

## COST OF CAPITAL STUDY

### YIELD CAPITALIZATION

2019 Assessment Year

APPENDIX C

## Electric Industry

<b>EQUITY RATE</b>						<b>9.00%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>							PAGE
	CAPM Ex Ante		6.39%				4
<b>DIVIDEND GROWTH MODELS Single Stage</b>							
	Value Line, based on Dividends Growth		9.00%				6
	Value Line, based on Earnings Growth		9.00%				7
	Value Line, based on Return on Equity		7.40%				8
<b>FCFE GROWTH MODEL Multi Stage</b>							9
			7.25%				
				<b>RANGE</b>	6.39-9.00%		
<b>DEBT RATE</b>						<b>5.00%</b>	10
<b>MARKET CAPITAL STRUCTURE</b>							
	Equity	60%	x	9.00%	=	5.40%	3
	Debt	40%	x	5.00%	=	2.00%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	2.00%	
						<u>1.52%</u>	
<b>WEIGHTED AVERAGE COST OF CAPITAL</b>						<b>6.92%</b>	

# SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2019 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	0.65	A	21.1	3.2%	4,565,463,816	44.7%	400,000,000	3.9%	5,246,300,000	51.4%	10,211,763,816
Ameren Corp	aee	0.60	A	21.4	2.8%	7,635,179,414	48.8%	142,000,000	0.9%	7,859,000,000	50.3%	15,636,179,414
Avista Corp	ava	0.65	A	20.9	3.5%	1,793,282,400	48.4%			1,912,500,000	51.6%	3,705,782,400
CMS Energy Corp	cms	0.55	B++	23.3	2.9%	4,755,453,762	30.7%	37,000,000	0.2%	10,684,000,000	69.0%	15,476,453,762
Con. Edison Inc	ed	0.45	A+	18.1	3.7%	16,411,778,560	51.5%			15,480,000,000	48.5%	31,891,778,560
Duke Energy Corp	duk	0.50	A	20.2	4.3%	43,057,804,503	46.0%			50,507,000,000	54.0%	93,564,804,503
Edison International	eix	0.55	B+	12.7	4.3%	12,055,014,622	41.7%	2,193,000,000	7.6%	14,629,000,000	50.7%	28,877,014,622
El Paso Electric Co	ee	0.65	B++	18.7	2.8%	1,182,101,177	46.0%			1,385,300,000	54.0%	2,567,401,177
Entergy Corp	etr	0.60	B++	15.7	4.2%	8,868,576,351	36.0%	219,400,000	0.9%	15,539,000,000	63.1%	24,626,976,351
Eversource Energy	es	0.60	A	21.2	3.1%	11,487,110,540	47.1%	155,600,000	0.6%	12,735,000,000	52.2%	24,377,710,540
FirstEnergy Corp	fe	0.65	B++	32.5	3.9%	5,983,910,595	25.7%	707,000,000	3.0%	16,608,000,000	71.3%	23,298,910,595
Idacorp Inc	ida	0.55	A	19.8	2.6%	2,353,343,246	56.2%			1,834,400,000	43.8%	4,187,743,246
NorthWestern Corp	nwe	0.55	B++	18.3	3.7%	1,917,231,853	48.5%			2,036,600,000	51.5%	3,953,831,853
OGE Energy Corp	oge	0.85	A	19.9	3.6%	4,006,630,239	58.0%			2,896,900,000	42.0%	6,903,530,239
Pinnacle West Capital Corp	pnw	0.55	A+	18.4	3.4%	5,178,083,942	53.6%			4,487,400,000	46.4%	9,665,483,942
PNM Resources Inc	pnm	0.65	B+	20.5	2.7%	1,708,570,235	44.2%	11,500,000	0.3%	2,142,600,000	55.5%	3,862,670,235
Portland General Elec Co	por	0.60	B++	18.1	3.1%	2,503,312,685	54.1%			2,127,000,000	45.9%	4,630,312,685
WEC Energy Group Inc	wec	0.55	A+	22.8	3.2%	9,785,424,119	49.4%	30,400,000	0.2%	9,994,000,000	50.4%	19,809,824,119
Xcel Energy Inc	xel	0.50	A+	20.2	3.1%	12,255,292,735	44.1%			15,508,000,000	55.9%	27,763,292,735
<b>Mean</b>		<b>0.59</b>		<b>20.2</b>	<b>3.4%</b>	<b>8,289,661,305</b>	<b>46.0%</b>		<b>2.0%</b>	<b>10,190,105,263</b>	<b>53.0%</b>	
<b>Harmonic Mean</b>		<b>0.58</b>					<b>44.3%</b>		<b>0.5%</b>		<b>52.1%</b>	
<b>Weighted Mean</b>						<b>157,503,564,793</b>	<b>44.4%</b>	<b>3,895,900,000</b>	<b>1.1%</b>	<b>193,612,000,000</b>	<b>54.5%</b>	<b>355,011,464,793</b>
<b>Median</b>		<b>0.60</b>			<b>3.2%</b>		<b>47.1%</b>		<b>0.9%</b>		<b>51.5%</b>	

# SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

2019 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Alliant Energy Corp	Int	42.25	236,063,279	9,973,673,538	61.4%	400,000,000	2.5%	5,860,800,000	36.1%	16,234,473,538
Ameren Corp	aee	65.23	244,638,879	15,957,794,077	64.4%	142,000,000	0.6%	8,669,000,000	35.0%	24,768,794,077
Avista Corp	ava	42.48	65,688,000	2,790,426,240	58.6%	-	-	1,970,779,000	41.4%	4,761,205,240
CMS Energy Corp	cms	49.65	283,400,105	14,070,815,213	54.7%	37,000,000	0.1%	11,630,000,000	45.2%	25,737,815,213
Con. Edison Inc	ed	76.46	311,418,948	23,811,092,764	56.0%	-	-	18,740,000,000	44.0%	42,551,092,764
Duke Energy Corp	duk	85.41	712,877,558	60,886,872,229	52.8%	-	-	54,534,000,000	47.2%	115,420,872,229
Edison International	eix	56.22	325,811,206	18,317,106,001	51.8%	2,193,000,000	6.2%	14,844,000,000	42.0%	35,354,106,001
El Paso Electric Co	ee	50.13	40,691,951	2,039,887,504	56.6%	-	-	1,566,874,000	43.4%	3,606,761,504
Entergy Corp	etr	85.21	189,580,512	16,154,155,428	50.1%	219,400,000	0.7%	15,880,239,000	49.2%	32,253,794,428
Eversource Energy	es	65.04	316,885,808	20,610,252,952	60.8%	155,600,000	0.5%	13,154,900,000	38.8%	33,920,752,952
FirstEnergy Corp	fe	37.18	511,445,350	19,015,538,113	48.8%	707,000,000	1.8%	19,266,000,000	49.4%	38,988,538,113
Idacorp Inc	ida	93.06	50,392,789	4,689,552,944	70.7%	-	-	1,942,773,000	29.3%	6,632,325,944
NorthWestern Corp	nwe	59.44	50,321,046	2,991,082,974	58.3%	-	-	2,137,827,000	41.7%	5,128,909,974
OGE Energy Corp	oge	38.50	199,732,315	7,689,694,128	70.8%	-	-	3,178,200,000	29.2%	10,867,894,128
Pinnacle West Capital	pnw	85.20	112,079,739	9,549,193,763	64.6%	-	-	5,233,563,000	35.4%	14,782,756,763
PNM Resources Inc	pnm	41.09	79,653,624	3,272,967,410	54.7%	11,500,000	0.2%	2,703,810,000	45.2%	5,988,277,410
Portland General Electric	por	45.85	89,244,659	4,091,867,615	59.7%	-	-	2,760,000,000	40.3%	6,851,867,615
WEC Energy Group	wec	69.26	315,455,323	21,848,435,671	67.4%	30,400,000	0.1%	10,554,900,000	32.5%	32,433,735,671
Xcel Energy Inc	xel	49.27	513,848,752	25,317,328,011	60.2%	-	-	16,755,000,000	39.8%	42,072,328,011
<b>Mean</b>					<b>59.1%</b>		<b>1.4%</b>		<b>40.3%</b>	
<b>Harmonic Mean</b>					<b>58.4%</b>		<b>0.3%</b>		<b>39.3%</b>	
<b>Weighted Mean</b>				<b>283,077,736,575</b>	<b>56.8%</b>	<b>3,895,900,000</b>	<b>0.8%</b>	<b>211,382,665,000</b>	<b>42.4%</b>	<b>498,356,301,575</b>
<b>Median</b>					<b>58.6%</b>		<b>0.6%</b>		<b>41.4%</b>	
<b>Std Dev</b>					<b>6.4%</b>		<b>2.0%</b>		<b>6.1%</b>	
<b>Coefficient of Variation</b>					<b>10.9%</b>		<b>140.8%</b>		<b>15.1%</b>	
<b>Target</b>					<b>60%</b>				<b>40%</b>	<b>100%</b>

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT  
CAPITAL ASSET PRICING MODEL**

2019 Assessment Year

**Ex Ante**  
**Ke = Rf + B (Rp)**

<b>Ke = Cost of Equity</b>		<b>6.39%</b>
		to page 1

Rm =	rate of return	8.65%	
Rf =	risk free rate	3.00%	
Rp =	risk premium	5.65%	
B =	Beta	0.60	page 7

<b>Rp = Risk Premium</b>		<b>5.65%</b>
		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>	5.96%	chart page 15
<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a>	5.65%	adjusted for Rf
2018 Implied Premium		
<b>John Graham &amp; Campbell Harvey</b>	6.21%	10 year expected real ret.
Duke CFO magazine Global Business Outlook	5.89%-6.54%	95% Interval 10 year expe
4th Qtr 2018	6.27%	adjusted for Rf
	3.06%	Rf rate used in survey

<b>Rf = Risk Free Rate</b>		<b>3.00%</b>
		to above

<b>Value Line Investment Survey, Selected Yields January 4, 2019, page 1949</b>		
as of 12-26-18	US Treasury Securities year end data	
	5 year	2.65%
	10 year	2.81%
	30 year	3.06%
	30 year Zero	3.10%

<b>Federal Reserve Statistical Release (<a href="http://www.federalreserve.gov/Releases/H15/Current/">http://www.federalreserve.gov/Releases/H15/Current/</a>)</b>		
as of 12-31-18	Treasury Constant Maturities	
	5 year	2.51%
	10 year	2.69%
	20 year	2.87%
	30 year	3.02%
	20 year TIPS	<u>1.09%</u>
	30 year TIPS	<u>1.21%</u>
		1.78%
		1.81%
		TIPS inflation indication

<b>Inflation</b>		<b>2.00%</b>
		to appraisal template

<b>Value Line Investment Survey, Economic Series January 4, 2019, page 1500</b>	
Consumer Price Index Annual Rate of Change 2021-2023	2.30%
<b>The Livingston Survey December 21, 2018, page 4, 10</b>	
Inflation median (measured by the CPI) over next 10 years	2.23%

<b>Gross Domestic Product (GDP) Nominal</b>		<b>3.90%</b>
		real GDP + inflation est

<b>Federal Reserve Projected Long Run Real GDP Growth</b>		
Median Projection Value From Dec 19, 2018 Report	1.90%	
<a href="https://www.federalreserve.gov/monetarypolicy/files/fomcproptabl20181219.pdf">https://www.federalreserve.gov/monetarypolicy/files/fomcproptabl20181219.pdf</a>		
<b>Congressional Budget Office Real GDP Economic Projections</b>		
The Budget and Economic Outlook 2019-2029	2019-2023	Table D-1 pg 140 2.18%
Average Percentage Change Year to Year	2024-2029	1.73%
<a href="http://www.cbo.gov/publication/54918">http://www.cbo.gov/publication/54918</a>		
<b>Federal Reserve Bank of Philadelphia</b>		
The Livingston Survey, December 21, 2018, page 4, 10		
Average Annual Real GDP Growth Rate for Next Ten Years		2.07%
<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

2019 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	42.25	1.42	3.36%	6.00%	9.36%
Ameren Corp	aee	65.23	1.93	2.96%	6.00%	8.96%
Avista Corp	ava	42.48	1.55	3.65%	4.00%	7.65%
CMS Energy Corp	cms	49.65	1.53	3.08%	7.00%	10.08%
Con. Edison Inc	ed	76.46	2.96	3.87%	3.50%	7.37%
Duke Energy Corp	duk	85.41	3.79	4.44%	4.00%	8.44%
Edison International	eix	56.22	2.46	4.38%	5.50%	9.88%
El Paso Electric Co	ee	50.13	1.52	3.03%	7.00%	10.03%
Entergy Corp	etr	85.21	3.66	4.30%	2.50%	6.80%
Eversource Energy	es	65.04	2.14	3.29%	6.00%	9.29%
FirstEnergy Corp	fe	37.18	1.52	4.09%	4.00%	8.09%
Idacorp Inc	ida	93.06	2.56	2.75%	6.50%	9.25%
NorthWestern Corp	nwe	59.44	2.30	3.87%	4.50%	8.37%
OGE Energy Corp	oge	38.50	1.54	4.00%	7.50%	11.50%
Pinnacle West Capital	pnw	85.20	3.04	3.57%	6.00%	9.57%
PNM Resources Inc	pnm	41.09	1.18	2.87%	7.00%	9.87%
Portland General Elec	por	45.85	1.52	3.32%	6.00%	9.32%
WEC Energy Group Inc	wec	69.26	2.36	3.41%	6.00%	9.41%
Xcel Energy Inc	xel	49.27	1.60	3.25%	5.50%	8.75%
<b>Mean</b>						<b>9.05%</b>
<b>Harmonic Mean</b>						<b>8.92%</b>
<b>Median</b>						<b>9.29%</b>
<b>Max</b>						<b>11.50%</b>
<b>Min</b>						<b>6.80%</b>
<b>Std Dev</b>						<b>1.10%</b>
<b>Coefficient of Variation</b>						<b>12.15%</b>
<b>Say</b>						<b>9.00%</b>

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2019 Assessment Year

Electric Industry

### Based on Earnings 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)	Earnings Growth (G)	Ke with Short Term Growth
Alliant Energy Corp	int	42.25	1.42	3.36%	6.50%	9.86%
Ameren Corp	aee	65.23	1.93	2.96%	6.50%	9.46%
Avista Corp	ava	42.48	1.55	3.65%	5.50%	9.15%
CMS Energy Corp	cms	49.65	1.53	3.08%	7.00%	10.08%
Con. Edison Inc	ed	76.46	2.96	3.87%	3.00%	6.87%
Duke Energy Corp	duk	85.41	3.79	4.44%	5.50%	9.94%
Edison International	eix	56.22	2.46	4.38%	4.50%	8.88%
El Paso Electric Co	ee	50.13	1.52	3.03%	3.00%	6.03%
Energy Corp	etr	85.21	3.66	4.30%	nil	nmf
Eversource Energy	es	65.04	2.14	3.29%	5.50%	8.79%
FirstEnergy Corp	fe	37.18	1.52	4.09%	6.50%	10.59%
Idacorp Inc	ida	93.06	2.56	2.75%	4.50%	7.25%
NorthWestern Corp	nwe	59.44	2.30	3.87%	2.50%	6.37%
OGE Energy Corp	oge	38.50	1.54	4.00%	6.50%	10.50%
Pinnacle West Capital	pnw	85.20	3.04	3.57%	6.00%	9.57%
PNM Resources Inc	pnm	41.09	1.18	2.87%	7.50%	10.37%
Portland General Electric	por	45.85	1.52	3.32%	4.00%	7.32%
WEC Energy Group	wec	69.26	2.36	3.41%	6.00%	9.41%
Xcel Energy Inc	xel	49.27	1.60	3.25%	5.50%	8.75%
<b>Mean</b>						<b>8.84%</b>
<b>Harmonic Mean</b>						<b>8.58%</b>
<b>Median</b>						<b>9.28%</b>
<b>Max</b>						<b>10.59%</b>
<b>Min</b>						<b>6.03%</b>
<b>Std Dev</b>						<b>1.46%</b>
<b>Coefficient of Variation</b>						<b>16.46%</b>
<b>Say</b>						<b>9.00%</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

## DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2019 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

**Po** = Current Price

**G** = Sustainable Growth

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

**ROE** = Return on Equity = (E1 / Po)

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Expected Earnings (E1)	Dividend Yield (D1/Po)	Retained Earnings (b)	ROE (E1/Po)	Growth (b*ROE)	$K_e$ Dividends	$K_e$ Earnings
Alliant Energy Corp	Int	42.25	1.42	2.25	3.36%	39.0%	5.33%	2.08%	5.44%	7.40%
Ameren Corp	aee	65.23	1.93	3.30	2.96%	44.0%	5.06%	2.23%	5.18%	7.28%
Avista Corp	ava	42.48	1.55	2.10	3.65%	22.0%	4.94%	1.09%	4.74%	6.03%
CMS Energy Corp	cms	49.65	1.53	2.50	3.08%	38.0%	5.04%	1.91%	4.99%	6.95%
Con. Edison Inc	ed	76.46	2.96	4.15	3.87%	40.0%	5.43%	2.17%	6.04%	7.60%
Duke Energy Corp	duk	85.41	3.79	4.95	4.44%	18.0%	5.80%	1.04%	5.48%	6.84%
Edison International	eix	56.22	2.46	4.75	4.38%	41.0%	8.45%	3.46%	7.84%	11.91%
El Paso Electric Co	ee	50.13	1.52	2.45	3.03%	39.0%	4.89%	1.91%	4.94%	6.79%
Entergy Corp	etr	85.21	3.66	4.05	4.30%	39.0%	4.75%	1.85%	6.15%	6.61%
Eversource Energy	es	65.04	2.14	3.45	3.29%	38.0%	5.30%	2.02%	5.31%	7.32%
FirstEnergy Corp	fe	37.18	1.52	2.50	4.09%	nmf	6.72%	nmf	nmf	nmf
Idacorp Inc	ida	93.06	2.56	4.55	2.75%	47.0%	4.89%	2.30%	5.05%	7.19%
NorthWestern Corp	nwe	59.44	2.30	3.50	3.87%	35.0%	5.89%	2.06%	5.93%	7.95%
OGE Energy Corp	oge	38.50	1.54	2.15	4.00%	36.0%	5.58%	2.01%	6.01%	7.59%
Pinnacle West Capital	pnw	85.20	3.04	4.85	3.57%	35.0%	5.69%	1.99%	5.56%	7.68%
PNM Resources Inc	pnm	41.09	1.18	2.15	2.87%	49.0%	5.23%	2.56%	5.44%	7.80%
Portland General Electric	por	45.85	1.52	2.50	3.32%	40.0%	5.45%	2.18%	5.50%	7.63%
WEC Energy Group Inc	wec	69.26	2.36	3.50	3.41%	34.0%	5.05%	1.72%	5.13%	6.77%
Xcel Energy Inc	xel	49.27	1.60	2.60	3.25%	38.0%	5.28%	2.01%	5.25%	7.28%
<b>Mean</b>									<b>5.55%</b>	<b>7.48%</b>
<b>Harmonic Mean</b>									<b>5.49%</b>	<b>7.35%</b>
<b>Median</b>									<b>5.44%</b>	<b>7.30%</b>
<b>Std Dev</b>									<b>0.70%</b>	<b>1.21%</b>
<b>Coefficient of Variation</b>									<b>12.57%</b>	<b>16.14%</b>

say **7.40%**

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

Washington State Department of Revenue

2019 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
Alliant Energy Corp	Int	42.25	2.25	18.78	63.00%	10.00%	7.31%
Ameren Corp	ae	65.23	3.30	19.77	58.00%	10.00%	6.95%
Avista Corp	ava	42.48	2.10	20.23	73.00%	7.50%	6.80%
CMS Energy Corp	cms	49.65	2.50	19.86	61.00%	14.00%	6.96%
Con. Edison Inc	ed	76.46	4.15	18.42	71.00%	7.50%	7.32%
Duke Energy Corp	duk	85.41	4.95	17.25	77.00%	8.00%	7.87%
Edison International	eix	56.22	4.75	11.84	55.00%	11.50%	12.75%
El Paso Electric Co	ee	50.13	2.45	20.46	61.00%	8.50%	5.53%
Entergy Corp	etr	85.21	4.05	21.04	90.00%	8.00%	7.23%
Eversource Energy	es	65.04	3.45	18.85	62.00%	9.00%	7.19%
FirstEnergy Corp	fe	37.18	2.50	14.87	63.00%	18.50%	10.76%
Idacorp Inc	ida	93.06	4.55	20.45	56.00%	9.50%	5.74%
NorthWestern Corp	nwe	59.44	3.50	16.98	65.00%	9.00%	7.54%
OGE Energy Corp	oge	38.50	2.15	17.91	71.00%	10.50%	8.06%
Pinnacle West Capital	pnw	85.20	4.85	17.57	62.00%	10.00%	7.79%
PNM Resources Inc	pnm	41.09	2.15	19.11	50.00%	9.50%	6.62%
Portland General Electric	por	45.85	2.50	18.34	60.00%	8.50%	6.74%
WEC Energy Group	wec	69.26	3.50	19.79	67.00%	11.00%	6.92%
Xcel Energy Inc	xel	49.27	2.60	18.95	61.00%	10.50%	6.67%
<b>Mean</b>				<b>18.45</b>	<b>64.53%</b>	<b>10.05%</b>	<b>7.51%</b>
<b>Harmonic Mean</b>				<b>18.13</b>	<b>63.46%</b>	<b>9.60%</b>	<b>7.26%</b>
<b>Median</b>				<b>18.85</b>	<b>62.00%</b>	<b>9.50%</b>	<b>7.19%</b>
<b>Industry Summary</b>				<b>18.50</b>	<b>63.00%</b>	<b>9.60%</b>	

**Say 7.25%**



## SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

Washington State Department of Revenue

2019 Assessment Year

Electric Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
Alliant Energy Corp	Int	Baa1	A-
Ameren Corp	aee	Baa1	BBB+
Avista Corp	ava	Baa2	BBB
CMS Energy Corp	cms	Baa1	BBB+
Con. Edison Inc	ed	Baa1	A-
Duke Energy Corp	duk	Baa1	A-
Edison International	eix	Baa3	BBB
El Paso Electric Co	ee	Baa1	BBB
Entergy Corp	etr	Baa2	BBB+
Eversource Energy	es	Baa1	A+
FirstEnergy Corp	fe	Baa3	BBB
Idacorp Inc	ida	Baa1	BBB
NorthWestern Corp	nwe	Baa1	BBB
OGE Energy Corp	oge	Baa1	BBB+
Pinnacle West Capital Corp	pnw	A3	A-
PNM Resources Inc	pnm	Baa3	BBB+
Portland General Elec Co	por	A3	BBB+
WEC Energy Group Inc	wec	Baa1	A-
Xcel Energy Inc	xel	Baa1	A-

<b>Overall Average Debt Rating</b>	<b>Baa1</b>	<b>BBB+</b>
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Mergent's Bond Record January 2019, page 250				
Corporate	Aaa	Aa	A	Baa
October	4.14%	4.28%	4.46%	5.07%
November	4.22%	4.37%	4.53%	5.22%
December	4.02%	4.20%	4.37%	5.13%
<b>4th Qtr Average</b>	<b>4.13%</b>	<b>4.28%</b>	<b>4.45%</b>	<b>5.14%</b>

Public Utilities	Aaa	Aa	A	Baa
October		4.31%	4.45%	4.91%
November		4.40%	4.52%	5.03%
December		4.24%	4.37%	4.92%
<b>4th Qtr Average</b>		<b>4.32%</b>	<b>4.45%</b>	<b>4.95%</b>

Industrials	Aaa	Aa	A	Baa
October	4.14%	4.24%	4.45%	5.22%
November	4.22%	4.34%	4.53%	5.42%
December	4.02%	4.16%	4.36%	5.34%
<b>4th Qtr Average</b>	<b>4.13%</b>	<b>4.25%</b>	<b>4.45%</b>	<b>5.33%</b>

		Avg YTM	Med YTM
<b>Moody's LT Bond Yield</b>	<b>Baa1</b>	5.03%	4.98%
<b>S&amp;P's LT Bond Yield</b>	<b>BBB+</b>	5.15%	5.08%

<b>Bloomberg Dec 2018</b>	20Y	25Y	30Y
<b>BBB+</b>	5.03%	5.05%	4.96%

<b>Debt Yield Rate</b>	<b>5.00%</b>
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to page 1

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2019 Assessment Year

Electric Industry

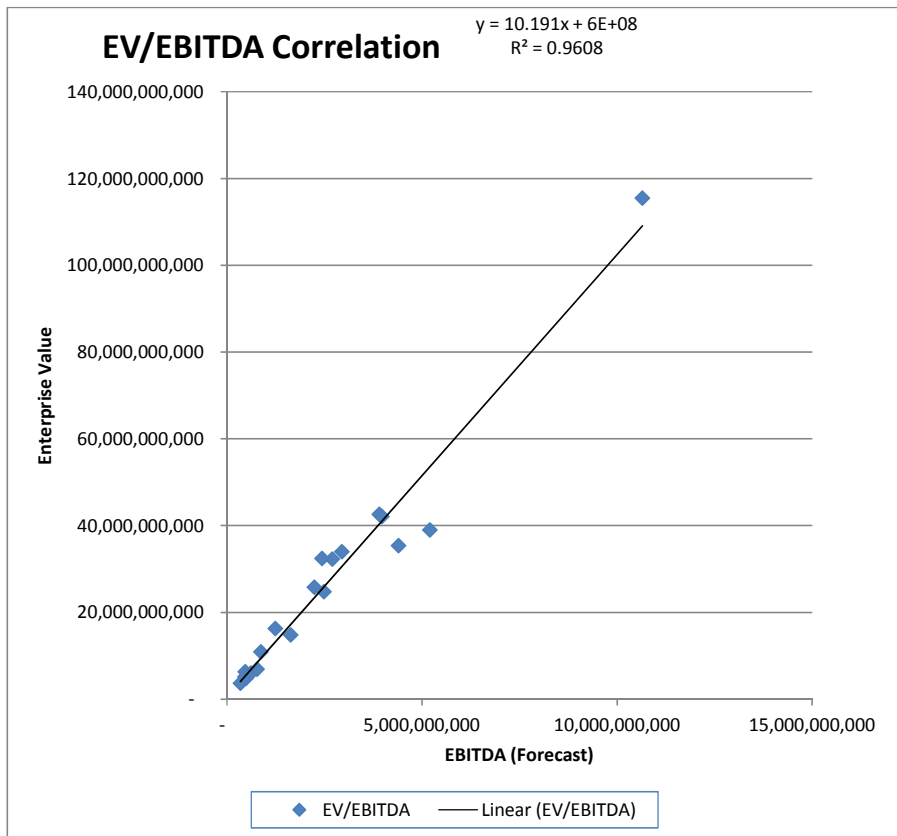
Company	Ticker	Stock Price	2018		2019		2018		2019	
			Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio	
Alliant Energy Corp	int	42.25	2.19	5.2%	2.25	5.3%	4.32	10.2%	4.40	10.4%
Ameren Corp	aee	65.23	3.32	5.1%	3.30	5.1%	7.64	11.7%	7.95	12.2%
Avista Corp	ava	42.48	1.90	4.5%	2.10	4.9%	5.00	11.8%	5.35	12.6%
CMS Energy Corp	cms	49.65	2.32	4.7%	2.50	5.0%	5.61	11.3%	6.00	12.1%
Con. Edison Inc	ed	76.46	4.80	6.3%	4.15	5.4%	9.05	11.8%	8.90	11.6%
Duke Energy Corp	duk	85.41	4.45	5.2%	4.95	5.8%	10.80	12.6%	11.65	13.6%
Edison International	eix	56.22	4.30	7.6%	4.75	8.4%	11.05	19.7%	11.75	20.9%
El Paso Electric Co	ee	50.13	2.30	4.6%	2.45	4.9%	6.20	12.4%	6.50	13.0%
Entergy Corp	etr	85.21	5.88	6.9%	4.05	4.8%	16.50	19.4%	14.65	17.2%
Eversource Energy	es	65.04	3.25	5.0%	3.45	5.3%	6.60	10.1%	7.00	10.8%
FirstEnergy Corp	fe	37.18	1.15	3.1%	2.50	6.7%	3.85	10.4%	5.35	14.4%
Idacorp Inc	ida	93.06	4.50	4.8%	4.55	4.9%	7.90	8.5%	8.10	8.7%
NorthWestern Corp	nwe	59.44	3.40	5.7%	3.50	5.9%	6.90	11.6%	7.20	12.1%
OGE Energy Corp	oge	38.50	2.12	5.5%	2.15	5.6%	3.74	9.7%	4.05	10.5%
Pinnacle West Capital Co	pnw	85.20	4.40	5.2%	4.85	5.7%	10.00	11.7%	10.70	12.6%
PNM Resources Inc	pnm	41.09	1.95	4.7%	2.15	5.2%	5.40	13.1%	5.75	14.0%
Portland General Elec Co	por	45.85	2.40	5.2%	2.50	5.5%	6.60	14.4%	7.00	15.3%
WEC Energy Group Inc	wec	69.26	3.34	4.8%	3.50	5.1%	6.04	8.7%	6.35	9.2%
Xcel Energy Inc	xel	49.27	2.45	5.0%	2.60	5.3%	5.85	11.9%	6.20	12.6%
		<b>Mean</b>		<b>5.2%</b>		<b>5.5%</b>		<b>12.2%</b>		<b>12.8%</b>
		<b>Harmonic Mean</b>		<b>5.1%</b>		<b>5.4%</b>		<b>11.6%</b>		<b>12.3%</b>
		<b>Median</b>		<b>5.1%</b>		<b>5.3%</b>		<b>11.7%</b>		<b>12.6%</b>
		<b>Max</b>		<b>7.6%</b>		<b>8.4%</b>		<b>19.7%</b>		<b>20.9%</b>
		<b>Min</b>		<b>3.1%</b>		<b>4.8%</b>		<b>8.5%</b>		<b>8.7%</b>
		<b>Std Dev</b>		<b>1.0%</b>		<b>0.8%</b>		<b>3.0%</b>		<b>2.8%</b>
		<b>Coefficient of Variation</b>		<b>18.4%</b>		<b>15.3%</b>		<b>24.4%</b>		<b>22.0%</b>
		<b>Say</b>		<b>5.1%</b>		<b>5.4%</b>		<b>12.0%</b>		<b>12.5%</b>

Source: Value Line / yr end stock price

## SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2019 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	42.25	16,234,473,538	1,211,900,000	1.85%	1,234,342,593	13.15	3,576,358,677	4.54	1,038,678,428	293,040,000	12.19
Ameren Corp	ae	65.23	24,768,794,077	2,390,000,000	4.06%	2,486,976,440	9.96	6,446,234,462	3.84	1,944,879,088	433,450,000	10.41
Avista Corp	ava	42.48	4,761,205,240	452,149,000	7.00%	483,799,430	9.84	1,438,567,200	3.31	351,430,800	98,538,950	10.58
CMS Energy Corp	cms	49.65	25,737,815,213	2,095,000,000	6.95%	2,240,641,711	11.49	7,014,152,599	3.67	1,700,400,630	581,500,000	11.28
Con. Edison Inc	ed	76.46	42,551,092,764	3,971,000,000	-1.66%	3,905,182,320	10.90	12,394,474,130	3.43	2,771,628,637	937,000,000	11.47
Duke Energy Corp	duk	85.41	115,420,872,229	9,872,000,000	7.87%	10,648,962,963	10.84	24,380,412,484	4.73	8,305,023,551	2,726,700,000	10.46
Edison International	ei	56.22	35,354,106,001	4,135,000,000	6.33%	4,396,945,701	8.04	13,602,617,851	2.60	3,828,281,671	742,200,000	7.74
El Paso Electric Co	ee	50.13	3,606,761,504	327,617,000	4.84%	343,469,435	10.50	925,741,885	3.90	264,497,682	78,343,700	10.52
Entergy Corp	etr	85.21	32,253,794,428	3,042,241,000	-11.21%	2,701,141,252	11.94	10,426,928,160	3.09	2,777,354,501	794,011,950	9.03
Eversource Energy	es	65.04	33,920,752,952	2,771,886,000	6.06%	2,939,879,091	11.54	8,397,473,912	4.04	2,218,200,656	657,745,000	11.79
FirstEnergy Corp	fe	37.18	38,988,538,113	3,742,000,000	38.96%	5,199,922,078	7.50	11,354,086,770	3.43	2,736,232,623	963,300,000	10.54
Idacorp Inc	ida	93.06	6,293,277,944	453,040,000	2.53%	464,509,367	13.55	1,385,801,698	4.54	408,181,591	97,138,650	12.45
NorthWestern Corp	nwe	59.44	5,128,909,974	440,748,000	4.35%	459,910,957	11.15	1,245,445,889	4.12	362,311,531	106,891,350	10.93
OGE Energy Corp	oge	38.50	10,867,894,128	800,400,000	8.29%	866,743,316	12.54	2,446,720,859	4.44	808,915,876	158,910,000	11.23
Pinnacle West Capital	pnw	85.20	14,782,756,763	1,526,752,000	7.00%	1,633,624,640	9.05	3,827,523,087	3.86	1,199,253,207	261,678,150	10.12
PNM Resources Inc	pnm	41.09	5,988,277,410	577,286,000	6.48%	614,702,685	9.74	1,501,470,812	3.99	458,008,338	135,190,500	10.09
Portland General Electric	por	45.85	6,851,867,615	728,000,000	6.06%	772,121,212	8.87	2,097,249,487	3.27	624,712,613	138,000,000	8.98
WEC Energy Group	wec	69.26	32,433,735,671	2,314,200,000	5.13%	2,432,975,166	13.33	7,902,155,841	4.10	2,003,141,301	527,745,000	12.82
Xcel Energy Inc	xel	49.27	42,072,328,011	3,746,000,000	5.98%	3,970,119,658	10.60	11,767,136,421	3.58	3,185,862,262	837,750,000	10.46
<b>19</b>	<b>Mean</b>						<b>10.76</b>		<b>3.82</b>			<b>10.69</b>
	<b>Harmonic Mean</b>						<b>10.49</b>		<b>3.73</b>			<b>10.54</b>
	<b>Median</b>						<b>10.84</b>		<b>3.86</b>			<b>10.54</b>
	<b>Std Dev</b>						<b>1.72</b>		<b>0.55</b>			<b>1.24</b>
	<b>Say</b>						<b>9.50</b>		<b>3.80</b>			<b>10.50</b>



#### Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast		
FirstEnergy Corp	7.50		
Edison International	8.04		
Portland General Elec Co	8.87		
Pinnacle West Capital Corp	9.05		
PNM Resources Inc	9.74		
Avista Corp	9.84		
Ameren Corp	9.96	<b>9.49</b>	<b>Low Average</b>
El Paso Electric Co	10.50	<b>9.79</b>	<b>Low Median</b>
Xcel Energy Inc	10.60	<b>9.50</b>	<b>Say</b>
Duke Energy Corp	10.84		
Con. Edison Inc	10.90	<b>12.04</b>	<b>High Average</b>
NorthWestern Corp	11.15	<b>11.74</b>	<b>High Median</b>
CMS Energy Corp	11.49	<b>12.00</b>	<b>Say</b>
Eversource Energy	11.54		
Entergy Corp	11.94		
OGE Energy Corp	12.54		
Alliant Energy Corp	13.15		
WEC Energy Group Inc	13.33		
Idacorp Inc	13.55		