPoint Energy Inc	cnp	27.73	0.71	1.25	2.56%	28.0%	4.51%	1.26%	3.82%	5.77%
Chesapeake Utilities	cpk	145.81	2.00	4.95	1.37%	61.0%	3.39%	2.07%	3.44%	5.47%
Consolidated Edison	ed	84.51	3.16	4.50	3.74%	32.0%	5.32%	1.70%	5.44%	7.03%
Dominion Energy	D	77.91	2.67	4.10	3.43%	16.0%	5.26%	0.84%	4.27%	6.10%
DTE Energy Co	dte	119.54	3.60	5.90	3.01%	1.0%	4.94%	0.05%	3.06%	4.98%
Duke Energy Corp	duk	103.86	3.98	5.45	3.83%	21.0%	5.25%	1.10%	4.93%	6.35%
Entergy Corp	etr	111.63	4.09	6.30	3.66%	43.0%	5.64%	2.43%	6.09%	8.07%
Eversource Energy	es	90.26	2.56	4.05	2.84%	30.0%	4.49%	1.35%	4.18%	5.83%
Exelon Corp	exc	40.86	1.35	2.25	3.30%	44.0%	5.51%	2.42%	5.73%	7.93%
FirstEnergy Corp	fe	41.21	1.56	2.40	3.79%	34.0%	5.82%	1.98%	5.77%	7.80%
Fortis Inc	fts.to	47.83	2.21	2.80	4.62%	48.0%	5.85%	2.81%	7.43%	8.66%
Hawaiian Electric	he	41.14	1.40	2.00	3.40%	37.0%	4.86%	1.80%	5.20%	6.66%
Idacorp Inc	ida	112.52	3.05	5.10	2.71%	41.0%	4.53%	1.86%	4.57%	6.39%
MGE Energy Inc	mgee	81.81	1.59	3.00	1.94%	48.0%	3.67%	1.76%	3.70%	5.43%
NorthWestern Corp	nwe	57.16	2.52	3.35	4.41%	25.0%	5.86%	1.47%	5.87%	7.33%
OGE Energy Corp	oge	37.96	1.66	2.50	4.37%	31.0%	6.59%	2.04%	6.41%	8.63%
Otter Tail Corp	ottr	70.93	1.65	3.95	2.33%	63.0%	5.57%	3.51%	5.83%	9.08%
PNM Resources Inc	pnm	45.26	1.64	2.45	3.62%	45.0%	5.41%	2.44%	6.06%	7.85%
Portland General Electric	por	52.92	1.80	2.90	3.40%	38.0%	5.48%	2.08%	5.48%	7.56%
Public Service Enterprise Group	peg	66.73	2.16	3.60	3.24%	13.0%	5.39%	0.70%	3.94%	6.10%
Sempra Energy	sre	132.28	4.62	8.50	3.49%	NMF	6.43%	NMF	NMF	NMF
WEC Energy Group Inc	wec	96.30	2.91	4.35	3.02%	34.0%	4.52%	1.54%	4.56%	6.05%
Xcel Energy Inc	xel	67.70	1.94	3.10	2.87%	38.0%	4.58%	1.74%	4.61%	6.32%
<b>Mean</b>									<b>4.96%</b>	<b>6.73%</b>
<b>Harmonic Mean</b>									<b>4.76%</b>	<b>6.54%</b>
<b>Median</b>									<b>4.78%</b>	<b>6.37%</b>
<b>Std Dev</b>									<b>1.01%</b>	<b>1.19%</b>
<b>Coefficient of Variation</b>									<b>20.35%</b>	<b>17.60%</b>

say **6.75%**

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

Washington State Department of Revenue

2022 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
Alliant Energy Corp	Int	61.02	2.75	22.19	62.00%	11.00%	5.78%
Ameren Corp	aee	89.01	4.10	21.71	57.00%	10.00%	6.69%
Avangrid Inc	agr	49.39	1.95	25.33	90.00%	4.00%	4.94%
Avista Corp	ava	42.05	2.05	20.51	85.00%	6.50%	7.71%
Black Hills	bkh	69.94	4.05	17.27	59.00%	9.00%	8.77%
CMS Energy Corp	cms	64.59	2.85	22.66	65.00%	12.00%	6.42%
CenterPoint Energy	cnp	27.73	1.25	22.18	59.00%	9.00%	6.69%
Chesapeake Utilities	cpk	145.81	4.95	29.46	40.00%	10.00%	2.96%
Consolidated Edison	ed	84.51	4.50	18.78	68.00%	7.50%	7.69%
Dominion Energy	D	77.91	4.10	19.00	66.00%	11.50%	8.25%
DTE Energy Co	dte	119.54	5.90	20.26	62.00%	11.00%	7.44%
Duke Energy Corp	duk	103.86	5.45	19.06	73.00%	9.00%	8.24%
Entergy Corp	etr	111.63	6.30	17.72	65.00%	10.50%	9.02%
Eversource Energy	es	90.26	4.05	22.29	64.00%	9.00%	6.09%
Exelon Corp	exc	40.86	2.25	18.16	60.00%	9.50%	9.08%
FirstEnergy Corp	fe	41.21	2.40	17.17	65.00%	15.50%	9.84%
Fortis Inc	fts.to	47.83	2.80	17.08	46.00%	7.00%	9.35%
Hawaiian Electric	he	41.14	2.00	20.57	70.00%	8.50%	6.29%
Idacorp Inc	ida	112.52	5.10	22.06	60.00%	9.50%	5.45%
MGE Energy Inc	mgee	81.81	3.00	27.27	53.00%	10.00%	3.26%
NorthWestern Corp	nwe	57.16	3.35	17.06	75.00%	7.00%	8.58%
OGE Energy Corp	oge	37.96	2.50	15.18	66.00%	12.00%	11.04%
Otter Tail Corp	ottr	70.93	3.95	17.96	41.00%	15.50%	6.67%
PNM Resources Inc	pnm	45.26	2.45	18.47	53.00%	9.00%	8.25%
Portland General Ele	por	52.92	2.90	18.25	62.00%	9.50%	7.74%
Public Service Enter	peg	66.73	3.60	18.54	60.00%	12.50%	8.37%
Sempra Energy	sre	132.28	8.50	15.56	55.00%	10.50%	10.57%
WEC Energy Group	wec	96.30	4.35	22.14	67.00%	12.00%	6.36%
Xcel Energy Inc	xel	67.70	3.10	21.84	62.00%	10.50%	6.16%
<b>Mean</b>				<b>20.20</b>	<b>62.41%</b>	<b>9.95%</b>	<b>7.37%</b>
<b>Harmonic Mean</b>				<b>19.73</b>	<b>60.55%</b>	<b>9.28%</b>	<b>6.74%</b>
<b>Median</b>				<b>19.06</b>	<b>62.00%</b>	<b>10.00%</b>	<b>7.69%</b>
<b>Industry Summary</b>				<b>20.00</b>	<b>62.00%</b>	<b>10.00%</b>	

**Say 7.50%**



## SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2022 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	Baa2	BBB+
Chesapeake Utilities	cpk		
Consolidated Edison	ed	Baa2	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-
Exelon Corp	exc	Baa2	BBB+
FirstEnergy Corp	fe	Ba1	BBB-
Fortis Inc	fts.to	Baa3	A-
Hawaiian Electric	he	Baa1	BBB
Idacorp Inc	ida	Baa1	BBB
MGE Energy Inc	mgee	A1	AA-
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 Gro	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>
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Mergent's Bond Record January 2022, page 90				
<b>Corporate</b>	<b>Aaa</b>	<b>Aa</b>	<b>A</b>	<b>Baa</b>
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%
<b>4th Qtr Average</b>	<b>2.67%</b>	<b>2.82%</b>	<b>3.00%</b>	<b>3.33%</b>
<b>Public Utilities</b>		<b>Aa</b>	<b>A</b>	<b>Baa</b>
October		2.99%	3.09%	3.32%
November		2.91%	3.02%	3.25%
December		3.01%	3.13%	3.36%
<b>4th Qtr Average</b>		<b>2.97%</b>	<b>3.08%</b>	<b>3.31%</b>
<b>Industrials</b>	<b>Aaa</b>	<b>Aa</b>	<b>A</b>	<b>Baa</b>
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%
<b>4th Qtr Average</b>	<b>2.67%</b>	<b>2.66%</b>	<b>2.93%</b>	<b>3.35%</b>

	<b>Corporate</b>	<b>Utilities</b>
<b>Bloomberg S&amp;P Bond Yields</b>	<b>BBB+</b>	2.93%
<b>Capital IQ Bond Yield</b>	<b>BBB+</b>	3.69%

<b>Debt Yield Rate</b>	<b>3.30%</b>
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## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2022 Assessment Year

Electric Industry

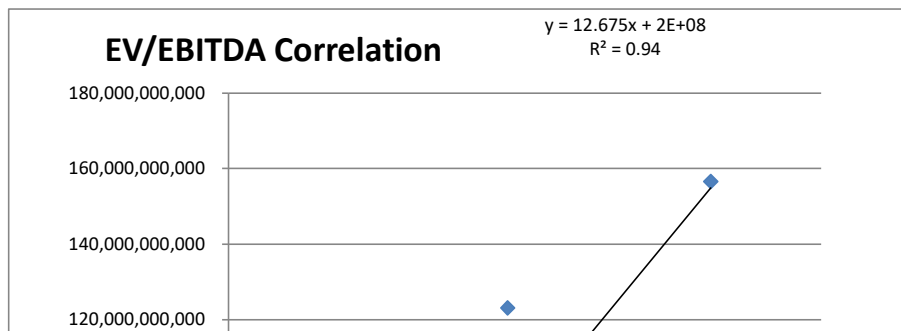
Company	Ticker	Stock Price	2021		2022		2021		2022	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
Alliant Energy Corp	int	61.02	2.63	4.3%	2.75	4.5%	5.25	8.6%	5.55	9.1%
Ameren Corp	aee	89.01	3.84	4.3%	4.10	4.6%	8.89	10.0%	9.35	10.5%
Avangrid Inc	agr	49.39	2.05	4.2%	1.95	3.9%	4.50	9.1%	4.70	9.5%
Avista Corp	ava	42.05	2.05	4.9%	2.05	4.9%	5.25	12.5%	5.40	12.8%
Black Hills	bkh	69.94	3.95	5.6%	4.05	5.8%	7.65	10.9%	7.85	11.2%
CMS Energy Corp	cms	64.59	2.58	4.0%	2.85	4.4%	6.42	9.9%	6.95	10.8%
CenterPoint Energy Inc	cnp	27.73	0.94	3.4%	1.25	4.5%	3.00	10.8%	3.45	12.4%
Chesapeake Utilities	cpk	145.81	4.70	3.2%	4.95	3.4%	8.50	5.8%	9.45	6.5%
Consolidated Edison	ed	84.51	4.45	5.3%	4.50	5.3%	10.05	11.9%	10.40	12.3%
Dominion Energy	D	77.91	3.10	4.0%	4.10	5.3%	6.55	8.4%	7.60	9.8%
DTE Energy Co	dte	119.54	4.10	3.4%	5.90	4.9%	11.94	10.0%	13.45	11.3%
Duke Energy Corp	duk	103.86	4.95	4.8%	5.45	5.2%	12.40	11.9%	13.30	12.8%
Entergy Corp	etr	111.63	6.87	6.2%	6.30	5.6%	17.90	16.0%	17.75	15.9%
Eversource Energy	es	90.26	3.45	3.8%	4.05	4.5%	6.80	7.5%	7.55	8.4%
Exelon Corp	exc	40.86	2.60	6.4%	2.25	5.5%	9.60	23.5%	6.50	15.9%
FirstEnergy Corp	fe	41.21	2.40	5.8%	2.40	5.8%	4.50	10.9%	4.70	11.4%
Fortis Inc	fts.to	47.83	2.61	5.5%	2.80	5.9%	5.76	12.0%	6.15	12.9%
Hawaiian Electric	he	41.14	2.15	5.2%	2.00	4.9%	4.95	12.0%	4.90	11.9%
Idacorp Inc	ida	112.52	4.90	4.4%	5.10	4.5%	8.50	7.6%	8.80	7.8%
MGE Energy Inc	mgee	81.81	2.92	3.6%	3.00	3.7%	5.05	6.2%	5.25	6.4%
NorthWestern Corp	nwe	57.16	3.65	6.4%	3.35	5.9%	7.05	12.3%	6.55	11.5%
OGE Energy Corp	oge	37.96	2.36	6.2%	2.50	6.6%	4.44	11.7%	4.70	12.4%
Otter Tail Corp	ottr	70.93	4.23	6.0%	3.95	5.6%	6.45	9.1%	6.30	8.9%
PNM Resources Inc	pnm	45.26	2.35	5.2%	2.45	5.4%	6.40	14.1%	6.50	14.4%
Portland General Electric	por	52.92	2.75	5.2%	2.90	5.5%	7.50	14.2%	7.85	14.8%
Public Service Enterprise	peg	66.73	2.30	3.4%	3.60	5.4%	5.40	8.1%	6.85	10.3%
Sempra Energy	sre	132.28	3.25	2.5%	8.50	6.4%	8.85	6.7%	14.85	11.2%
WEC Energy Group Inc	wec	96.30	4.11	4.3%	4.35	4.5%	7.53	7.8%	8.10	8.4%
Xcel Energy Inc	xel	67.70	2.95	4.4%	3.10	4.6%	7.10	10.5%	7.55	11.2%
<b>Mean</b>			<b>4.7%</b>		<b>5.1%</b>		<b>10.7%</b>		<b>11.1%</b>	
<b>Harmonic Mean</b>			<b>4.4%</b>		<b>5.0%</b>		<b>9.8%</b>		<b>10.6%</b>	
<b>Median</b>			<b>4.4%</b>		<b>5.2%</b>		<b>10.5%</b>		<b>11.2%</b>	
<b>Max</b>			<b>6.4%</b>		<b>6.6%</b>		<b>23.5%</b>		<b>15.9%</b>	
<b>Min</b>			<b>2.5%</b>		<b>3.4%</b>		<b>5.8%</b>		<b>6.4%</b>	
<b>Std Dev</b>			<b>1.1%</b>		<b>0.8%</b>		<b>3.5%</b>		<b>2.5%</b>	
<b>Coefficient of Variation</b>			<b>22.7%</b>		<b>15.1%</b>		<b>32.6%</b>		<b>22.1%</b>	
<b>Say</b>			<b>4.5%</b>		<b>5.0%</b>		<b>10.5%</b>		<b>11.0%</b>	

Source: Value Line / yr end stock price

# SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

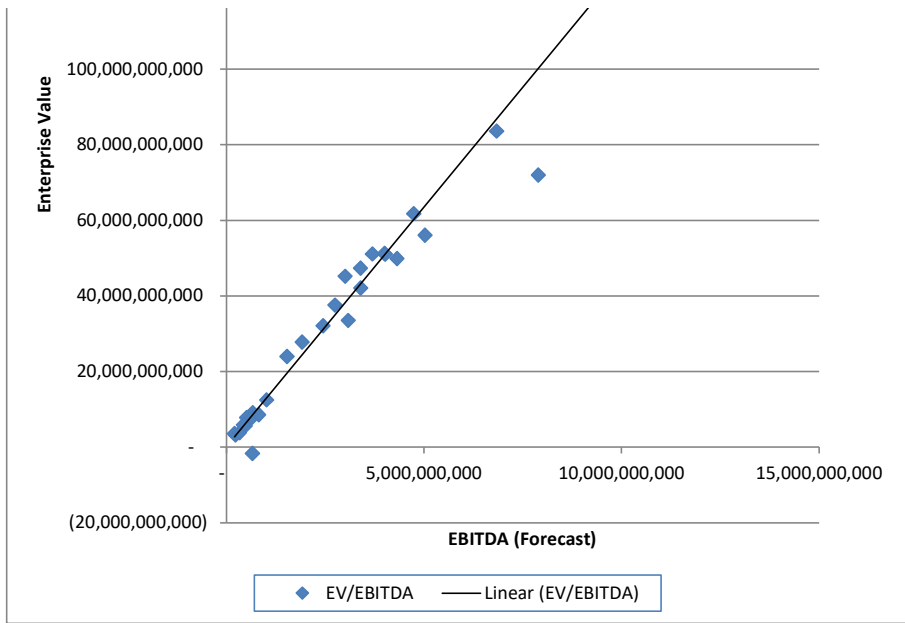
2022 Assessment Year

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	61.02	24,013,679,400	1,452,000,000	5.71%	1,534,971,429	15.64	3,894,808,500	6.17	1,390,108,500	274,890,000	14.42	
Ameren Corp	ae	89.01	37,600,877,000	2,610,000,000	5.17%	2,745,050,619	13.70	6,532,695,000	5.76	2,409,495,000	479,193,000	13.02	
Avangrid Inc	agr	49.39	27,830,808,000	1,837,000,000	4.44%	1,918,644,444	14.51	6,950,240,000	4.00	1,819,840,000	302,115,000	13.12	
Avista Corp	ava	42.05	5,628,144,000	460,408,000	2.86%	473,562,514	11.88	1,412,125,000	3.99	386,100,000	86,511,777	11.91	
Black Hills	bkh	69.94	9,099,234,000	645,382,000	2.61%	662,254,732	13.74	1,848,612,500	4.92	508,287,500	150,830,427	13.81	
CMS Energy Corp	cms	64.59	32,129,598,400	2,260,000,000	8.26%	2,446,573,209	13.13	7,504,784,000	4.28	2,013,832,000	455,400,000	13.01	
CenterPoint Energy	cnp	27.73	33,534,951,600	2,679,000,000	15.00%	3,080,850,000	10.88	8,396,082,000	3.99	2,169,774,000	573,705,000	12.22	
Chesapeake Utilities	cpk	145.81	3,221,780,000	204,001,000	11.18%	226,801,112	14.21	632,700,000	5.09	170,100,000	19,707,600	16.97	
Consolidated Edison	ed	84.51	56,079,540,000	4,858,000,000	3.48%	5,027,184,080	11.16	13,770,600,000	4.07	3,681,600,000	867,471,000	12.33	
Dominion Energy	D	77.91	123,141,100,000	6,090,000,000	16.03%	7,066,259,542	17.43	13,891,500,000	8.86	6,156,000,000	1,928,454,000	15.23	
DTE Energy Co	dte	119.54	42,076,875,000	3,014,000,000	12.65%	3,395,167,504	12.39	13,610,937,500	3.09	2,605,937,500	624,228,000	13.03	
Duke Energy Corp	duk	103.86	156,619,200,000	11,379,000,000	7.26%	12,204,895,161	12.83	25,641,000,000	6.11	10,241,000,000	2,299,539,000	12.49	
Entergy Corp	etr	111.63	49,937,390,500	4,352,195,000	-0.84%	4,315,724,092	11.57	11,115,352,500	4.49	3,597,037,500	893,018,643	11.12	
Eversource Energy	es	90.26	51,112,120,000	3,328,294,000	11.03%	3,695,385,250	13.83	9,993,600,000	5.11	2,619,850,000	647,997,900	15.64	
Exelon Corp	exc	40.86	83,634,800,000	10,095,000,000	-32.29%	6,835,156,250	12.24	17,444,000,000	4.79	6,370,000,000	1,438,536,000	10.71	
FirstEnergy Corp	fe	41.21	51,239,700,000	3,830,000,000	4.44%	4,000,222,222	12.81	11,343,000,000	4.52	2,679,000,000	892,419,000	14.35	
Fortis Inc	fts.to	47.83	47,372,684,000	3,179,200,000	6.77%	3,394,458,333	13.96	9,496,000,000	4.99	2,920,020,000	760,320,000	12.87	
Hawaiian Electric	he	41.14	(1,671,630,000)	664,768,000	-1.01%	658,053,172	NMF	2,814,150,000	NMF	536,550,000	62,386,170	NMF	
Idacorp Inc	ida	112.52	7,787,557,000	493,846,000	3.53%	511,275,859	15.23	1,500,887,500	5.19	443,960,000	78,578,676	14.90	
MGE Energy Inc	mgee	81.81	3,606,639,600	194,277,000	3.96%	201,971,139	17.86	625,568,000	5.77	189,840,000	24,087,162	16.86	
NorthWestern Corp	nwe	57.16	5,884,403,000	463,148,000	-7.09%	430,300,624	13.68	1,226,250,000	4.80	356,975,000	93,302,088	13.07	
OGE Energy Corp	oge	37.96	12,531,996,000	960,200,000	5.86%	1,016,427,928	12.33	2,801,400,000	4.47	940,470,000	147,186,600	11.52	
Otter Tail Corp	ottr	70.93	3,825,413,500	341,066,000	-2.33%	333,134,233	11.48	1,186,252,500	3.22	261,765,000	28,982,976	13.16	
PNM Resources Inc	pnm	45.26	7,811,175,800	629,557,000	1.56%	639,393,828	12.22	1,755,223,500	4.45	557,895,000	129,195,330	11.37	
Portland General Electric	por	52.92	8,575,278,000	782,000,000	4.67%	818,493,333	10.48	2,447,445,000	3.50	703,752,500	126,423,000	10.33	
Public Service Enterprise Group	peg	66.73	51,044,460,000	3,165,000,000	26.85%	4,014,861,111	12.71	8,057,100,000	6.34	3,438,700,000	579,018,000	12.70	
Sempra Energy	sre	132.28	71,996,760,000	4,705,000,000	67.80%	7,894,830,508	9.12	12,886,050,000	5.59	4,707,450,000	730,158,000	13.24	
WEC Energy Group	wec	96.30	45,225,709,000	2,789,200,000	7.57%	3,000,334,661	15.07	8,201,180,000	5.51	2,554,983,000	489,040,200	14.86	
Xcel Energy Inc	xel	67.70	61,790,000,000	4,460,000,000	6.34%	4,742,676,056	13.03	13,905,000,000	4.44	4,077,000,000	832,656,000	12.59	
<b>29 Mean</b>							<b>13.18</b>		<b>4.91</b>			<b>13.24</b>	
<b>Harmonic Mean</b>							<b>12.91</b>		<b>4.69</b>				<b>13.05</b>
<b>Median</b>							<b>12.93</b>		<b>4.80</b>				<b>13.02</b>
<b>Std Dev</b>							<b>1.95</b>		<b>1.15</b>			<b>1.68</b>	
<b>Say</b>							<b>13.00</b>		<b>4.75</b>			<b>13.00</b>	



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast
Hawaiian Electric	NMF
Portland General Electric	10.48
CenterPoint Energy Inc	10.88
Consolidated Edison	11.16
Otter Tail Corp	11.48
Entergy Corp	11.57
Avista Corp	11.88
PNM Resources Inc	12.22
Exelon Corp	12.24



OGE Energy Corp	12.33		
DTE Energy Co	12.39		
Public Service Enterprise Group	12.71	<b>11.92</b>	<b>Low Average</b>
FirstEnergy Corp	12.81	<b>12.22</b>	<b>Low Median</b>
Duke Energy Corp	12.83	<b>12.00</b>	<b>Say</b>
Xcel Energy Inc	13.03	<b>14.64</b>	<b>High Average</b>
CMS Energy Corp	13.13	<b>14.08</b>	<b>High Median</b>
NorthWestern Corp	13.68	<b>14.50</b>	<b>Say</b>
Ameren Corp	13.70		
Black Hills	13.74		
Eversource Energy	13.83		
Fortis Inc	13.96		
Chesapeake Utilities	14.21		
Avangrid Inc	14.51		
WEC Energy Group Inc	15.07		
Idacorp Inc	15.23		
Alliant Energy Corp	15.64		
Dominion Energy	17.43		
MGE Energy Inc	17.86		

## STOCK PRICE

Washington State Department of Revenue

2022 Assessment Year

Electric Industry

**73.89**  
**2021 Year End**

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Alliant Energy Corp	Int								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	61.36	61.75	61.04	61.47	61.02	580,400			<b>61.02</b>
Ameren Corp	aee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	88.95	89.46	88.44	89.01	89.01	726,100			<b>89.01</b>
Avangrid	agr								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	50.26	50.51	49.78	49.88	49.39	394,600			<b>49.39</b>
Avista	ava								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	42.33	42.73	41.99	42.49	42.05	289,700			<b>42.05</b>
Black Hills	bkh								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	70.52	70.92	70.24	70.57	69.94	161,300			<b>69.94</b>
CMS Energy Corp	cms								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	65.12	65.33	64.64	65.05	64.59	784,500			<b>64.59</b>
CenterPoint Energy	cnp								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	27.77	28.01	27.67	27.91	27.73	3,039,300			<b>27.73</b>
Chesapeake Util	cpk								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	144	146.07	143.97	145.81	145.81	33,500			<b>145.81</b>
Consolidated Edison	ed								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	85.04	85.6	84.67	85.32	84.51	1,048,000			<b>84.51</b>
Dominion Energy	D								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	78.35	78.82	77.98	78.56	77.91	1,975,500			<b>77.91</b>
DTE Energy	dte								
Date	Open	High	Low	Close	Adj Close	Volume			
12/31/2021	119.47	120.12	118.63	119.54	119.54	565,400			<b>119.54</b>
Duke Energy	duk								

Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	104.72	105.23	104	104.9		103.86	1,945,700
							<b>103.86</b>
Entergy Corp	etr						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	111.42	113.08	110.78	112.65		111.63	551,300
							<b>111.63</b>
Eversource Energy	es						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	91.06	91.46	90.22	90.98		90.26	980,200
							<b>90.26</b>
Exelon	exc						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	40.59	41.38	40.59	41.2		40.86	5,549,537
							<b>40.86</b>
FirstEnergy Corp	fe						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	41.31	41.75	41.26	41.59		41.21	1,266,500
							<b>41.21</b>
Fortis	fts						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	48.09	48.39	47.98	48.27		47.83	474,900
							<b>47.83</b>
Hawaiian	he						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	41.56	41.71	41.27	41.5		41.14	150,700
							<b>41.14</b>
Idacorp	ida						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	113.28	113.75	112.29	113.31		112.52	102,400
							<b>112.52</b>
MGE Energy	mgee						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	81.62	82.55	81.53	82.25		81.81	50,300
							<b>81.81</b>
NorthWestern Corp	new						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	57.43	57.52	56.66	57.16		57.16	184,300
							<b>57.16</b>
OGE Energy Corp	oge						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	38.26	38.57	38.18	38.38		37.96	642,900
							<b>37.96</b>
<b>Ottertail</b>	<b>ottr</b>						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	70.41	71.71	70.2	71.42		70.93	72,600
							<b>70.93</b>
PNM Resources Inc	pnm						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	45.79	45.85	45.61	45.61		45.26	266,500
							<b>45.26</b>
Portland General	por						
Date	Open	High	Low	Close	Adj Close	Volume	
12/31/2021	53	53.12	52.56	52.92		52.92	270,200
							<b>52.92</b>

P.S. Enterprise	peg								
Date	Open	High	Low	Close	Adj Close		Volume		
12/31/2021	66.22	67.05	66.02	66.73		66.73	1,221,800		<b>66.73</b>
Sempra	sre								
Date	Open	High	Low	Close	Adj Close		Volume		
12/31/2021	131.41	132.85	131.09	132.28		132.28	730,700		<b>132.28</b>
WEC Energy	wec								
Date	Open	High	Low	Close	Adj Close		Volume		
12/31/2021	97.18	97.5	96.3	97.07		96.3	624,500		<b>96.30</b>
Xcel energy	xel								
Date	Open	High	Low	Close	Adj Close		Volume		
12/31/2021	67.44	67.98	66.42	67.7		67.7	5,704,600		<b>67.70</b>

Source:  
finance.yahoo.com  
Historical Stock Quotes

## IMPLIED PREMIUMS FOR US MARKET

Updated January 2022

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buy	Inge in Earn	Inge in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	pothed Grov	Premium	t Growth	Esed Premium (
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%			
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%		2.92%
1962	5.81%	3.40%	63.1	3.67	2.15		8.79%	5.21%	2.73%	3.85%	1.12%	4.05%	3.56%		3.56%
1963	5.51%	3.13%	75.02	4.13	2.35		12.75%	9.45%	3.12%	4.14%	1.02%	4.96%	3.38%		3.38%
1964	5.62%	3.05%	84.75	4.76	2.58		15.23%	10.08%	3.54%	4.21%	0.67%	5.13%	3.31%		3.31%
1965	5.73%	3.06%	92.43	5.30	2.83		11.20%	9.42%	3.93%	4.65%	0.72%	5.46%	3.32%		3.32%
1966	6.74%	3.59%	80.33	5.41	2.88		2.23%	1.96%	4.76%	4.64%	-0.12%	4.19%	3.68%		3.68%
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	5.70%	1.49%	5.25%	3.20%		3.20%
1968	5.51%	2.93%	103.86	5.72	3.04		4.81%	2.09%	5.21%	6.16%	0.95%	5.32%	3.00%		3.00%
1969	6.63%	3.52%	92.06	6.10	3.24		6.66%	6.49%	6.58%	7.88%	1.30%	7.55%	3.74%		3.74%
1970	5.98%	3.46%	92.15	5.51	3.19		-9.72%	-1.61%	6.53%	6.50%	-0.03%	4.78%	3.41%		3.41%
1971	5.46%	3.10%	102.09	5.57	3.16		1.15%	-0.74%	4.39%	5.89%	1.50%	4.57%	3.09%		3.09%
1972	5.23%	2.70%	118.05	6.17	3.19		10.76%	0.71%	3.84%	6.41%	2.57%	5.21%	2.72%		2.72%
1973	8.16%	3.70%	97.55	7.96	3.61		28.93%	13.24%	6.93%	6.90%	-0.03%	8.30%	4.30%		4.30%
1974	13.64%	5.43%	68.56	9.35	3.72		17.48%	3.14%	8.00%	7.40%	-0.60%	6.42%	5.59%		5.59%
1975	8.55%	4.14%	90.19	7.71	3.73		-17.54%	0.30%	5.80%	7.76%	1.96%	5.99%	4.13%		4.13%
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	5.08%	6.81%	1.73%	8.19%	4.55%		4.55%
1977	11.43%	5.11%	95.1	10.87	4.86		11.53%	15.07%	5.12%	7.78%	2.66%	9.52%	5.92%		5.92%
1978	12.11%	5.39%	96.11	11.64	5.18		7.07%	6.60%	7.18%	9.15%	1.97%	8.48%	5.72%		5.72%
1979	13.48%	5.53%	107.94	14.55	5.97		25.01%	15.23%	10.38%	10.33%	-0.05%	11.70%	6.45%		6.45%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%



# DATA INPUT

Washington State Department of Revenue

2022 Assessment Year

Electric Industry

Guideline Companies		Historic Figures (2021)														
		Stock Price 12/31/21	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	61.02	0.85	A	14.65	5.25	2.63	1.61	23.91	2.55	250,470,000	6,735,000,000	22.3	3.0%	113.06%	
Ameren Corp	aee	89.01	0.80	A	24.81	8.89	3.84	2.20	37.64	2.36	257,700,000	12,562,000,000	22.4	2.8%	111.13%	
Avangrid Inc	agr	49.39	0.85	B++	17.55	4.50	2.05	1.76	49.95	0.99	387,200,000	7,486,000,000	21.3	3.8%	110.38%	
Avista Corp	ava	42.05	0.95	B++	19.60	5.25	2.05	1.69	30.00	1.40	71,500,000	1,949,800,000	19.3	4.1%	115.80%	
Black Hills	bkh	69.94	1.00	A	29.35	7.65	3.95	2.29	43.05	1.62	64,750,000	4,125,600,000	17.9	3.5%	110.75%	
CMS Energy Corp	cms	64.59	0.80	B++	25.29	6.42	2.58	1.74	22.11	2.92	289,760,000	12,092,000,000	24.8	2.9%	111.12%	
CenterPoint Energy Inc	cnp	27.73	1.15	B+	13.28	3.00	0.94	0.66	13.70	2.02	628,920,000	15,558,000,000	29.1	2.6%	108.08%	
Chesapeake Utilities	cpk	145.81	0.80	A	30.85	8.50	4.70	1.84	44.35	3.29	18,000,000	505,500,000	28.5	1.5%	104.99%	
Consolidated Edison	ed	84.51	0.75	A+	38.15	10.05	4.45	3.10	56.55	1.49	354,000,000	21,841,000,000	19.4	3.7%	114.07%	
Dominion Energy	D	77.91	0.85	B++	17.30	6.55	3.10	2.52	30.40	2.56	810,000,000	34,775,000,000	25.4	3.3%	114.28%	
DTE Energy Co	dte	119.54	0.95	A	77.23	11.94	4.10	3.88	44.93	2.66	193,750,000	14,531,000,000	29.7	2.9%	108.85%	
Duke Energy Corp	duk	103.86	0.85	A	32.40	12.40	4.95	3.90	60.90	1.71	770,000,000	57,929,000,000	27.1	3.8%	109.16%	
Energys Corp	etr	111.63	0.95	B++	57.95	17.90	6.87	3.86	57.42	1.94	202,650,000	24,842,000,000	15.3	3.9%	108.94%	
Eversource Energy	es	90.26	0.90	A	28.45	6.80	3.45	2.41	42.20	2.14	347,000,000	17,874,000,000	26.0	2.9%	107.79%	
Exelon Corp	exc	40.86	0.95	B++	35.70	9.60	2.60	1.53	34.05	1.20	980,000,000	35,659,000,000	NMF	3.3%	112.65%	
FirstEnergy Corp	fe	41.21	0.85	B+	19.45	4.50	2.40	1.56	15.10	2.73	570,000,000	22,503,000,000	18.2	3.8%	112.93%	
Fortis Inc	fts.to	47.83	0.75	B++	19.90	5.76	2.61	2.08	37.21	1.29	474,800,000	24,040,000,000	22.3	3.8%	112.94%	
Hawaiian Electric	he	41.14	0.85	A	25.10	4.95	2.15	1.36	22.15	1.86	109,500,000	2,244,800,000	19.3	3.3%	121.08%	
Idacorp Inc	ida	112.52	0.80	A+	28.95	8.50	4.90	2.88	52.80	2.13	50,450,000	2,000,600,000	22.8	2.7%	119.02%	
MGE Energy Inc	mgee	81.81	0.75	A+	16.77	5.05	2.92	1.52	28.41	2.88	36,160,000	631,500,000	24.6	2.2%	117.08%	
NorthWestern Corp	nwe	57.16	0.95	B++	24.75	7.05	3.65	2.48	42.95	1.33	54,500,000	2,516,700,000	15.4	4.4%	111.25%	
OGE Energy Corp	oge	37.96	1.05	A	18.26	4.44	2.36	1.63	20.27	1.87	200,100,000	449,640,000	16.0	4.4%	115.80%	
Otter Tail Corp	ottr	70.93	0.85	A	28.80	6.45	4.23	1.56	23.84	2.98	41,550,000	734,000,000	14.6	2.7%	114.96%	
PNM Resources Inc	pnm	45.26	0.95	B++	20.40	6.40	2.35	1.25	25.25	1.79	85,830,000	3,396,000,000	23.8	2.8%	105.84%	
Portland General Electric	por	52.92	0.90	B++	26.75	7.50	2.75	1.70	30.20	1.75	89,650,000	3,285,000,000	20.8	3.4%	116.13%	
Public Service Enterprise Group	peg	66.73	0.90	A++	17.15	5.40	2.30	2.04	27.80	2.40	502,000,000	14,425,000,000	26.4	3.2%	110.22%	
Sempra Energy	sre	132.28	0.95	A	39.10	8.85	3.25	4.40	75.30	1.76	317,000,000	20,042,000,000	39.6	3.4%	110.09%	
WEC Energy Group Inc	wec	96.30	0.80	A+	26.36	7.53	4.11	2.71	34.60	2.78	315,430,000	13,524,000,000	22.1	3.3%	109.26%	
Xcel Energy Inc	xel	67.70	0.80	A+	24.65	7.10	2.95	1.83	28.45	2.38	540,000,000	20,979,000,000	23.9	2.8%	112.74%	
<b>Average</b>																22.8
<b>Harmonic Mean</b>																21.7
<b>Median</b>																22.4

			Projected (Next Year) 2022									Longer Term Forecasts		Income Statement		
Payout Ratio	All Divs 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 Divs to Net Profits	Rtn on Shrhldrs Equity	CP Projection 25-27	Earnings Projection 25-27	Earnings Growth 25-27	Dividend Growth 25-27	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	Morningstar	Morningstar	Morningstar
61.22%	62%	11.3%	15.55	5.55	2.75	1.71	25.00	62%	11.0%	7.00	3.25	4.5%	6.0%	795,000,000	1,069,000,000	20,562,000,000
57.29%	57%	10.1%	25.35	9.35	4.10	2.36	40.25	57%	10.0%	11.75	5.25	6.5%	7.0%	1,333,000,000	1,968,000,000	43,475,000,000
85.85%	83%	4.0%	17.95	4.70	1.95	1.76	50.15	90%	4.0%	6.00	2.50	3.0%	1.0%	895,000,000	3,777,000,000	39,603,000,000
82.44%	82%	6.5%	19.75	5.40	2.05	1.76	30.75	85%	6.5%	6.25	2.75	3.0%	4.5%	228,232,000	434,473,000	7,505,848,000
57.97%	59%	9.0%	28.55	7.85	4.05	2.41	45.35	59%	9.0%	9.00	4.75	5.0%	5.5%	409,429,000	808,133,000	7,856,573,000
67.44%	68%	11.3%	25.90	6.95	2.85	1.84	23.10	65%	12.0%	8.75	3.75	6.5%	6.0%	1,146,000,000	2,627,000,000	30,854,000,000
70.21%	72%	7.1%	13.35	3.45	1.25	0.71	14.25	59%	9.0%	4.50	1.65	5.0%	2.5%	1,363,000,000	7,355,000,000	33,673,000,000
39.15%	39%	10.5%	35.15	9.45	4.95	2.00	48.65	40%	10.0%	11.50	6.15	8.5%	8.0%	131,112,000	173,135,000	2,172,496,000
69.66%	68%	7.5%	38.90	10.40	4.50	3.16	58.20	68%	7.5%	12.25	5.25	3.5%	2.5%	2,826,000,000	5,551,000,000	62,208,000,000
81.29%	84%	9.0%	17.15	7.60	4.10	2.67	33.30	66%	11.5%	9.25	5.25	11.5%	-0.5%	3,322,000,000	7,269,000,000	86,503,000,000
94.63%	99%	9.1%	70.25	13.45	5.90	3.60	50.95	62%	11.0%	17.00	7.50	4.5%	3.0%	1,555,000,000	3,317,000,000	37,180,000,000
78.79%	79%	8.0%	33.30	13.30	5.45	3.98	62.40	73%	9.0%	16.50	7.00	7.0%	2.0%	5,716,000,000	9,940,000,000	163,229,000,000
56.19%	57%	10.5%	54.85	17.75	6.30	4.09	60.20	65%	10.5%	21.25	8.00	3.0%	5.0%	2,109,251,000	3,623,595,000	67,528,242,000
69.86%	70%	8.5%	28.80	7.55	4.05	2.56	44.05	64%	9.0%	9.25	5.00	5.5%	6.0%	1,993,321,000	3,270,120,000	42,843,000,000
58.85%	56%	7.5%	17.80	6.50	2.25	1.35	23.85	60%	9.5%	7.50	3.00	NMF	NMF	2,522,000,000	13,957,000,000	114,537,000,000
65.00%	66%	15.5%	19.90	4.70	2.40	1.56	16.05	65%	15.5%	6.00	3.25	10.0%	3.0%	2,229,000,000	3,237,000,000	47,416,000,000
79.69%	52%	6.7%	20.00	6.15	2.80	2.21	38.85	46%	7.0%	7.50	3.50	5.0%	6.0%	1,975,200,000	2,182,400,000	40,984,000,000
63.26%	63%	9.5%	25.70	4.90	2.00	1.40	22.85	70%	8.5%	5.50	2.25	3.0%	3.0%	386,066,000	8,380,681,000	8,542,614,000
58.78%	59%	9.5%	29.75	8.80	5.10	3.05	54.85	60%	9.5%	10.00	5.75	4.0%	6.5%	314,402,000	595,873,000	7,200,773,000
52.05%	52%	10.3%	17.30	5.25	3.00	1.59	29.85	53%	10.0%	6.00	3.50	4.5%	4.5%	117,294,000	199,371,000	2,590,390,000
67.95%	75%	8.0%	22.50	6.55	3.35	2.52	44.80	75%	7.0%	7.50	3.75	2.0%	2.5%	275,681,000	437,795,000	7,317,269,000
69.07%	69%	11.6%	14.00	4.70	2.50	1.66	21.10	66%	12.0%	6.25	3.25	6.5%	3.0%	544,200,000	613,600,000	14,271,800,000
36.88%	37%	17.8%	28.55	6.30	3.95	1.65	26.10	41%	15.5%	6.50	3.75	4.5%	6.0%	249,708,000	369,354,000	3,123,932,000
53.19%	55%	9.5%	20.45	6.50	2.45	1.64	26.60	53%	9.0%	8.00	3.00	6.5%	6.5%	309,347,000	324,600,000	9,851,773,000
61.82%	62%	9.0%	27.30	7.85	2.90	1.80	31.27	62%	9.5%	9.00	3.25	7.0%	5.5%	378,000,000	688,000,000	12,151,000,000
88.70%	87%	8.5%	16.05	6.85	3.60	2.16	28.95	60%	12.5%	8.25	4.50	4.0%	5.0%	1,762,000,000	6,250,000,000	43,885,000,000
135.38%	NMF	4.5%	40.65	14.85	8.50	4.62	79.05	55%	10.5%	18.75	10.75	10.0%	6.0%	2,850,000,000	4,375,000,000	59,534,000,000
65.94%	66%	11.9%	26.00	8.10	4.35	2.91	35.90	67%	12.0%	10.75	5.50	6.0%	7.0%	1,714,900,000	2,656,700,000	36,871,700,000
62.03%	62%	10.5%	25.75	7.55	3.10	1.94	29.85	62%	10.5%	9.00	3.75	6.0%	6.0%	2,203,000,000	4,239,000,000	67,171,000,000
	65.7%	9.4%						62.4%	9.95%	<b>9.54</b>						
	62.7%	8.6%						60.6%	9.28%	<b>8.29</b>						
	64.5%	9.1%						62.0%	10.00%	<b>8.75</b>						

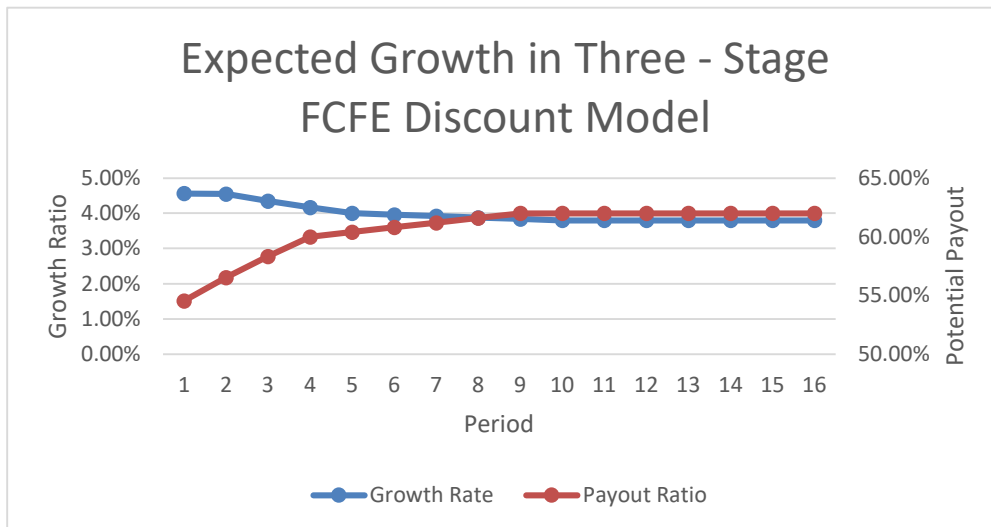
Balance Sheet			Cash Flow Statement	Other Financials	
Intangibles (excl. GW)	Current Liabilities	Long Term Debt Less Current Maturities	Depreciation & Amortization	Carrying Value Debt	Fair Value Debt
Morningstar	Morningstar	Morningstar	Morningstar	10-K	10-K
	2,054,000,000	6,735,000,000	657,000,000	7,368,000,000	8,330,000,000
	2,826,000,000	12,562,000,000	1,277,000,000	13,067,000,000	14,521,000,000
610,000,000	3,329,000,000	7,922,000,000	942,000,000	8,294,000,000	9,155,000,000
-	913,106,000	1,949,917,000	232,176,000	2,263,862,000	2,621,569,000
10,770,000	901,713,000	4,126,923,000	235,953,000	4,126,923,000	4,570,619,000
-	2,204,000,000	12,046,000,000	1,114,000,000	12,419,000,000	13,800,000,000
	4,287,000,000	538,000,000	1,316,000,000	16,086,000,000	17,385,000,000
19,967,000	376,433,000	549,903,000	72,889,000	568,800,000	597,200,000
1,590,000,000	5,427,000,000	22,604,000,000	2,032,000,000	23,044,000,000	26,287,000,000
1,459,000,000	8,673,000,000	37,426,000,000	2,768,000,000	51,135,000,000	58,438,000,000
275,000,000	6,346,000,000	14,512,000,000	1,459,000,000	17,378,000,000	18,916,000,000
	15,931,000,000	60,448,000,000	5,663,000,000	63,835,000,000	69,683,000,000
	6,190,742,000	24,841,572,000	2,242,944,000	24,841,572,000	27,061,171,000
-	5,847,039,000	17,477,279,000	1,334,973,000	18,216,700,000	19,636,300,000
-	16,111,000,000	35,714,000,000	7,573,000,000	38,697,000,000	43,592,000,000
-	4,416,000,000	22,248,000,000	1,601,000,000	23,946,000,000	27,043,000,000
1,667,200,000	3,841,600,000	18,965,600,000	1,204,000,000	20,400,000,000	23,040,000,000
	279,431,000	2,410,242,000	278,702,000	1,561,302,000	1,890,490,000
	325,624,000	2,000,640,000	179,444,000	2,000,640,000	2,381,172,000
	117,847,000	614,211,000	76,983,000	623,449,000	729,914,000
	379,642,000	2,541,478,000	187,467,000	2,541,478,000	2,827,336,000
	1,089,600,000	4,496,400,000	416,000,000	3,851,800,000	4,460,200,000
22,517,000	387,699,000	734,014,000	91,358,000	763,997,000	878,272,000
	664,213,000	3,519,580,000	320,210,000	3,698,919,000	3,915,010,000
-	768,000,000	3,285,000,000	404,000,000	3,299,000,000	3,831,000,000
20,000,000	7,072,000,000	15,219,000,000	1,403,000,000	15,919,000,000	17,546,000,000
440,000,000	10,035,000,000	21,068,000,000	1,855,000,000	20,099,000,000	22,126,000,000
	3,753,000,000	13,472,400,000	1,074,300,000	13,563,400,000	14,819,400,000
-	5,046,000,000	21,779,000,000	2,257,000,000	22,380,000,000	25,232,000,000

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

Company Alliant Energy C 4.14% GDP  
 Ticker Int 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		45.63%	54.37%	2.63			(61.02)
	1	4.56%	45.45%	54.55%	2.75	1.50		1.50
	2	4.55%	43.48%	56.52%	2.88	1.63		1.63
Stage 1	3	4.35%	41.67%	58.33%	3.00	1.75		1.75
	4	4.17%	40.00%	60.00%	3.13	1.88		1.88
	5	4.00%	39.60%	60.40%	3.25	1.96		1.96
	6	3.96%	39.20%	60.80%	3.38	2.05		2.05
Stage 2	7	3.92%	38.80%	61.20%	3.51	2.15		2.15
	8	3.88%	38.40%	61.60%	3.65	2.25		2.25
	9	3.84%	38.00%	62.00%	3.79	2.35		2.35
	10	3.80%	38.00%	62.00%	3.93	2.44	81.62	84.05
Stage 3	11+	3.80%	38.00%	62.00%	4.08	2.53		

**$K_e = 5.78\%$**

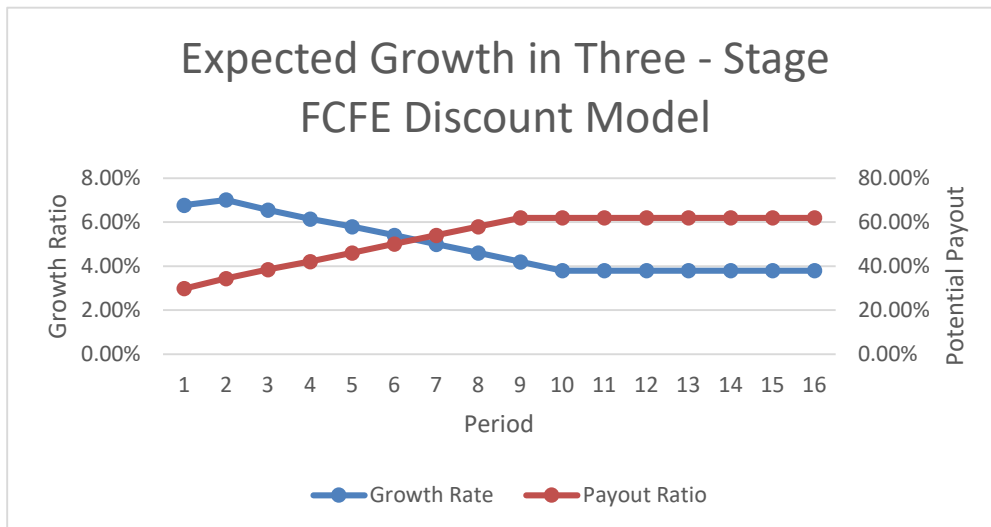


### Three Stage Free Cash Flow to Equity Discount Model

Company **Ameren Corp** 4.14% GDP  
 Ticker **ae** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		67.71%	32.29%	3.84			(89.01)
	1	6.77%	70.12%	29.88%	4.10	1.23		1.23
	2	7.01%	65.53%	34.47%	4.39	1.51		1.51
Stage 1	3	6.55%	61.50%	38.50%	4.68	1.80		1.80
	4	6.15%	57.93%	42.07%	4.96	2.09		2.09
	5	5.79%	53.95%	46.05%	5.25	2.42		2.42
	6	5.39%	49.96%	50.04%	5.53	2.77		2.77
	7	5.00%	45.97%	54.03%	5.81	3.14		3.14
Stage 2	8	4.60%	41.99%	58.01%	6.08	3.53		3.53
	9	4.20%	38.00%	62.00%	6.33	3.93		3.93
	10	3.80%	38.00%	62.00%	6.57	4.07	136.45	140.52
Stage 3	11+	3.80%	38.00%	62.00%	6.82	4.23		

**$K_e = 6.69%$**

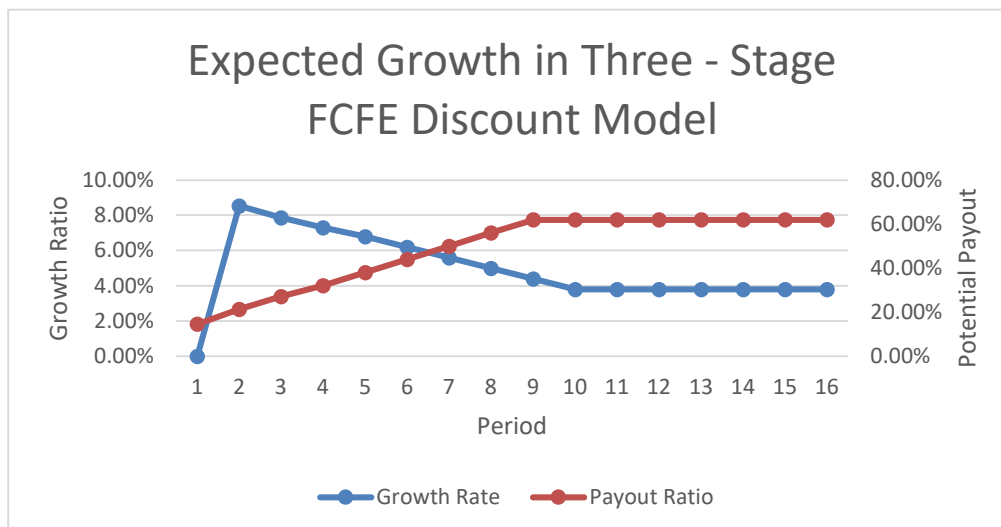


### Three Stage Free Cash Flow to Equity Discount Model

Company Avangrid Inc 4.14% GDP  
 Ticker agr 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-48.78%	148.78%	2.05			(49.39)
	1	-4.88%	70.51%	29.49%	1.95	0.58		0.58
	2	7.05%	65.87%	34.13%	2.09	0.71		0.71
Stage 1	3	6.59%	61.80%	38.20%	2.23	0.85		0.85
	4	6.18%	58.20%	41.80%	2.36	0.99		0.99
	5	5.82%	54.16%	45.84%	2.50	1.15		1.15
	6	5.42%	50.12%	49.88%	2.64	1.31		1.31
	7	5.01%	46.08%	53.92%	2.77	1.49		1.49
Stage 2	8	4.61%	42.04%	57.96%	2.90	1.68		1.68
	9	4.20%	38.00%	62.00%	3.02	1.87		1.87
	10	3.80%	38.00%	62.00%	3.13	1.94	65.01	66.95
Stage 3	11+	3.80%	38.00%	62.00%	3.25	2.02		

**$K_e = 4.94\%$**

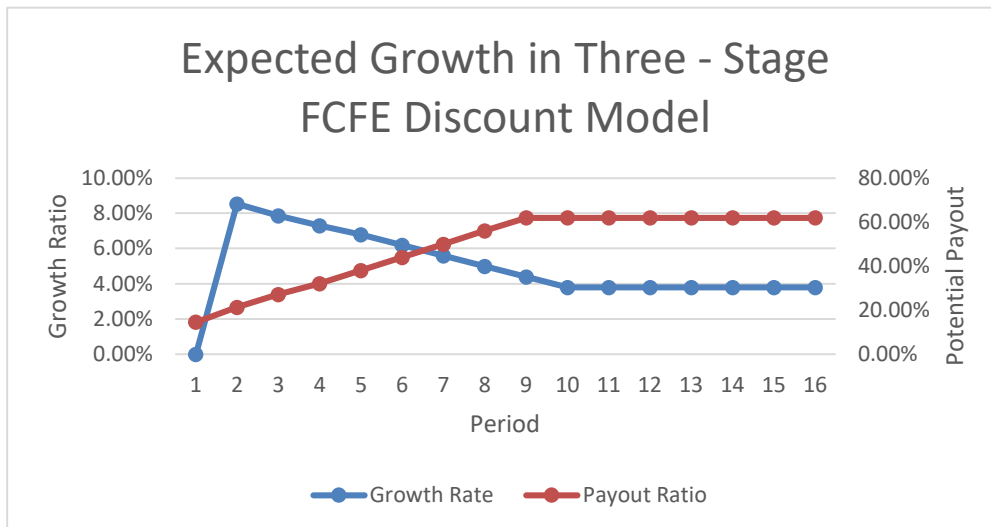


### Three Stage Free Cash Flow to Equity Discount Model

Company **Avista Corp** 4.14% GDP  
 Ticker **ava** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		0.00%	100.00%	2.05			(42.05)
	1	0.00%	85.37%	14.63%	2.05	0.30		0.30
	2	8.54%	78.65%	21.35%	2.23	0.48		0.48
Stage 1	3	7.87%	72.92%	27.08%	2.40	0.65		0.65
	4	7.29%	67.96%	32.04%	2.58	0.82		0.82
	5	6.80%	61.97%	38.03%	2.75	1.05		1.05
	6	6.20%	55.98%	44.02%	2.92	1.29		1.29
	7	5.60%	49.98%	50.02%	3.08	1.54		1.54
Stage 2	8	5.00%	43.99%	56.01%	3.24	1.81		1.81
	9	4.40%	38.00%	62.00%	3.38	2.10		2.10
	10	3.80%	38.00%	62.00%	3.51	2.18	72.85	75.02
Stage 3	11+	3.80%	38.00%	62.00%	3.64	2.26		

**$K_e = 7.71\%$**

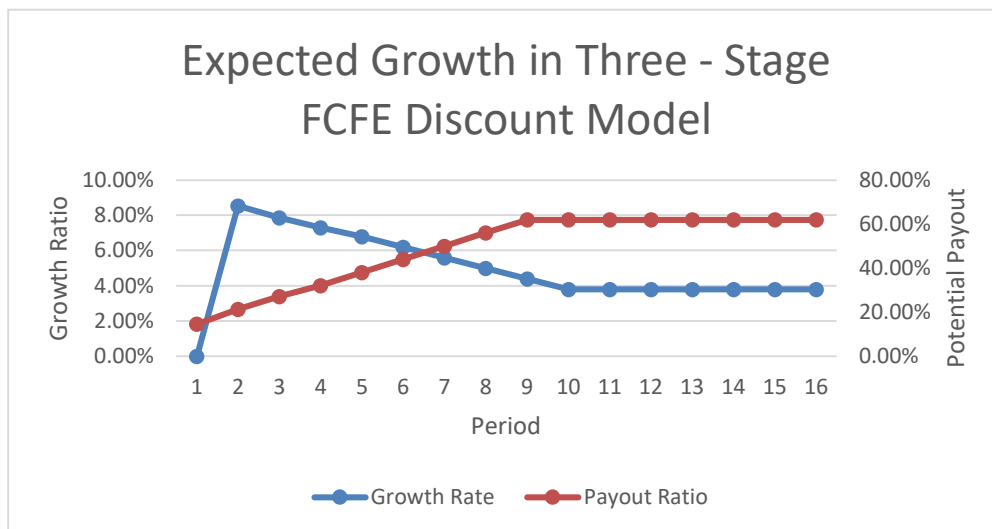


### Three Stage Free Cash Flow to Equity Discount Model

Company **Black Hills** 4.14% GDP  
 Ticker **bkh** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		25.32%	74.68%	3.95			(69.94)
	1	2.53%	43.21%	56.79%	4.05	2.30		2.30
	2	4.32%	41.42%	58.58%	4.23	2.48		2.48
Stage 1	3	4.14%	39.77%	60.23%	4.40	2.65		2.65
	4	3.98%	38.25%	61.75%	4.58	2.82		2.82
	5	3.83%	38.20%	61.80%	4.75	2.94		2.94
	6	3.82%	38.15%	61.85%	4.93	3.05		3.05
Stage 2	7	3.82%	38.10%	61.90%	5.12	3.17		3.17
	8	3.81%	38.05%	61.95%	5.31	3.29		3.29
	9	3.81%	38.00%	62.00%	5.52	3.42		3.42
	10	3.80%	38.00%	62.00%	5.73	3.55	118.88	122.43
Stage 3	11+	3.80%	38.00%	62.00%	5.94	3.69		

**$K_e = 8.77%$**



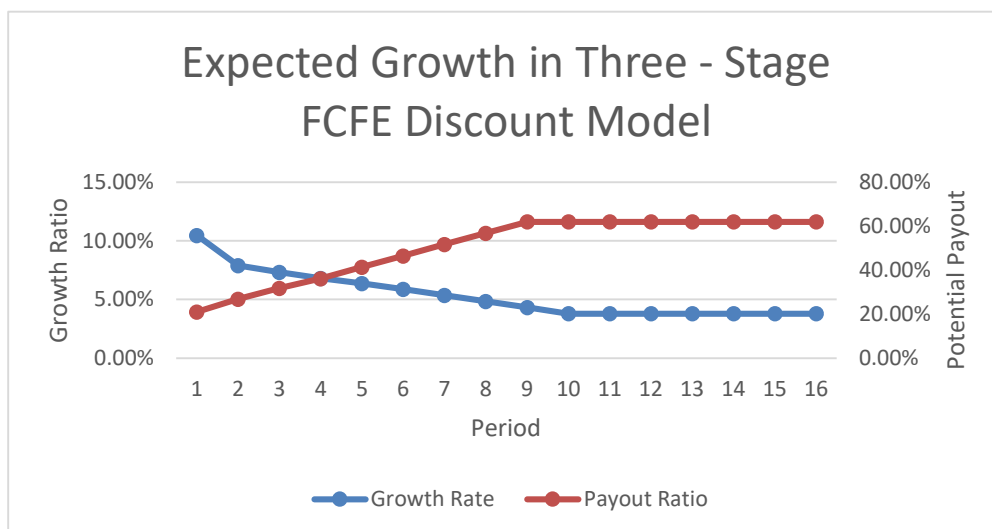


### Three Stage Free Cash Flow to Equity Discount Model

Company **CMS Energy Co** 4.14% GDP  
 Ticker **cms** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		104.65%	-4.65%	2.58			(64.59)
Stage 1	1	10.47%	78.95%	21.05%	2.85	0.60		0.60
	2	7.89%	73.17%	26.83%	3.08	0.82		0.82
	3	7.32%	68.18%	31.82%	3.30	1.05		1.05
	4	6.82%	63.83%	36.17%	3.53	1.28		1.28
	5	6.38%	58.66%	41.34%	3.75	1.55		1.55
Stage 2	6	5.87%	53.50%	46.50%	3.97	1.85		1.85
	7	5.35%	48.33%	51.67%	4.18	2.16		2.16
	8	4.83%	43.17%	56.83%	4.38	2.49		2.49
	9	4.32%	38.00%	62.00%	4.57	2.84		2.84
	10	3.80%	38.00%	62.00%	4.75	2.94	98.56	101.50
Stage 3	11+	3.80%	38.00%	62.00%	4.93	3.06		

**$K_e = 6.42\%$**

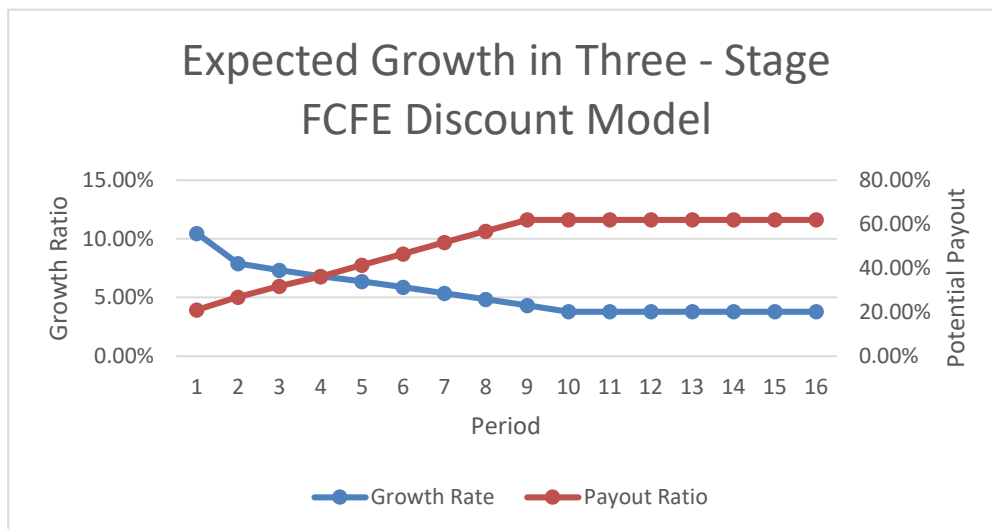


### Three Stage Free Cash Flow to Equity Discount Model

Company **CenterPoint Energy** 4.14% GDP  
 Ticker **cnp** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		329.79%	-229.79%	0.94			(27.73)
Stage 1	1	32.98%	80.00%	20.00%	1.25	0.25		0.25
	2	8.00%	74.07%	25.93%	1.35	0.35		0.35
	3	7.41%	68.97%	31.03%	1.45	0.45		0.45
	4	6.90%	64.52%	35.48%	1.55	0.55		0.55
	5	6.45%	59.21%	40.79%	1.65	0.67		0.67
Stage 2	6	5.92%	53.91%	46.09%	1.75	0.81		0.81
	7	5.39%	48.61%	51.39%	1.84	0.95		0.95
	8	4.86%	43.30%	56.70%	1.93	1.10		1.10
	9	4.33%	38.00%	62.00%	2.02	1.25		1.25
	10	3.80%	38.00%	62.00%	2.09	1.30	43.42	44.72
Stage 3	11+	3.80%	38.00%	62.00%	2.17	1.35		

**$K_e = 6.69%$**

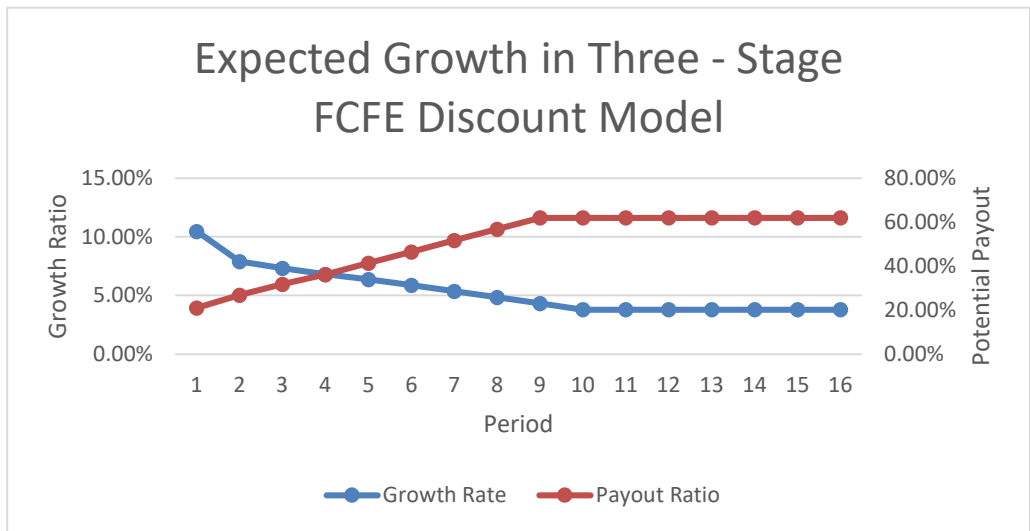


### Three Stage Free Cash Flow to Equity Discount Model

Company Chesapeake Ut  
 Ticker cpk  
 4.14% GDP  
 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		53.19%	46.81%	4.70			(145.81)
Stage 1	1	5.32%	60.61%	39.39%	4.95	1.95		1.95
	2	6.06%	57.14%	42.86%	5.25	2.25		2.25
	3	5.71%	54.05%	45.95%	5.55	2.55		2.55
	4	5.41%	51.28%	48.72%	5.85	2.85		2.85
	5	5.13%	48.63%	51.37%	6.15	3.16		3.16
Stage 2	6	4.86%	45.97%	54.03%	6.45	3.48		3.48
	7	4.60%	43.31%	56.69%	6.75	3.82		3.82
	8	4.33%	40.66%	59.34%	7.04	4.18		4.18
	9	4.07%	38.00%	62.00%	7.32	4.54		4.54
	10	3.80%	38.00%	62.00%	7.60	4.71	157.82	162.53
Stage 3	11+	3.80%	38.00%	62.00%	7.89	4.89		

**Ke = 2.96%**

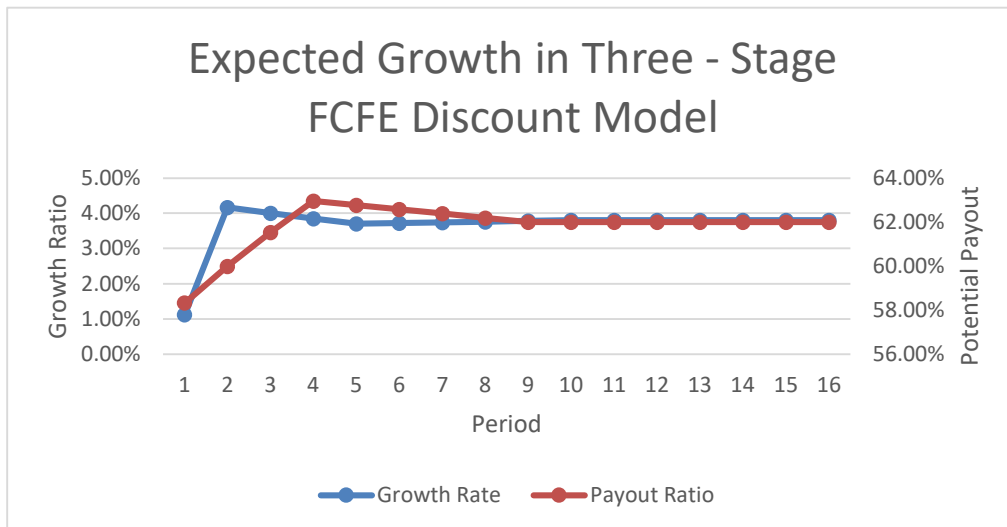


### Three Stage Free Cash Flow to Equity Discount Model

Company Consolidated Earnings 4.14% GDP  
 Ticker ed 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		11.24%	88.76%	4.45			(84.51)
	1	1.12%	41.67%	58.33%	4.50	2.63		2.63
	2	4.17%	40.00%	60.00%	4.69	2.81		2.81
Stage 1	3	4.00%	38.46%	61.54%	4.88	3.00		3.00
	4	3.85%	37.04%	62.96%	5.06	3.19		3.19
	5	3.70%	37.23%	62.77%	5.25	3.30		3.30
	6	3.72%	37.42%	62.58%	5.45	3.41		3.41
	7	3.74%	37.61%	62.39%	5.65	3.52		3.52
Stage 2	8	3.76%	37.81%	62.19%	5.86	3.65		3.65
	9	3.78%	38.00%	62.00%	6.08	3.77		3.77
	10	3.80%	38.00%	62.00%	6.31	3.91	131.09	135.00
Stage 3	11+	3.80%	38.00%	62.00%	6.55	4.06		

**$K_e = 7.69\%$**

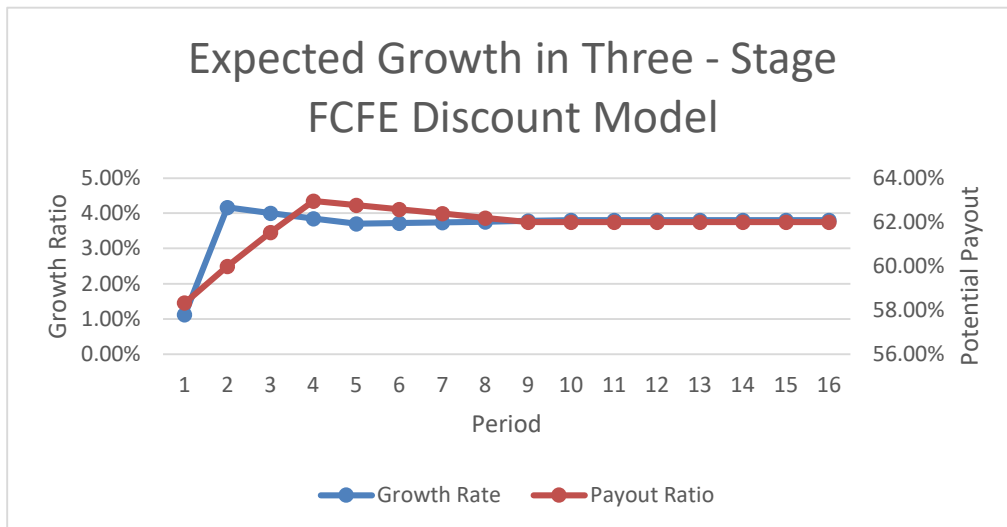


### Three Stage Free Cash Flow to Equity Discount Model

Company **Dominion Energy** 4.14% GDP  
 Ticker **D** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		322.58%	-222.58%	3.10			(77.91)
Stage 1	1	32.26%	70.12%	29.88%	4.10	1.23		1.23
	2	7.01%	65.53%	34.47%	4.39	1.51		1.51
	3	6.55%	61.50%	38.50%	4.68	1.80		1.80
	4	6.15%	57.93%	42.07%	4.96	2.09		2.09
	5	5.79%	53.95%	46.05%	5.25	2.42		2.42
Stage 2	6	5.39%	49.96%	50.04%	5.53	2.77		2.77
	7	5.00%	45.97%	54.03%	5.81	3.14		3.14
	8	4.60%	41.99%	58.01%	6.08	3.53		3.53
	9	4.20%	38.00%	62.00%	6.33	3.93		3.93
	10	3.80%	38.00%	62.00%	6.57	4.07	136.45	140.52
Stage 3	11+	3.80%	38.00%	62.00%	6.82	4.23		

**$K_e = 8.25\%$**

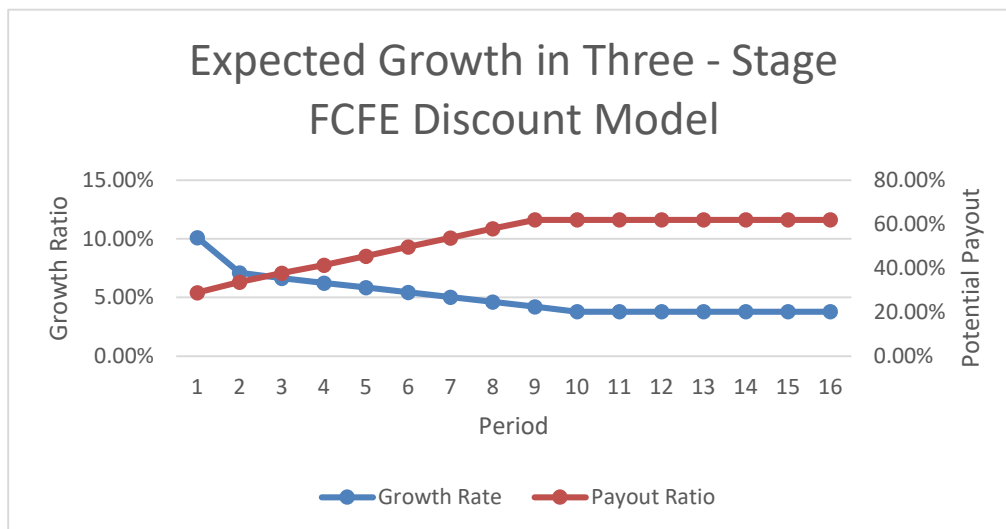


### Three Stage Free Cash Flow to Equity Discount Model

Company **DTE Energy Co** 4.14% GDP  
 Ticker **dte** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		439.02%	-339.02%	4.10			(119.54)
Stage 1	1	43.90%	67.80%	32.20%	5.90	1.90		1.90
	2	6.78%	63.49%	36.51%	6.30	2.30		2.30
	3	6.35%	59.70%	40.30%	6.70	2.70		2.70
	4	5.97%	56.34%	43.66%	7.10	3.10		3.10
	5	5.63%	52.67%	47.33%	7.50	3.55		3.55
Stage 2	6	5.27%	49.00%	51.00%	7.90	4.03		4.03
	7	4.90%	45.34%	54.66%	8.28	4.53		4.53
	8	4.53%	41.67%	58.33%	8.66	5.05		5.05
	9	4.17%	38.00%	62.00%	9.02	5.59		5.59
	10	3.80%	38.00%	62.00%	9.36	5.80	194.33	200.13
Stage 3	11+	3.80%	38.00%	62.00%	9.72	6.02		

**$K_e = 7.44\%$**

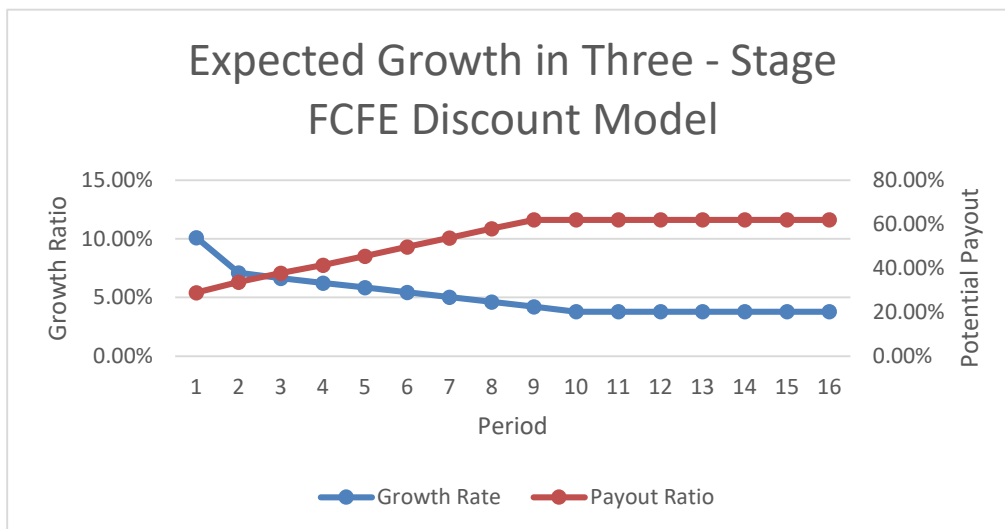


### Three Stage Free Cash Flow to Equity Discount Model

Company **Duke Energy Co** 4.14% GDP  
 Ticker **duk** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		101.01%	-1.01%	4.95			(103.86)
Stage 1	1	10.10%	71.10%	28.90%	5.45	1.58		1.58
	2	7.11%	66.38%	33.62%	5.84	1.96		1.96
	3	6.64%	62.25%	37.75%	6.23	2.35		2.35
	4	6.22%	58.60%	41.40%	6.61	2.74		2.74
	5	5.86%	54.48%	45.52%	7.00	3.19		3.19
Stage 2	6	5.45%	50.36%	49.64%	7.38	3.66		3.66
	7	5.04%	46.24%	53.76%	7.75	4.17		4.17
	8	4.62%	42.12%	57.88%	8.11	4.69		4.69
	9	4.21%	38.00%	62.00%	8.45	5.24		5.24
	10	3.80%	38.00%	62.00%	8.77	5.44	182.16	187.60
Stage 3	11+	3.80%	38.00%	62.00%	9.11	5.65		

**$K_e = 8.24\%$**



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

Company	Entergy Corp	4.14%	GDP
Ticker	etr	20.0	Industry P/E
		62.0%	Target Dividend Payout Ratio
		10.0%	Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-82.97%	182.97%	6.87			(111.63)
	1	-8.30%	67.46%	32.54%	6.30	2.05		2.05
	2	6.75%	63.20%	36.80%	6.73	2.48		2.48
Stage 1	3	6.32%	59.44%	40.56%	7.15	2.90		2.90
	4	5.94%	56.11%	43.89%	7.58	3.32		3.32
	5	5.61%	52.48%	47.52%	8.00	3.80		3.80
	6	5.25%	48.86%	51.14%	8.42	4.31		4.31
	7	4.89%	45.24%	54.76%	8.83	4.84		4.84
Stage 2	8	4.52%	41.62%	58.38%	9.23	5.39		5.39
	9	4.16%	38.00%	62.00%	9.62	5.96		5.96
	10	3.80%	38.00%	62.00%	9.98	6.19	207.19	213.38
Stage 3	11+	3.80%	38.00%	62.00%	10.36	6.42		
							<b>K<sub>e</sub> =</b>	<b>9.02%</b>

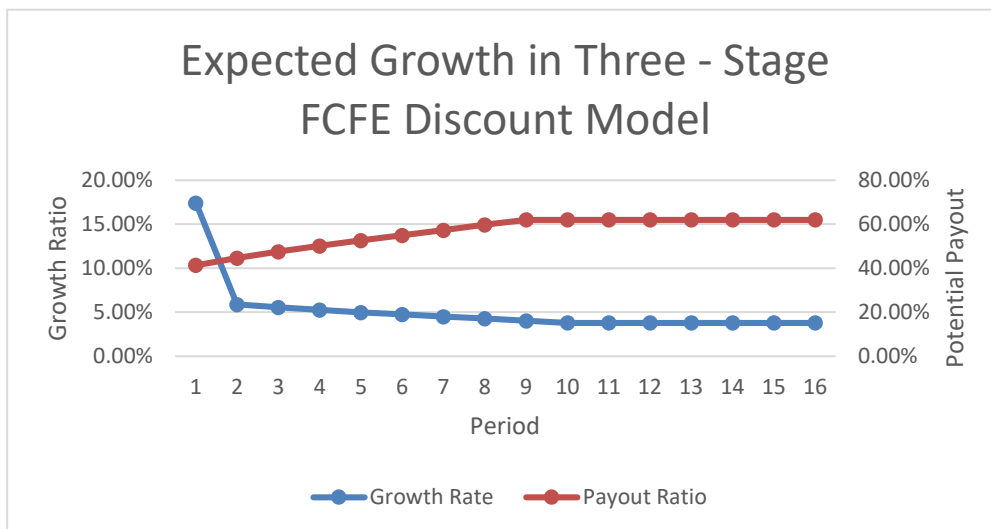


### Three Stage Free Cash Flow to Equity Discount Model

Company **Eversource Energy** 4.14% GDP  
 Ticker **ES** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		173.91%	-73.91%	3.45			(90.26)
Stage 1	1	17.39%	58.64%	41.36%	4.05	1.68		1.68
	2	5.86%	55.39%	44.61%	4.29	1.91		1.91
	3	5.54%	52.49%	47.51%	4.53	2.15		2.15
	4	5.25%	49.87%	50.13%	4.76	2.39		2.39
	5	4.99%	47.50%	52.50%	5.00	2.63		2.63
Stage 2	6	4.75%	45.12%	54.88%	5.24	2.87		2.87
	7	4.51%	42.75%	57.25%	5.47	3.13		3.13
	8	4.27%	40.37%	59.63%	5.71	3.40		3.40
	9	4.04%	38.00%	62.00%	5.94	3.68		3.68
	10	3.80%	38.00%	62.00%	6.16	3.82	127.96	131.78
Stage 3	11+	3.80%	38.00%	62.00%	6.40	3.97		

**$K_e = 6.09\%$**

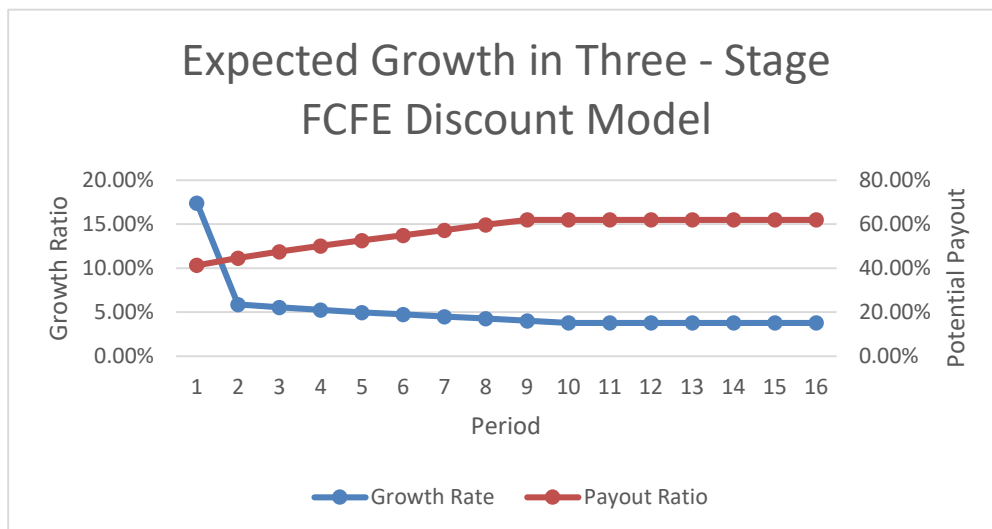


### Three Stage Free Cash Flow to Equity Discount Model

Company **Exelon Corp** 4.14% GDP  
 Ticker **exc** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-134.62%	234.62%	2.60			(40.86)
	1	-13.46%	83.33%	16.67%	2.25	0.38		0.38
	2	8.33%	76.92%	23.08%	2.44	0.56		0.56
Stage 1	3	7.69%	71.43%	28.57%	2.63	0.75		0.75
	4	7.14%	66.67%	33.33%	2.81	0.94		0.94
	5	6.67%	60.93%	39.07%	3.00	1.17		1.17
	6	6.09%	55.20%	44.80%	3.18	1.43		1.43
	7	5.52%	49.47%	50.53%	3.36	1.70		1.70
Stage 2	8	4.95%	43.73%	56.27%	3.52	1.98		1.98
	9	4.37%	38.00%	62.00%	3.68	2.28		2.28
	10	3.80%	38.00%	62.00%	3.82	2.37	79.27	81.64
Stage 3	11+	3.80%	38.00%	62.00%	3.96	2.46		

**$K_e = 9.08\%$**

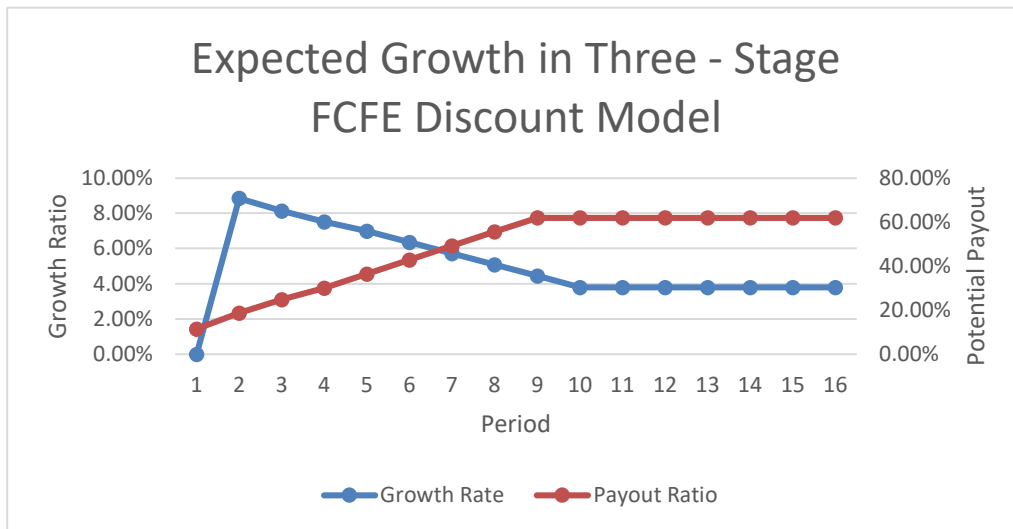


### Three Stage Free Cash Flow to Equity Discount Model

Company **FirstEnergy Corp** 4.14% GDP  
 Ticker **fe** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		0.00%	100.00%	2.40			(41.21)
	1	0.00%	88.54%	11.46%	2.40	0.27		0.27
	2	8.85%	81.34%	18.66%	2.61	0.49		0.49
Stage 1	3	8.13%	75.22%	24.78%	2.83	0.70		0.70
	4	7.52%	69.96%	30.04%	3.04	0.91		0.91
	5	7.00%	63.57%	36.43%	3.25	1.18		1.18
	6	6.36%	57.18%	42.82%	3.46	1.48		1.48
	7	5.72%	50.78%	49.22%	3.65	1.80		1.80
Stage 2	8	5.08%	44.39%	55.61%	3.84	2.14		2.14
	9	4.44%	38.00%	62.00%	4.01	2.49		2.49
	10	3.80%	38.00%	62.00%	4.16	2.58	86.42	89.00
Stage 3	11+	3.80%	38.00%	62.00%	4.32	2.68		

**$K_e = 9.84\%$**

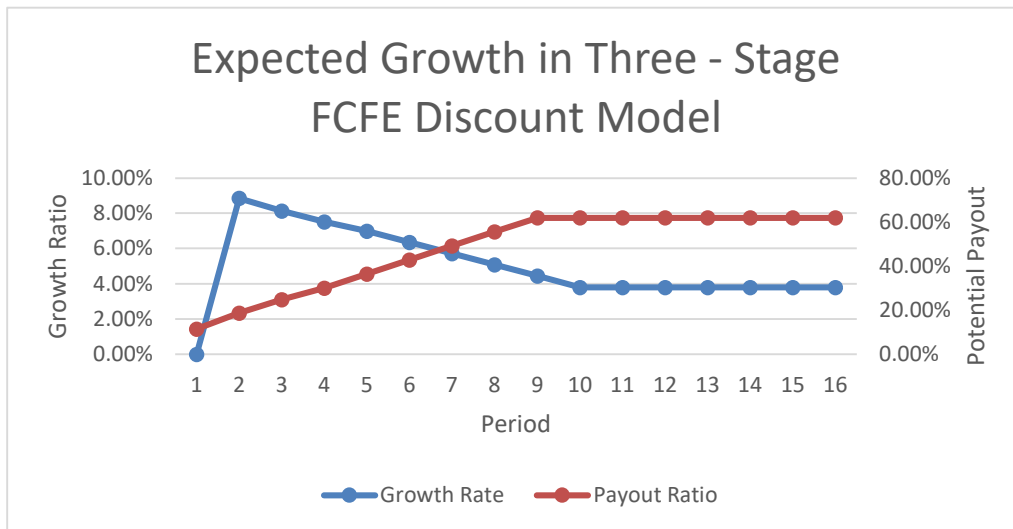


### Three Stage Free Cash Flow to Equity Discount Model

Company **Fortis Inc** 4.14% GDP  
 Ticker **fts.to** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		72.80%	27.20%	2.61			(47.83)
	1	7.28%	62.50%	37.50%	2.80	1.05		1.05
	2	6.25%	58.82%	41.18%	2.98	1.23		1.23
Stage 1	3	5.88%	55.56%	44.44%	3.15	1.40		1.40
	4	5.56%	52.63%	47.37%	3.33	1.57		1.57
	5	5.26%	49.71%	50.29%	3.50	1.76		1.76
	6	4.97%	46.78%	53.22%	3.67	1.96		1.96
Stage 2	7	4.68%	43.85%	56.15%	3.85	2.16		2.16
	8	4.39%	40.93%	59.07%	4.01	2.37		2.37
	9	4.09%	38.00%	62.00%	4.18	2.59		2.59
	10	3.80%	38.00%	62.00%	4.34	2.69	90.05	92.74
Stage 3	11+	3.80%	38.00%	62.00%	4.50	2.79		

**$K_e = 9.35\%$**

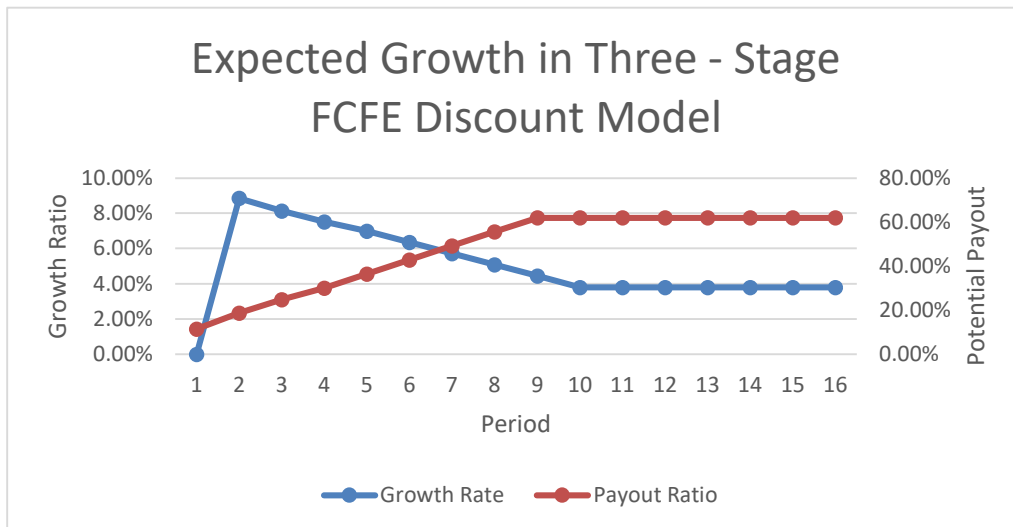


### Three Stage Free Cash Flow to Equity Discount Model

Company **Hawaiian Electric** 4.14% GDP  
 Ticker **he** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-69.77%	169.77%	2.15			(41.14)
	1	-6.98%	31.25%	68.75%	2.00	1.38		1.38
	2	3.13%	30.30%	69.70%	2.06	1.44		1.44
Stage 1	3	3.03%	29.41%	70.59%	2.13	1.50		1.50
	4	2.94%	28.57%	71.43%	2.19	1.56		1.56
	5	2.86%	30.46%	69.54%	2.25	1.56		1.56
	6	3.05%	32.34%	67.66%	2.32	1.57		1.57
	7	3.23%	34.23%	65.77%	2.39	1.57		1.57
Stage 2	8	3.42%	36.11%	63.89%	2.48	1.58		1.58
	9	3.61%	38.00%	62.00%	2.56	1.59		1.59
	10	3.80%	38.00%	62.00%	2.66	1.65	55.27	56.92
Stage 3	11+	3.80%	38.00%	62.00%	2.76	1.71		

**$K_e = 6.29\%$**

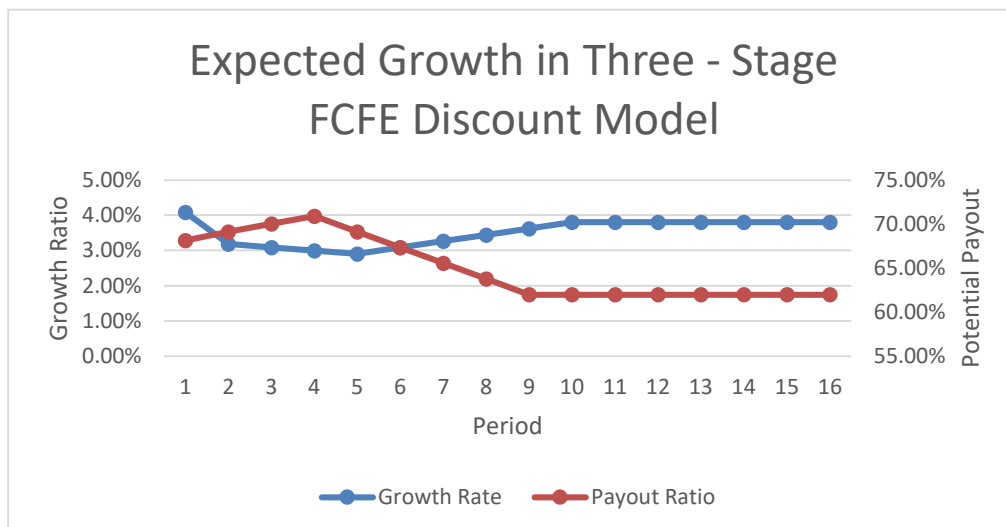


### Three Stage Free Cash Flow to Equity Discount Model

Company	Idacorp Inc	4.14%	GDP
Ticker	ida	20.0	Industry P/E
		62.0%	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%	4.90			(112.52)
	1	4.08%	31.86%	68.14%	5.10	3.48		3.48
	2	3.19%	30.88%	69.12%	5.26	3.64		3.64
Stage 1	3	3.09%	29.95%	70.05%	5.43	3.80		3.80
	4	3.00%	29.08%	70.92%	5.59	3.96		3.96
	5	2.91%	30.87%	69.13%	5.75	3.98		3.98
	6	3.09%	32.65%	67.35%	5.93	3.99		3.99
	7	3.26%	34.43%	65.57%	6.12	4.01		4.01
Stage 2	8	3.44%	36.22%	63.78%	6.33	4.04		4.04
	9	3.62%	38.00%	62.00%	6.56	4.07		4.07
	10	3.80%	38.00%	62.00%	6.81	4.22	141.38	145.61
Stage 3	11+	3.80%	38.00%	62.00%	7.07	4.38		

**$K_e = 5.45\%$**

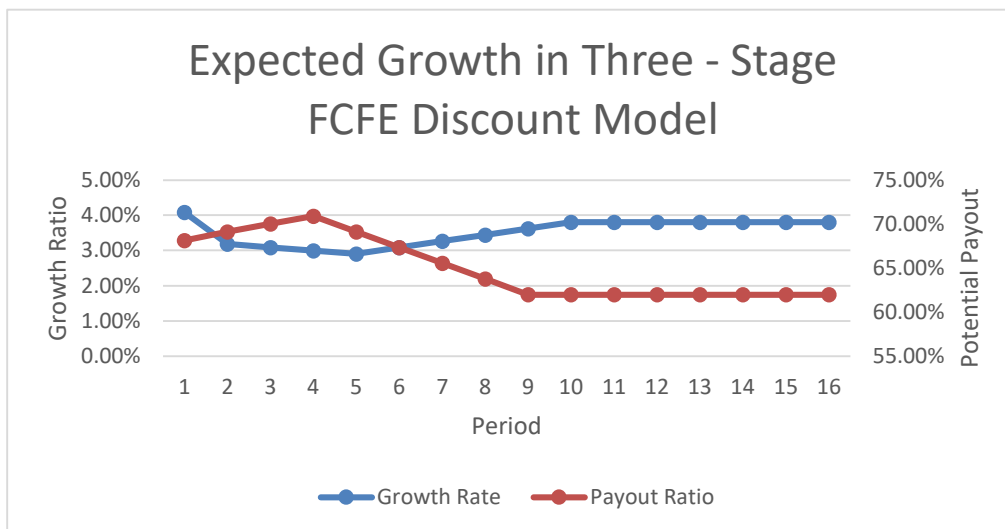


### Three Stage Free Cash Flow to Equity Discount Model

Company **MGE Energy Inc** 4.14% GDP  
 Ticker **mgee** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		27.40%	72.60%	2.92			(81.81)
	1	2.74%	41.67%	58.33%	3.00	1.75		1.75
	2	4.17%	40.00%	60.00%	3.13	1.88		1.88
Stage 1	3	4.00%	38.46%	61.54%	3.25	2.00		2.00
	4	3.85%	37.04%	62.96%	3.38	2.13		2.13
	5	3.70%	37.23%	62.77%	3.50	2.20		2.20
	6	3.72%	37.42%	62.58%	3.63	2.27		2.27
	7	3.74%	37.61%	62.39%	3.77	2.35		2.35
Stage 2	8	3.76%	37.81%	62.19%	3.91	2.43		2.43
	9	3.78%	38.00%	62.00%	4.06	2.51		2.51
	10	3.80%	38.00%	62.00%	4.21	2.61	87.39	90.00
Stage 3	11+	3.80%	38.00%	62.00%	4.37	2.71		

**$K_e = 3.26\%$**

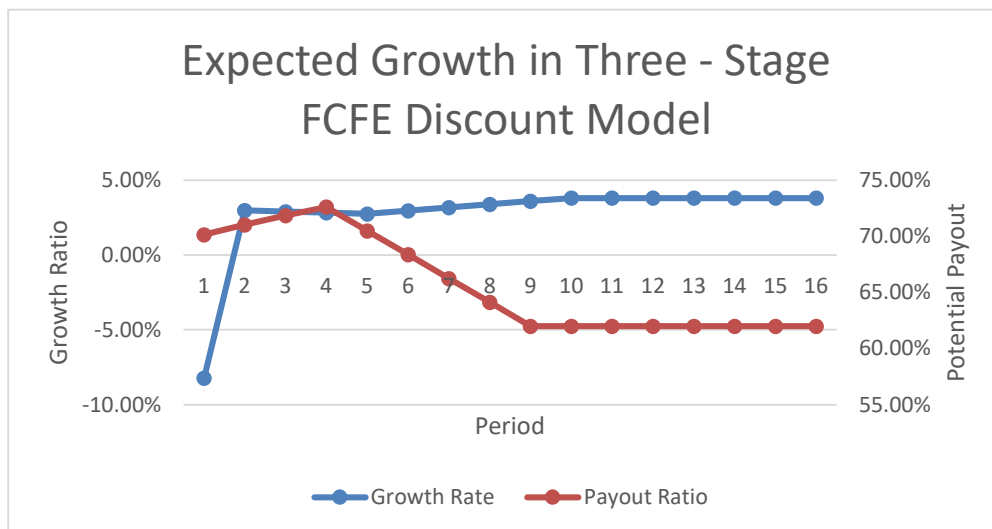


### Three Stage Free Cash Flow to Equity Discount Model

Company **NorthWestern** ( ) 4.14% GDP  
 Ticker **nwe** ( ) 20.0 Industry P/E  
 ( ) 62.0% Target Dividend Payout Ratio  
 ( ) 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-82.19%	182.19%	3.65			(57.16)
	1	-8.22%	29.85%	70.15%	3.35	2.35		2.35
	2	2.99%	28.99%	71.01%	3.45	2.45		2.45
Stage 1	3	2.90%	28.17%	71.83%	3.55	2.55		2.55
	4	2.82%	27.40%	72.60%	3.65	2.65		2.65
	5	2.74%	29.52%	70.48%	3.75	2.64		2.64
	6	2.95%	31.64%	68.36%	3.86	2.64		2.64
	7	3.16%	33.76%	66.24%	3.98	2.64		2.64
Stage 2	8	3.38%	35.88%	64.12%	4.12	2.64		2.64
	9	3.59%	38.00%	62.00%	4.27	2.64		2.64
	10	3.80%	38.00%	62.00%	4.43	2.74	91.91	94.65
Stage 3	11+	3.80%	38.00%	62.00%	4.60	2.85		

**$K_e = 8.58\%$**



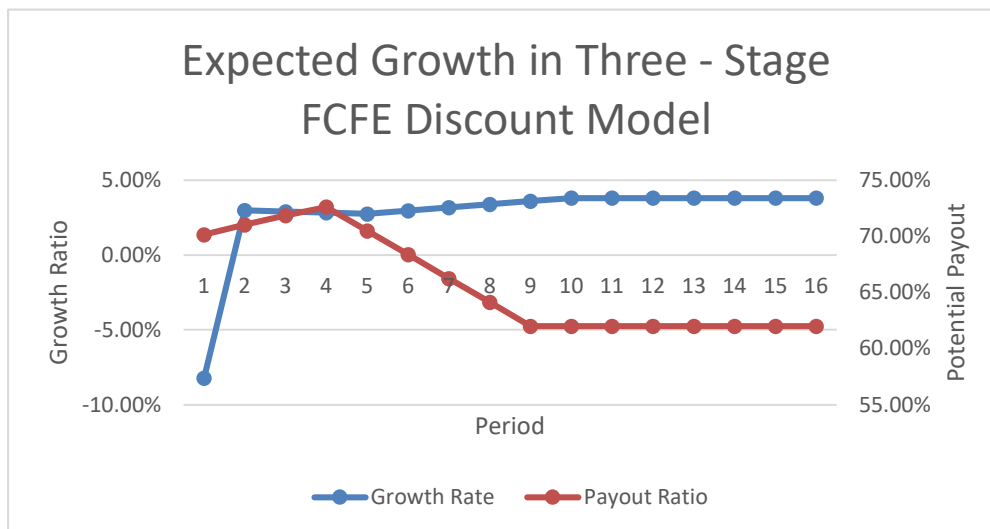


### Three Stage Free Cash Flow to Equity Discount Model

Company **OGE Energy Cor** 4.14% GDP  
 Ticker **oge** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		59.32%	40.68%	2.36			(37.96)
	1	5.93%	75.00%	25.00%	2.50	0.63		0.63
	2	7.50%	69.77%	30.23%	2.69	0.81		0.81
Stage 1	3	6.98%	65.22%	34.78%	2.88	1.00		1.00
	4	6.52%	61.22%	38.78%	3.06	1.19		1.19
	5	6.12%	56.58%	43.42%	3.25	1.41		1.41
	6	5.66%	51.93%	48.07%	3.43	1.65		1.65
	7	5.19%	47.29%	52.71%	3.61	1.90		1.90
Stage 2	8	4.73%	42.64%	57.36%	3.78	2.17		2.17
	9	4.26%	38.00%	62.00%	3.94	2.45		2.45
	10	3.80%	38.00%	62.00%	4.09	2.54	85.00	87.54
Stage 3	11+	3.80%	38.00%	62.00%	4.25	2.63		

**$K_e = 11.04%$**

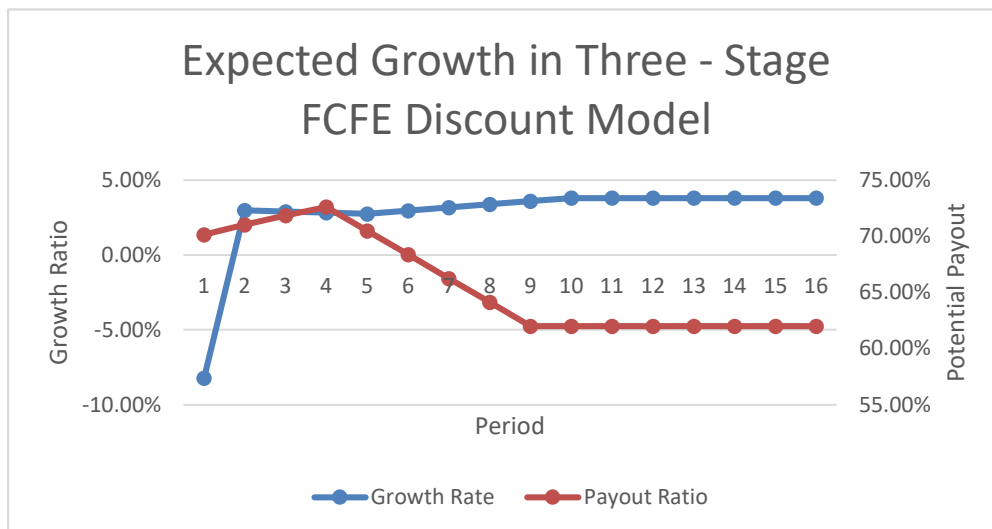


### Three Stage Free Cash Flow to Equity Discount Model

Company **Otter Tail Corp** 4.14% GDP  
 Ticker **ottr** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		-66.19%	166.19%	4.23			(70.93)
	1	-6.62%	-12.66%	112.66%	3.95	4.45		4.45
	2	-1.27%	-12.82%	112.82%	3.90	4.40		4.40
Stage 1	3	-1.28%	-12.99%	112.99%	3.85	4.35		4.35
	4	-1.30%	-13.16%	113.16%	3.80	4.30		4.30
	5	-1.32%	-2.93%	102.93%	3.75	3.86		3.86
	6	-0.29%	7.31%	92.69%	3.74	3.47		3.47
	7	0.73%	17.54%	82.46%	3.77	3.11		3.11
Stage 2	8	1.75%	27.77%	72.23%	3.83	2.77		2.77
	9	2.78%	38.00%	62.00%	3.94	2.44		2.44
	10	3.80%	38.00%	62.00%	4.09	2.53	84.88	87.41
Stage 3	11+	3.80%	38.00%	62.00%	4.24	2.63		

**$K_e = 6.67%$**

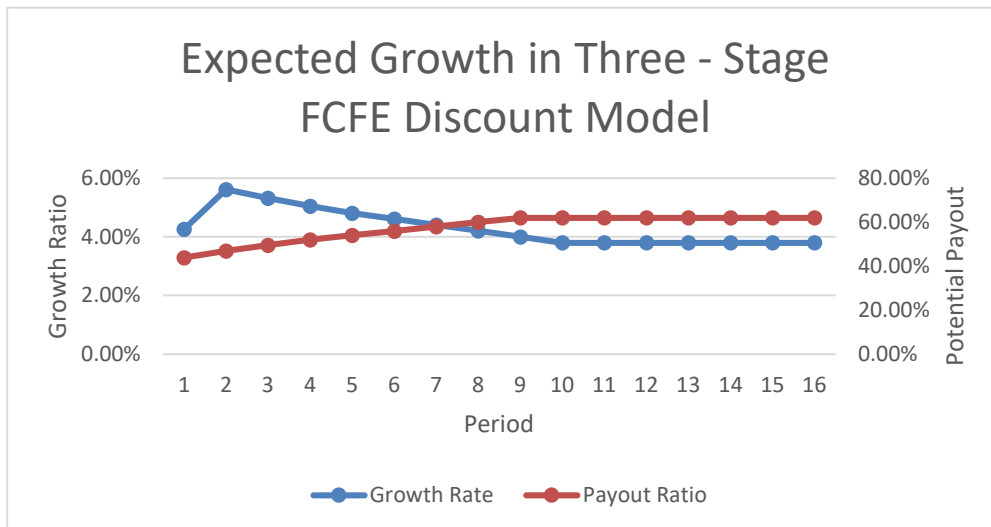


### Three Stage Free Cash Flow to Equity Discount Model

Company **PNM Resources** 4.14% GDP  
 Ticker **pnm** 20.0 Industry P/E  
 62.0% 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%	57.45%	2.35			(45.26)
	1	4.26%	56.12%	43.88%	2.45	1.08		1.08
	2	5.61%	53.14%	46.86%	2.59	1.21		1.21
Stage 1	3	5.31%	50.46%	49.54%	2.73	1.35		1.35
	4	5.05%	48.03%	51.97%	2.86	1.49		1.49
	5	4.80%	46.03%	53.97%	3.00	1.62		1.62
	6	4.60%	44.02%	55.98%	3.14	1.76		1.76
	7	4.40%	42.01%	57.99%	3.28	1.90		1.90
Stage 2	8	4.20%	40.01%	59.99%	3.41	2.05		2.05
	9	4.00%	38.00%	62.00%	3.55	2.20		2.20
	10	3.80%	38.00%	62.00%	3.69	2.28	76.51	78.79
Stage 3	11+	3.80%	38.00%	62.00%	3.83	2.37		

**$K_e = 8.25\%$**

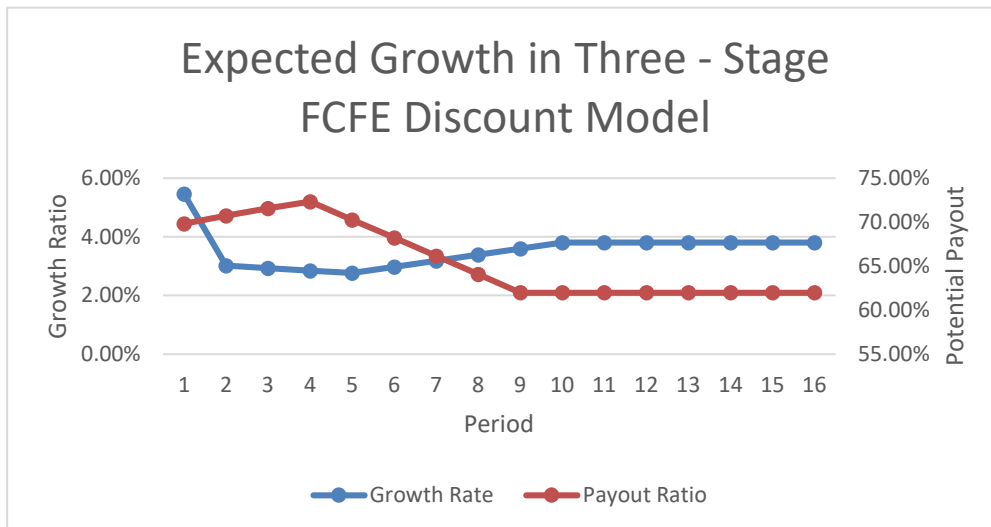


### Three Stage Free Cash Flow to Equity Discount Model

Company **Portland General** 4.14% GDP  
 Ticker **por** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		54.55%	45.45%	2.75			(52.92)
Stage 1	1	5.45%	30.17%	69.83%	2.90	2.03		2.03
	2	3.02%	29.29%	70.71%	2.99	2.11		2.11
	3	2.93%	28.46%	71.54%	3.08	2.20		2.20
	4	2.85%	27.67%	72.33%	3.16	2.29		2.29
	5	2.77%	29.73%	70.27%	3.25	2.28		2.28
Stage 2	6	2.97%	31.80%	68.20%	3.35	2.28		2.28
	7	3.18%	33.87%	66.13%	3.45	2.28		2.28
	8	3.39%	35.93%	64.07%	3.57	2.29		2.29
	9	3.59%	38.00%	62.00%	3.70	2.29		2.29
	10	3.80%	38.00%	62.00%	3.84	2.38	79.69	82.07
Stage 3	11+	3.80%	38.00%	62.00%	3.98	2.47		

**$K_e = 7.74%$**

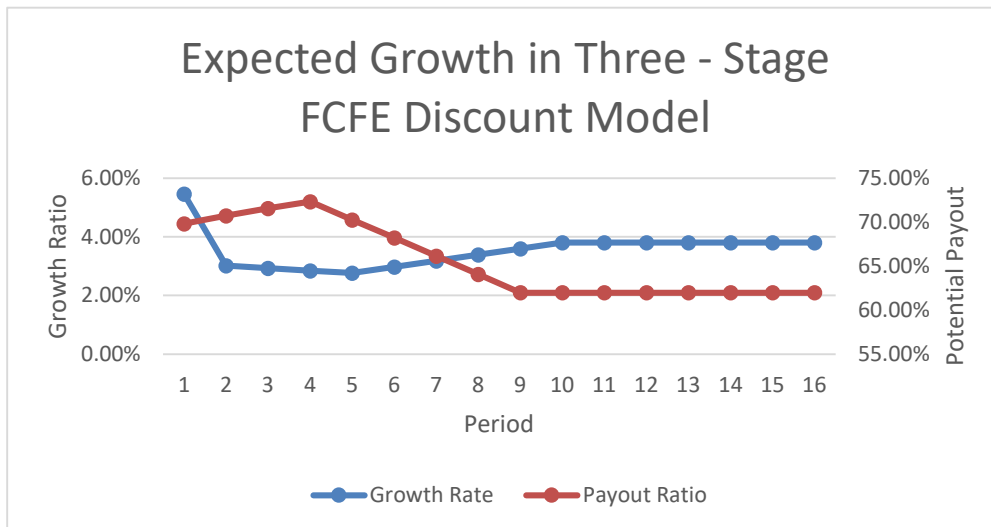


### Three Stage Free Cash Flow to Equity Discount Model

Company **Public Service E** 4.14% GDP  
 Ticker **peg** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		565.22%	-465.22%	2.30			(66.73)
Stage 1	1	56.52%	62.50%	37.50%	3.60	1.35		1.35
	2	6.25%	58.82%	41.18%	3.83	1.58		1.58
	3	5.88%	55.56%	44.44%	4.05	1.80		1.80
	4	5.56%	52.63%	47.37%	4.28	2.02		2.02
	5	5.26%	49.71%	50.29%	4.50	2.26		2.26
Stage 2	6	4.97%	46.78%	53.22%	4.72	2.51		2.51
	7	4.68%	43.85%	56.15%	4.94	2.78		2.78
	8	4.39%	40.93%	59.07%	5.16	3.05		3.05
	9	4.09%	38.00%	62.00%	5.37	3.33		3.33
	10	3.80%	38.00%	62.00%	5.58	3.46	115.78	119.23
Stage 3	11+	3.80%	38.00%	62.00%	5.79	3.59		

**$K_e = 8.37%$**

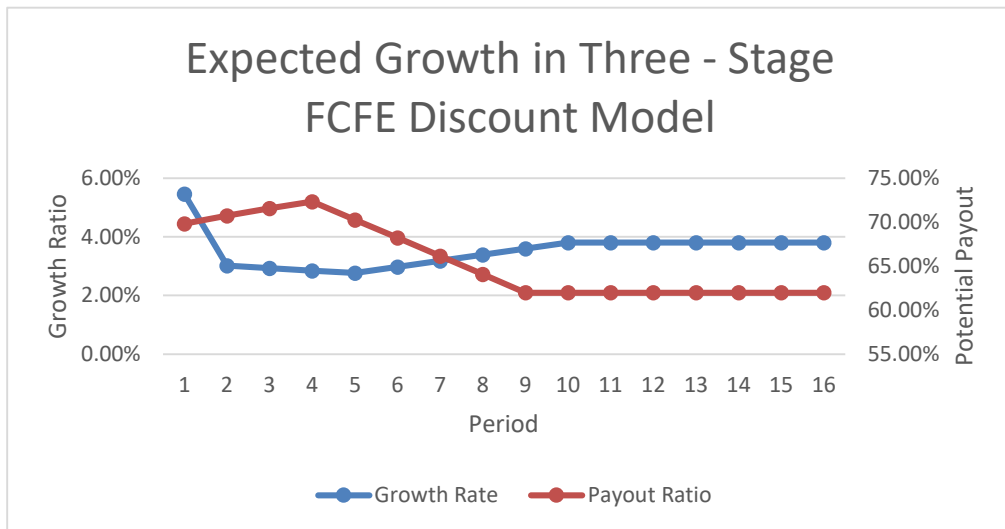


### Three Stage Free Cash Flow to Equity Discount Model

Company **Sempra Energy** 4.14% GDP  
 Ticker **sre** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		1615.38%	-1515.38%	3.25			(132.28)
Stage 1	1	#####	66.18%	33.82%	8.50	2.88		2.88
	2	6.62%	62.07%	37.93%	9.06	3.44		3.44
	3	6.21%	58.44%	41.56%	9.63	4.00		4.00
	4	5.84%	55.21%	44.79%	10.19	4.56		4.56
	5	5.52%	51.77%	48.23%	10.75	5.18		5.18
Stage 2	6	5.18%	48.33%	51.67%	11.31	5.84		5.84
	7	4.83%	44.89%	55.11%	11.85	6.53		6.53
	8	4.49%	41.44%	58.56%	12.39	7.25		7.25
	9	4.14%	38.00%	62.00%	12.90	8.00		8.00
	10	3.80%	38.00%	62.00%	13.39	8.30	277.94	286.24
Stage 3	11+	3.80%	38.00%	62.00%	13.90	8.62		

**$K_e = 10.57%$**

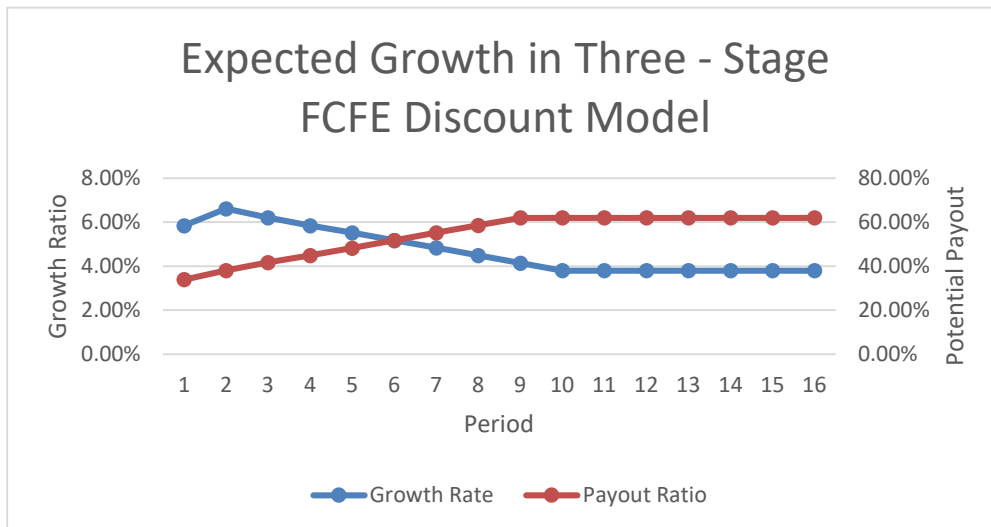


### Three Stage Free Cash Flow to Equity Discount Model

Company **WEC Energy Group** 4.14% GDP  
 Ticker **wec** 20.0 Industry P/E  
 62.0% Target Dividend Payout Ratio  
 10.0% Target ROE

	Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
Historic	0		58.39%	41.61%	4.11			(96.30)
	1	5.84%	66.09%	33.91%	4.35	1.48		1.48
	2	6.61%	61.99%	38.01%	4.64	1.76		1.76
Stage 1	3	6.20%	58.38%	41.62%	4.93	2.05		2.05
	4	5.84%	55.16%	44.84%	5.21	2.34		2.34
	5	5.52%	51.72%	48.28%	5.50	2.66		2.66
	6	5.17%	48.29%	51.71%	5.78	2.99		2.99
Stage 2	7	4.83%	44.86%	55.14%	6.06	3.34		3.34
	8	4.49%	41.43%	58.57%	6.34	3.71		3.71
	9	4.14%	38.00%	62.00%	6.60	4.09		4.09
	10	3.80%	38.00%	62.00%	6.85	4.25	142.19	146.43
Stage 3	11+	3.80%	38.00%	62.00%	7.11	4.41		

**$K_e = 6.36\%$**



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

Company Xcel Energy Inc 4.14% GDP  
 Ticker xel 20.0 Industry P/E  
 62.0% 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%	2.95			(67.70)
	1	5.08%	52.42%	47.58%	3.10	1.48		1.48
	2	5.24%	49.81%	50.19%	3.26	1.64		1.64
Stage 1	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%	43.84%	56.16%	3.75	2.11		2.11
	6	4.38%	42.38%	57.62%	3.91	2.26		2.26
	7	4.24%	40.92%	59.08%	4.08	2.41		2.41
Stage 2	8	4.09%	39.46%	60.54%	4.25	2.57		2.57
	9	3.95%	38.00%	62.00%	4.41	2.74		2.74
	10	3.80%	38.00%	62.00%	4.58	2.84	95.13	97.98
Stage 3	11+	3.80%	38.00%	62.00%	4.76	2.95		

**$K_e = 6.16\%$**

