

COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2018 Assessment Year

APPENDIX C

Electric Industry

EQUITY RATE						9.00%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		6.08%				4
DIVIDEND GROWTH MODELS Single Stage							
	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		7.00%				8
FCFE GROWTH MODEL Multi Stage							9
			7.50%				
				RANGE	6.08-9.00%		
DEBT RATE						4.50%	10
MARKET CAPITAL STRUCTURE							
	Equity	60%	x	9.00%	=	5.40%	3
	Debt	40%	x	4.50%	=	1.80%	3
	Marginal Tax Rate	24%	=	(1-.24)	x	1.80%	
						<u>1.37%</u>	
WEIGHTED AVERAGE COST OF CAPITAL						6.77%	

SUPPORT FOR GUIDELINE COMPANIES

Washington State Department of Revenue

2018 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	Int	0.70	A	19.2	3.0%	4,182,783,520	48.7%	400,000,000	4.7%	4,010,600,000	46.7%	8,593,383,520
Ameren Corp	ae	0.65	A	19.4	3.0%	7,184,416,369	49.8%	142,000,000	1.0%	7,094,000,000	49.2%	14,420,416,369
Avista Corp	ava	0.75	A	25.9	2.8%	1,700,560,145	52.4%			1,543,300,000	47.6%	3,243,860,145
CMS Energy Corp	cms	0.65	B++	19.7	2.8%	4,453,769,803	32.5%	37,000,000	0.3%	9,214,000,000	67.2%	13,704,769,803
Con. Edison	ed	0.50	A+	19.2	3.2%	15,084,846,974	50.7%			14,651,000,000	49.3%	29,735,846,974
El Paso Electric	ee	0.80	B++	21.3	2.4%	1,118,303,925	48.3%			1,195,900,000	51.7%	2,314,203,925
Eversource	es	0.65	A	18.7	3.0%	11,091,003,280	51.1%	155,600,000	0.7%	10,468,000,000	48.2%	21,714,603,280
Idacorp Inc	ida	0.70	A	20.3	2.5%	2,245,009,843	56.3%			1,745,700,000	43.7%	3,990,709,843
NorthWestern Corp	nwe	0.70	B+	16.4	3.5%	2,368,982,655	56.6%			1,816,900,000	43.4%	4,185,882,655
PG&E Corp	pcg	0.65	B	10.1	4.6%	19,213,691,804	53.2%	252,000,000	0.7%	16,619,000,000	46.1%	36,084,691,804
Pinnacle West	pnw	0.70	A+	17.0	3.2%	4,988,734,454	52.6%			4,491,000,000	47.4%	9,479,734,454
PNM Resources	pnm	0.75	B+	17.8	2.5%	1,736,449,003	43.1%	11,500,000	0.3%	2,282,400,000	56.6%	4,030,349,003
Portland General	por	0.70	B++	18.4	2.9%	2,427,765,856	51.6%			2,277,000,000	48.4%	4,704,765,856
WEC Energy Group	wec	0.60	A+	19.1	3.2%	9,460,023,960	51.9%	30,400,000	0.2%	8,746,600,000	48.0%	18,237,023,960
Xcel Energy	xel	0.60	A+	19.4	3.0%	11,373,888,534	43.8%			14,573,000,000	56.2%	25,946,888,534
Mean		0.67		18.8	3.0%	6,575,348,675	49.5%		1.1%	6,715,226,667	50.0%	
Harmonic Mean		0.67					48.6%		0.4%		49.4%	
Weighted Mean						98,630,230,124	49.2%	1,028,500,000	0.5%	100,728,400,000	50.3%	200,387,130,124
Median		0.70			3.0%		51.1%		0.7%		48.2%	

SUPPORT FOR CAPITAL STRUCTURE Market Value

Washington State Department of Revenue

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Electric Industry

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Alliant Energy	Int	42.25	231,348,646	9,774,480,294	62.6%	400,000,000	2.6%	5,447,500,000	34.9%	15,621,980,294
Ameren Corp	aee	58.99	242,634,798	14,313,026,734	62.3%	142,000,000	0.6%	8,531,000,000	37.1%	22,986,026,734
Avista Corp	ava	51.10	64,415,157	3,291,614,523	58.8%	-		2,303,371,000	41.2%	5,594,985,523
CMS Energy Corp	cms	47.30	282,420,406	13,358,485,204	55.4%	37,000,000	0.2%	10,715,000,000	44.4%	24,110,485,204
Con. Edison	ed	84.95	310,068,797	26,340,344,305	59.2%	-		18,142,000,000	40.8%	44,482,344,305
El Paso Electric	ee	55.35	40,591,794	2,246,755,798	61.1%	-		1,428,178,000	38.9%	3,674,933,798
Eversource	es	63.18	316,885,808	20,020,845,349	60.6%	155,600,000	0.5%	12,877,100,000	39.0%	33,053,545,349
Idacorp Inc	ida	91.36	50,393,038	4,603,907,952	70.6%	-		1,915,459,000	29.4%	6,519,366,952
NorthWestern Corp	nwe	59.70	48,594,516	2,901,092,605	60.1%	-		1,924,128,000	39.9%	4,825,220,605
PG&E Corp	pcg	44.83	514,422,806	23,061,574,393	53.9%	252,000,000	0.6%	19,478,000,000	45.5%	42,791,574,393
Pinnacle West	pnw	85.18	111,729,775	9,517,142,235	64.2%	-		5,304,956,000	35.8%	14,822,098,235
PNM Resources	pnm	40.15	79,653,624	3,198,093,004	55.5%	11,500,000	0.2%	2,554,836,000	44.3%	5,764,429,004
Portland General	por	45.58	89,092,325	4,060,828,174	58.9%	-		2,829,000,000	41.1%	6,889,828,174
WEC Energy Group	wec	65.83	315,544,495	20,772,294,106	66.7%	30,400,000	0.1%	10,341,900,000	33.2%	31,144,594,106
Xcel Energy	xel	48.11	507,762,881	24,428,472,205	59.6%	-		16,531,000,000	40.4%	40,959,472,205
Mean					60.6%		0.7%		39.0%	
Harmonic Mean					60.4%		0.3%		38.5%	
			Weighted Mean	181,888,956,879	60.0%	1,028,500,000	0.3%	120,323,428,000	39.7%	303,240,884,879
Median					60.1%		0.5%		39.9%	
Std Dev					4.3%		0.9%		4.4%	
Coefficient of Variation					7.2%		128.4%		11.3%	
Target					60%				40%	100%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

2018 Assessment Year

Ex Ante

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

Ke = Cost of Equity			6.08%
			to page 1
	Rm =	rate of return	7.50%
	Rf =	risk free rate	2.75%
	Rp =	risk premium	4.75%
	B =	Beta	0.70
			page 7
Rp = Risk Premium			4.75%
			to above
Shannon Pratt and Roger Grabowski		3.50% - 6.00%	
	Cost of Capital, App and Exam, 5th Ed, 2014		
Dr. Aswath Damodaran		5.08%	chart page 13
	http://pages.stern.nyu.edu/~adamodar/	4.73%	adjusted for Rf
	2017 Implied Premium		
John Graham & Campbell Harvey		7.16%	10 year expected real ret
Duke CFO magazine Global Business Outlook survey - U.S.		2.37%	Rf rate used in survey
	4th Qtr 2017	6.78%	adjusted for Rf
Rf = Risk Free Rate			2.75%
			to above
Value Line Investment Survey, Selected Yields January 5, 2018, page 2573			
	as of 12-27-17	US Treasury Securities year end data	
		5 year	2.19%
		10 year	2.41%
		30 year	2.75%
		30 year Zero	2.87%
Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/Current/)			
	as of 12-29-17	Treasury Constant Maturities	
		5 year	2.20%
		10 year	2.40%
		20 year	2.58%
		30 year	2.74%
		20 year TIPS	0.61%
		30 year TIPS	0.73%
			1.97%
			2.01%
			TIPS inflation indication
Inflation			2.00%
Value Line Investment Survey, Economic Series January 5, 2018, page 1500			
	Consumer Price Index Annual Rate of Change 2020-2022	2.50%	
Federal Reserve Bank of Philadelphia			
	The Livingston Survey December 15, 2017	Table 3	
	Inflation median (measured by the CPI) over next 10 year	2.34%	
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey		
Nominal Gross Domestic Product (GDP)			3.80%
Federal Reserve Projected Long Run Real GDP Growth			
	Median Projection Value From Dec 13, 2017 Report	1.80%	
	http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm		
Congressional Budget Office Real GDP Economic Projections			Table D-1 pg 140
	The Budget and Economic Outlook 2018-2028	2018-2022	2.18%
	Average Percentage Change From Year to Year	2023-2028	1.73%
	http://www.cbo.gov/publication/53651		
Federal Reserve Bank of Philadelphia			
	The Livingston Survey, December 15, 2017	pg 4	
	Average Annual Real GDP Growth Rate for Next Ten Years	2.18%	
	https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey		

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue
2018 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	Int	42.25	1.34	3.17%	6.00%	9.17%
Ameren Corp	aee	58.99	1.85	3.14%	4.50%	7.64%
Avista Corp	ava	51.10	1.49	2.92%	4.00%	6.92%
CMS Energy Corp	cms	47.30	1.43	3.02%	7.00%	10.02%
Con. Edison	ed	84.95	2.86	3.37%	3.50%	6.87%
El Paso Electric	ee	55.35	1.42	2.57%	7.00%	9.57%
Eversource	es	63.18	2.02	3.20%	6.00%	9.20%
Idacorp Inc	ida	91.36	2.40	2.63%	7.00%	9.63%
NorthWestern Corp	nwe	59.70	2.20	3.69%	5.00%	8.69%
PG&E Corp	pcg	44.83	nil	nmf	3.00%	nmf
Pinnacle West	pnw	85.18	2.86	3.36%	5.50%	8.86%
PNM Resources	pnm	40.15	1.09	2.71%	9.00%	11.71%
Portland General	por	45.58	1.42	3.12%	6.00%	9.12%
WEC Energy Group	wec	65.83	2.21	3.36%	6.00%	9.36%
Xcel Energy	xel	48.11	1.52	3.16%	6.00%	9.16%
Mean						8.99%
Harmonic Mean						8.83%
Median						9.17%
Max						11.71%
Min						6.87%
Std Dev						1.25%
Coefficient of Variation						13.88%
Say						9.00%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2018 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	Int	42.25	1.34	3.17%	6.50%	9.67%
Ameren Corp	aee	58.99	1.85	3.14%	7.50%	10.64%
Avista Corp	ava	51.10	1.49	2.92%	4.00%	6.92%
CMS Energy Corp	cms	47.30	1.43	3.02%	8.50%	11.52%
Con. Edison	ed	84.95	2.86	3.37%	3.00%	6.37%
El Paso Electric	ee	55.35	1.42	2.57%	5.00%	7.57%
Eversource	es	63.18	2.02	3.20%	6.50%	9.70%
Idacorp Inc	ida	91.36	2.40	2.63%	3.50%	6.13%
NorthWestern Corp	nwe	59.70	2.20	3.69%	4.50%	8.19%
PG&E Corp	pcg	44.83	nil	nmf	8.50%	nmf
Pinnacle West	pnw	85.18	2.86	3.36%	5.50%	8.86%
PNM Resources	pnm	40.15	1.09	2.71%	7.50%	10.21%
Portland General	por	45.58	1.42	3.12%	6.00%	9.12%
WEC Energy Group	wec	65.83	2.21	3.36%	6.00%	9.36%
Xcel Energy	xel	48.11	1.52	3.16%	4.50%	7.66%
Mean						8.71%
Harmonic Mean						8.41%
Median						8.99%
Max						11.52%
Min						6.13%
Std Dev						1.63%
Coefficient of Variation						18.70%
Say						9.00%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

Washington State Department of Revenue

2018 Assessment Year

Electric Industry

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

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

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	Int	42.25	1.34	2.10	3.17%	37.0%	4.97%	1.84%	5.01%	6.81%
Ameren Corp	aee	58.99	1.85	3.05	3.14%	36.0%	5.17%	1.86%	5.00%	7.03%
Avista Corp	ava	51.10	1.49	1.95	2.92%	21.0%	3.82%	0.80%	3.72%	4.62%
CMS Energy Corp	cms	47.30	1.43	2.35	3.02%	38.0%	4.97%	1.89%	4.91%	6.86%
Con. Edison	ed	84.95	2.86	4.20	3.37%	33.0%	4.94%	1.63%	5.00%	6.58%
El Paso Electric	ee	55.35	1.42	2.65	2.57%	46.0%	4.79%	2.20%	4.77%	6.99%
Eversource	es	63.18	2.02	3.30	3.20%	39.0%	5.22%	2.04%	5.23%	7.26%
Idacorp Inc	ida	91.36	2.40	4.20	2.63%	45.0%	4.60%	2.07%	4.70%	6.67%
NorthWestern Corp	nwe	59.70	2.20	3.50	3.69%	38.0%	5.86%	2.23%	5.91%	8.09%
PG&E Corp	pcg	44.83	nil	3.75	nmf	44.0%	8.36%	3.68%	nmf	12.05%
Pinnacle West	pnw	85.18	2.86	4.40	3.36%	37.0%	5.17%	1.91%	5.27%	7.08%
PNM Resources	pnm	40.15	1.09	1.70	2.71%	52.0%	4.23%	2.20%	4.92%	6.44%
Portland General	por	45.58	1.42	2.40	3.12%	43.0%	5.27%	2.26%	5.38%	7.53%
WEC Energy Group	wec	65.83	2.21	3.30	3.36%	34.0%	5.01%	1.70%	5.06%	6.72%
Xcel Energy	xel	48.11	1.52	2.40	3.16%	33.0%	4.99%	1.65%	4.81%	6.63%
Mean									4.98%	7.16%
Harmonic Mean									4.93%	6.91%
Median									5.00%	6.86%
Std Dev									0.48%	1.54%
Coefficient of Variation									9.56%	21.52%

say **7.00%**

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

Washington State Department of Revenue

2018 Assessment Year

Electric Industry

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE
Alliant Energy	Int	42.25	2.10	20.12	64.00%	11.50%
Ameren Corp	aee	58.99	3.05	19.34	60.00%	10.00%
Avista Corp	ava	51.10	1.95	26.21	65.00%	8.50%
CMS Energy Corp	cms	47.30	2.35	20.13	61.00%	13.50%
Con. Edison	ed	84.95	4.20	20.23	67.00%	8.50%
El Paso Electric	ee	55.35	2.65	20.89	59.00%	9.00%
Eversource	es	63.18	3.30	19.15	58.00%	10.00%
Idacorp Inc	ida	91.36	4.20	21.75	60.00%	9.50%
NorthWestern Corp	nwe	59.70	3.50	17.06	62.00%	9.50%
PG&E Corp	pcg	44.83	3.75	11.95	51.00%	9.00%
Pinnacle West	pnw	85.18	4.40	19.36	62.00%	10.50%
PNM Resources	pnm	40.15	1.70	23.62	56.00%	9.00%
Portland General	por	45.58	2.40	18.99	55.00%	9.50%
WEC Energy Group	wec	65.83	3.30	19.95	66.00%	12.00%
Xcel Energy	xel	48.11	2.40	20.05	67.00%	10.50%
Mean				19.92	60.87%	10.03%
Harmonic Mean				19.39	60.52%	9.87%
Median				20.05	61.00%	9.50%
Industry Summary				20.00	61.00%	10.00%

SUPPORT FOR DEBT RATING AND DEBT YIELD

Washington State Department of Revenue

2018 Assessment Year

Electric Industry

Company	Ticker	Mergent's Ratings	S&P Ratings
Alliant Energy	Int	Baa1	A-
Ameren Corp	aee	Baa1	BBB+
Avista Corp	ava	Baa1	BBB
CMS Energy Corp	cms	Baa1	BBB+
Con. Edison	ed	A3	A-
El Paso Electric	ee	Baa1	BBB
Eversource	es	Baa1	A+
Idacorp Inc	ida	Baa2	BBB
NorthWestern Corp	nwe	Baa1	BBB
PG&E Corp	pcg	Baa1	BBB
Pinnacle West	pnw	Baa1	A-
PNM Resources	pnm	Baa3	BBB+
Portland General	por	A3	BBB
WEC Energy Group	wec	A3	A-
Xcel Energy	xel	A3	A-
Overall Average Debt Rating		Baa1	BBB+

Mergent's Bond Record January 2018, page 249				
Corporate	Aaa	Aa	A	Baa
October	3.60%	3.75%	3.91%	4.32%
November	3.57%	3.67%	3.84%	4.27%
December	3.51%	3.61%	3.79%	4.22%
4th Qtr Average	3.56%	3.68%	3.85%	4.27%

Public Utilities	Aaa	Aa	A	Baa
October		3.74%	3.91%	4.26%
November		3.65%	3.83%	4.16%
December		3.62%	3.79%	4.14%
4th Qtr Average		3.67%	3.84%	4.19%

Industrials	Aaa	Aa	A	Baa
October	3.60%	3.74%	3.90%	4.37%
November	3.57%	3.68%	3.85%	4.37%
December	3.51%	3.60%	3.79%	4.31%
4th Qtr Average	3.56%	3.67%	3.85%	4.35%

S&P's Long Term Bond Yield	BBB+	4.52%	4.51%
		Avg YTM	Med YTM
	Bloomberg Dec	20y	25Y
	BBB+	4.18%	4.28%
			30Y
			4.45%

Debt Yield Rate **4.50%**

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SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Electric Industry

Company	Ticker	Stock Price	2017		2018		2017		2018	
			Actual Earnings Ratio (EPS/P)	Projected Earnings Ratio (PEPS/P)	Cash Flow Ratio (CF/P)	Projected Cash Flow Ratio				
Alliant Energy	int	42.25	1.99	4.7%	2.10	5.0%	3.97	9.4%	4.25	10.1%
Ameren Corp	aee	58.99	2.77	4.7%	3.05	5.2%	6.80	11.5%	7.35	12.5%
Avista Corp	ava	51.10	1.80	3.5%	1.95	3.8%	5.05	9.9%	5.35	10.5%
CMS Energy Corp	cms	47.30	2.17	4.6%	2.35	5.0%	5.29	11.2%	5.65	11.9%
Con. Edison	ed	84.95	4.05	4.8%	4.20	4.9%	8.40	9.9%	8.80	10.4%
El Paso Electric	ee	55.35	2.40	4.3%	2.65	4.8%	6.10	11.0%	6.50	11.7%
Eversource	es	63.18	3.10	4.9%	3.30	5.2%	5.75	9.1%	6.15	9.7%
Idacorp Inc	ida	91.36	4.10	4.5%	4.20	4.6%	7.40	8.1%	7.70	8.4%
NorthWestern Corp	nwe	59.70	3.40	5.7%	3.50	5.9%	6.85	11.5%	7.00	11.7%
PG&E Corp	pcg	44.83	3.70	8.3%	3.75	8.4%	9.25	20.6%	9.50	21.2%
Pinnacle West	pnw	85.18	4.30	5.0%	4.40	5.2%	9.95	11.7%	10.30	12.1%
PNM Resources	pnm	40.15	1.90	4.7%	1.70	4.2%	5.30	13.2%	5.40	13.4%
Portland General	por	45.58	2.30	5.0%	2.40	5.3%	6.20	13.6%	6.55	14.4%
WEC Energy Group	wec	65.83	3.14	4.8%	3.30	5.0%	5.69	8.6%	5.95	9.0%
Xcel Energy	xel	48.11	2.15	4.5%	2.40	5.0%	5.35	11.1%	5.75	12.0%
Mean				4.9%		5.2%		11.4%		11.9%
Harmonic Mean				4.8%		5.0%		10.8%		11.4%
Median				4.7%		5.0%		11.1%		11.7%
Max				8.3%		8.4%		20.6%		21.2%
Min				3.5%		3.8%		8.1%		8.4%
Std Dev				1.0%		1.0%		3.0%		3.0%
Coefficient of Variation				20.8%		19.4%		26.4%		25.3%
Say				4.8%		5.0%		11.0%		12.0%

Source: Value Line / yr end stock price

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

2018 Assessment Year

Company	Ticker	Stock Price	Enterprise Value	EBITDA Historical	Annual Change VL	EBITDA Forecast	EV / EBITDA Forecast
Alliant Energy	Int	42.25	15,621,980,294	1,136,900,000	7.05%	1,217,084,383	12.84
Ameren Corp	aee	58.99	22,986,026,734	2,334,000,000	8.09%	2,522,779,412	9.11
Avista Corp	ava	51.10	5,594,985,523	460,164,000	5.94%	487,500,475	11.48
CMS Energy Corp	cms	47.30	24,110,485,204	2,219,000,000	6.81%	2,370,009,452	10.17
Con. Edison	ed	84.95	44,482,344,305	3,951,000,000	4.76%	4,139,142,857	10.75
El Paso Electric	ee	55.35	3,674,933,798	350,527,000	6.56%	373,512,377	9.84
Eversource	es	63.18	33,053,545,349	2,691,956,000	6.96%	2,879,222,504	11.48
Idacorp Inc	ida	91.36	6,276,514,952	470,284,000	4.05%	489,349,568	12.83
NorthWestern Corp	nwe	59.70	4,825,220,605	427,552,000	2.19%	436,914,453	11.04
PG&E Corp	pcg	44.83	42,791,574,393	5,810,000,000	2.70%	5,967,027,027	7.17
Pinnacle West	pnw	85.18	14,822,098,235	1,545,056,000	3.52%	1,599,404,704	9.27
PNM Resources	pnm	40.15	5,764,429,004	486,985,000	1.89%	496,173,396	11.62
Portland General	por	45.58	6,795,828,174	721,000,000	5.65%	761,701,613	8.92
WEC Energy Group	wec	65.83	31,144,594,106	2,583,800,000	4.57%	2,701,864,675	11.53
Xcel Energy	xel	48.11	40,959,472,205	3,799,000,000	7.48%	4,083,037,383	10.03
15		Mean				10.54	
		Harmonic Mean				10.31	
		Median				10.75	
		Std Dev				1.54	

Source:

Value Line & Morning Star

Say

9.50

STOCK PRICE

Washington State Department of Revenue

2018 Assessment Year

Electric Industry

								60.12	
								Year End	
Alliant Energy Corp	Int								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	42.79	42.97	42.57	42.61		42.25 1,101,300	42.25		
Ameren Corp	aee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	59.24	59.44	58.98	58.99		58.99 1,193,000	58.99		
Avista	ava								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	51.57	51.6	51.45	51.49		51.10 311,800	51.10		
CMS Energy Corp	cms								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	47.42	47.58	47.23	47.30		47.30 1,432,600	47.30		
Consolidated Edison	ed								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	85.37	85.45	84.82	84.95		84.95 1,346,800	84.95		
El Paso	ee								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	55.45	55.60	55.30	55.35		55.35 148,300	55.35		
Eversource Energy	es								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	62.87	63.41	62.87	63.18		63.18 1,538,400	63.18		
Idacorp	ida								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	91.58	92.43	91.24	91.36		91.36 142,600	91.36		
NorthWestern Corp	nwe								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	59.71	59.91	59.54	59.70		59.70 232,500	59.70		
PG&E	pcg								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	44.85	45.00	44.60	44.83		44.83 4,154,500	44.83		
Pinnacle	pnw								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	85.33	85.50	84.88	85.18		85.18 512,800	85.18		

PNM Resources Inc pnm									
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	40.85	40.85	40.4	40.45		40.15	391,400		40.15
Portland General por									
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	45.67	45.83	45.57	45.58		45.58	359,700		45.58
WEC Energy wec									
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	66.51	66.84	66.29	66.43		65.83	1,197,300		65.83
Xcel energy xel									
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	48.11	48.29	48.07	48.11		48.11	2,770,600		48.11

Source:
finance.yahoo.com
 Historical Stock Quotes

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2018.

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	ends + Buy	Change in Earnings	Change in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	Implied Growth	Premium	Implied Premium	Growth	Implied Premium	ERP/Riskfree	
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%						
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%			2.92%	1.24	
1962	5.81%	3.40%	63.1	3.67	2.15		8.79%	5.21%	2.73%	3.85%	1.12%	4.05%	3.56%			3.56%	0.92	
1963	5.51%	3.13%	75.02	4.13	2.35		12.75%	9.45%	3.12%	4.14%	1.02%	4.96%	3.38%			3.38%	0.82	
1964	5.62%	3.05%	84.75	4.76	2.58		15.23%	10.08%	3.54%	4.21%	0.67%	5.13%	3.31%			3.31%	0.79	
1965	5.73%	3.06%	92.43	5.30	2.83		11.20%	9.42%	3.93%	4.65%	0.72%	5.46%	3.32%			3.32%	0.71	
1966	6.74%	3.59%	80.33	5.41	2.88		2.23%	1.96%	4.76%	4.64%	-0.12%	4.19%	3.68%			3.68%	0.79	
1967	5.66%	3.09%	96.47	5.46	2.98		0.85%	3.37%	4.21%	5.70%	1.49%	5.25%	3.20%			3.20%	0.56	
1968	5.51%	2.93%	103.86	5.72	3.04		4.81%	2.09%	5.21%	6.16%	0.95%	5.32%	3.00%			3.00%	0.49	
1969	6.63%	3.52%	92.06	6.10	3.24		6.66%	6.49%	6.58%	7.88%	1.30%	7.55%	3.74%			3.74%	0.47	
1970	5.98%	3.46%	92.15	5.51	3.19		-9.72%	-1.61%	6.53%	6.50%	-0.03%	4.78%	3.41%			3.41%	0.52	
1971	5.46%	3.10%	102.09	5.57	3.16		1.15%	-0.74%	4.39%	5.89%	1.50%	4.57%	3.09%			3.09%	0.52	
1972	5.23%	2.70%	118.05	6.17	3.19		10.76%	0.71%	3.84%	6.41%	2.57%	5.21%	2.72%			2.72%	0.42	
1973	8.16%	3.70%	97.55	7.96	3.61		28.93%	13.24%	6.93%	6.90%	-0.03%	8.30%	4.30%			4.30%	0.62	
1974	13.64%	5.43%	68.56	9.35	3.72		17.48%	3.14%	8.00%	7.40%	-0.60%	6.42%	5.59%			5.59%	0.76	
1975	8.55%	4.14%	90.19	7.71	3.73		-17.54%	0.30%	5.80%	7.76%	1.96%	5.99%	4.13%			4.13%	0.53	
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	5.08%	6.81%	1.73%	8.19%	4.55%			4.55%	0.67	
1977	11.43%	5.11%	95.1	10.87	4.86		11.53%	15.07%	5.12%	7.78%	2.66%	9.52%	5.92%			5.92%	0.76	
1978	12.11%	5.39%	96.11	11.64	5.18		7.07%	6.60%	7.18%	9.15%	1.97%	8.48%	5.72%			5.72%	0.63	
1979	13.48%	5.53%	107.94	14.55	5.97		25.01%	15.23%	10.38%	10.33%	-0.05%	11.70%	6.45%			6.45%	0.62	
1980	11.04%	4.74%	135.76	14.99	6.44		3.01%	7.81%	11.24%	12.43%	1.19%	11.01%	5.03%			5.03%	0.40	
1981	12.39%	5.57%	122.55	15.18	6.83		1.31%	6.08%	14.71%	13.98%	-0.73%	11.42%	5.73%			5.73%	0.41	
1982	9.83%	4.93%	140.64	13.82	6.93		-8.95%	1.58%	10.54%	10.47%	-0.07%	7.96%	4.90%			4.90%	0.47	
1983	8.06%	4.32%	164.93	13.29	7.12		-3.84%	2.76%	8.80%	11.80%	3.00%	9.09%	4.31%			4.31%	0.37	
1984	10.07%	4.68%	167.24	16.84	7.83		26.69%	9.85%	9.85%	11.51%	1.66%	11.02%	5.11%			5.11%	0.44	
1985	7.42%	3.88%	211.28	15.68	8.20		-6.91%	4.74%	7.72%	8.99%	1.27%	7.89%	4.03%	6.75%		3.84%	0.43	
1986	5.96%	3.38%	242.17	14.43	8.19		-7.93%	-0.15%	6.16%	7.22%	1.06%	5.54%	3.36%	6.96%		3.58%	0.50	
1987	6.49%	3.71%	247.08	16.04	9.17		11.10%	11.99%	5.47%	8.86%	3.39%	9.66%	4.18%	8.58%		3.99%	0.45	
1988	8.20%	3.68%	277.72	24.12	10.22		50.42%	11.49%	6.35%	9.14%	2.79%	9.76%	4.12%	7.67%		3.77%	0.41	
1989	6.80%	3.32%	353.4	24.32	11.73		0.83%	14.80%	8.37%	7.93%	-0.44%	9.58%	3.85%	7.46%		3.51%	0.44	
1990	6.58%	3.74%	330.22	22.65	12.35		-6.87%	5.26%	7.81%	8.07%	0.26%	7.39%	3.92%	7.19%		3.89%	0.48	
1991	4.58%	3.11%	417.09	19.30	12.97		-14.79%	5.03%	7.00%	6.70%	-0.30%	6.34%	3.27%	7.81%		3.48%	0.52	
1992	4.16%	2.90%	435.71	20.87	12.64		8.13%	-2.59%	5.30%	6.68%	1.38%	4.67%	2.83%	9.83%		3.55%	0.53	
1993	4.25%	2.72%	466.45	26.90	12.69		28.89%	0.41%	3.50%	5.79%	2.29%	4.73%	2.74%	8.00%		3.17%	0.55	
1994	5.89%	2.91%	459.27	31.75	13.36		18.03%	5.34%	5.00%	7.82%	2.82%	7.23%	3.06%	7.17%		3.55%	0.45	
1995	5.74%	2.30%	615.93	37.70	14.17		18.74%	6.00%	3.50%	5.57%	2.07%	5.65%	2.44%	6.50%		3.29%	0.59	
1996	4.83%	2.01%	740.74	40.63	14.89		-7.77%	5.10%	5.00%	6.41%	1.41%	6.13%	2.11%	7.92%		3.20%	0.50	
1997	4.08%	1.60%	970.43	44.09	15.52		8.52%	4.25%	5.35%	5.74%	0.39%	5.45%	1.67%	8.00%		2.73%	0.48	
1998	3.11%	1.32%	1229.23	44.27	16.20		0.41%	4.37%	4.33%	4.65%	0.32%	4.60%	1.38%	7.20%		2.26%	0.49	
1999	3.07%	1.14%	1469.25	51.68	16.71		16.74%	3.16%	5.37%	6.44%	1.07%	5.75%	1.20%	12.50%		2.05%	0.32	
2000	3.94%	1.23%	1320.28	56.13	16.27		8.61%	-2.65%	5.73%	5.11%	-0.62%	3.71%	1.65%	12.00%		2.87%	0.56	
2001	3.85%	1.37%	1148.09	38.85	15.74	30.08	-30.79%	-3.24%	1.80%	5.05%	3.25%	3.56%	1.73%	10.30%		3.62%	2.91%	0.72
2002	5.23%	1.83%	879.82	46.04	16.08	29.83	18.51%	2.15%	1.20%	3.81%	2.61%	3.57%	2.29%	8.00%		4.10%	4.73%	1.08
2003	4.87%	1.61%	1111.91	54.69	17.88	31.58	18.79%	11.19%	1.00%	4.25%	3.25%	5.35%	2.12%	11.00%		3.69%	4.74%	0.87
2004	5.58%	1.60%	1211.92	67.68	19.407	40.60	23.75%	8.54%	2.18%	4.22%	2.04%	4.90%	2.02%	8.50%		3.65%	4.86%	0.86
2005	5.47%	1.79%	1248.29	76.45	22.38	61.17	12.96%	15.32%	4.31%	4.39%	0.08%	6.16%	2.20%	8.00%		4.08%	5.22%	0.93
2006	6.18%	1.77%	1418.3	87.72	25.05	73.16	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%		4.16%	6.12%	0.89
2007	5.62%	1.89%	1468.36	82.54	27.73	95.36	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%		4.37%	4.59%	1.09
2008	7.24%	3.11%	903.25	65.39	28.05	67.52	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%		6.43%	6.92%	2.91
2009	5.35%	2.00%	1115.10	59.65	22.31	37.43	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%		4.36%	4.64%	1.14
2010	6.65%	1.84%	1257.64	83.66	23.12	55.53	40.25%	3.63%	0.13%	3.29%	3.16%	3.33%	2.24%	6.95%		5.20%	6.09%	1.58
2011	7.72%	2.07%	1257.60	97.05	26.02	71.28	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%		6.01%	8.34%	3.20
2012	7.18%	2.13%	1426.19	102.47	30.44	75.90	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%		5.78%	7.30%	3.28
2013	5.81%	1.96%	1848.36	107.45	36.28	88.13	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%		4.96%	4.99%	1.63
2014	5.49%	1.92%	2058.90	113.01	39.44	101.98	5.17%	8.71%	0.05%	2.17%	2.12%	2.77%	2.24%	5.58%		5.78%	5.48%	2.66
2015	5.20%	2.11%	2043.94	106.32	43.16	106.10	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.51%		6.12%	5.16%	2.70
2016	4.86%	2.01%	2238.83	108.86	45.03	108.67	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%		5.69%	4.50%	2.32
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%		5.08%	4.75%	2.11

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

DATA INPUT

Washington State Department of Revenue

2018 Assessment Year

Electric Industry

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

Guideline Companies		Stock Price	Beta Levered	Financial Strength	Revenues	Cash Flow	Earnings	Dividends	Bk Value	Mkt/Bk	Common	LTD (BV)	Trailing P/E Ratio	Aver Annual Div Yield
Name	Ticker	Yahoo	V L	V L	Per Share	Per Share	Per Share	Per Share	Stock	Stock	Shares	V L	V L	V L
Alliant Energy	Int	42.25	0.70	A	14.62	3.97	1.99	1.26	18.08	2.34	231,348,646	4,010,600,000	19.2	3.5%
Ameren Corp	ae	58.99	0.65	A	25.46	6.80	2.77	1.78	29.61	1.99	242,634,798	7,094,000,000	19.4	3.5%
Avista Corp	ava	51.10	0.75	A	21.95	5.05	1.80	1.43	26.40	1.94	64,415,157	1,543,300,000	25.9	2.9%
CMS Energy Corp	cms	47.30	0.65	B++	23.37	5.29	2.17	1.33	15.77	3.00	282,420,406	9,214,000,000	19.7	3.4%
Con. Edison	ed	84.95	0.50	A+	37.60	8.40	4.05	2.76	48.65	1.75	310,068,797	14,651,000,000	19.2	3.8%
El Paso Electric	ee	55.35	0.80	B++	22.80	6.10	2.40	1.32	27.55	2.01	40,591,794	1,195,900,000	21.3	2.8%
Eversource	es	63.18	0.65	A	24.15	5.75	3.10	1.90	35.00	1.81	316,885,808	10,468,000,000	18.7	3.5%
Idacorp Inc	ida	91.36	0.70	A	26.70	7.40	4.10	2.24	44.55	2.05	50,393,038	1,745,700,000	20.3	2.9%
NorthWestern Corp	nwe	59.70	0.70	B+	26.65	6.85	3.40	2.10	48.75	1.22	48,594,516	1,816,900,000	16.4	4.1%
PG&E Corp	pcg	44.83	0.65	B	34.55	9.25	3.70	2.08	37.35	1.20	514,422,806	16,619,000,000	10.1	nil
Pinnacle West	pnw	85.18	0.70	A+	32.60	9.95	4.30	2.70	44.65	1.91	111,729,775	4,491,000,000	17.0	3.6%
PNM Resources	pnm	40.15	0.75	B+	18.50	5.30	1.90	0.99	21.80	1.84	79,653,624	2,282,400,000	17.8	3.1%
Portland General	por	45.58	0.70	B++	22.70	6.20	2.30	1.34	27.25	1.67	89,092,325	2,277,000,000	18.4	3.4%
WEC Energy Group	wec	65.83	0.60	A+	24.24	5.69	3.14	2.08	29.98	2.20	315,544,495	8,746,600,000	19.1	3.7%
Xcel Energy	xel	48.11	0.60	A+	22.65	5.35	2.15	1.44	22.40	2.15	507,762,881	14,573,000,000	19.4	3.4%
Average													18.8	
Harmonic Mean													18.1	
Median													19.2	

check formula						Projected (Next Year)					Income statement			Balance
Calculated Debt	Payout Ratio	Current Payout Ratio	Projected Payout Ratio	% Rtn on Shrhldrs Equity	% Rtn on Shrhldrs Equity	Revenues	Cash Flow	Earnings	Dividends	Bk Value	CF Projection	Operating Income	Current Assets	Current Liabilities
mk to bk	calculated	V L	VL	V L	V L	V L	V L	V L	V L	V L	V L	Morningstar	Morningstar	Morningstar
111.94%	63%	63%	64%	10.9%	11.5%	15.30	4.25	2.10	1.34	19.00	5.00	653,400,000	905,100,000	2,149,000,000
107.51%	64%	64%	60%	9.3%	10.0%	25.20	7.35	3.05	1.85	31.00	9.25	1,458,000,000	1,612,000,000	2,940,000,000
125.92%	79%	79%	65%	6.5%	8.5%	22.00	5.35	1.95	1.49	27.15	6.50	284,509,000	337,534,000	697,502,000
105.01%	61%	62%	61%	13.6%	13.5%	23.40	5.65	2.35	1.43	16.95	7.00	1,338,000,000	2,475,000,000	2,784,000,000
113.18%	68%	67%	67%	8.5%	8.5%	38.80	8.80	4.20	2.86	50.15	10.50	2,610,000,000	3,537,000,000	4,902,000,000
119.41%	55%	54%	59%	9.0%	9.0%	22.75	6.50	2.65	1.42	28.80	7.25	198,254,000	156,792,000	316,225,000
104.48%	61%	61%	58%	9.0%	10.0%	24.60	6.15	3.30	2.02	36.30	8.00	1,918,154,000	2,487,099,000	3,589,045,000
109.70%	55%	55%	60%	9.0%	9.5%	26.50	7.70	4.20	2.40	46.30	9.00	304,351,000	443,601,000	200,749,000
105.98%	62%	62%	62%	9.5%	9.5%	26.80	7.00	3.50	2.20	38.05	8.00	261,415,000	296,359,000	632,238,000
111.69%	56%	56%	51%	10.0%	9.0%	34.25	9.50	3.75	nil	41.15	10.50	2,956,000,000	6,281,000,000	7,129,000,000
108.89%	63%	63%	62%	9.5%	10.5%	33.35	10.30	4.40	2.86	46.15	12.25	934,427,000	1,016,288,000	1,197,852,000
104.81%	52%	48%	56%	8.5%	9.0%	19.15	5.40	1.70	1.09	22.30	6.75	306,485,000	294,420,000	835,644,000
116.13%	58%	57%	55%	8.5%	9.5%	22.95	6.55	2.40	1.42	28.20	7.75	376,000,000	526,000,000	432,000,000
108.16%	66%	66%	66%	10.5%	12.0%	24.40	5.95	3.30	2.21	30.95	7.25	1,785,200,000	2,213,500,000	3,869,300,000
110.38%	67%	67%	67%	9.5%	10.5%	22.55	5.75	2.40	1.52	23.35	6.75	2,190,000,000	2,973,000,000	4,088,000,000
		61.6%	60.9%	9.5%	10.03%						8.12			
		60.8%	60.5%	9.2%	9.87%						7.74			
		62.0%	61.0%	9.3%	9.50%						7.75			

Sheet

CF Statement

PP&E Gross	Intangibles (Excl. WG)	LT Debt	Dep & Amort	Carrying Value	Fair Value
Morningstar	Morningstar	Morningstar	Morningstar	10-K	10-K
15,517,600,000		4,010,600,000	483,500,000	4,866,300,000	5,447,500,000
33,099,000,000	-	7,094,000,000	876,000,000	7,935,000,000	8,531,000,000
6,011,147,000	-	1,820,784,000	175,655,000	1,829,292,000	2,303,371,000
23,271,000,000	-	9,123,000,000	881,000,000	10,204,000,000	10,715,000,000
46,864,000,000	131,000,000	14,731,000,000	1,341,000,000	16,029,000,000	18,142,000,000
4,323,087,000	-	1,195,988,000	152,273,000	1,195,988,000	1,428,178,000
28,072,900,000	-	11,775,889,000	773,802,000	12,325,500,000	12,877,100,000
6,382,149,000	-	1,746,123,000	165,933,000	1,746,123,000	1,915,459,000
6,018,384,000	-	1,793,416,000	166,137,000	1,815,629,000	1,924,128,000
77,248,000,000	-	17,753,000,000	2,854,000,000	17,440,000,000	19,478,000,000
19,702,087,000	257,189,000	4,789,713,000	610,629,000	4,871,713,000	5,304,956,000
7,619,847,000	-	2,180,750,000	180,500,000	2,437,645,000	2,554,836,000
10,305,000,000	-	2,426,000,000	345,000,000	2,436,000,000	2,829,000,000
29,040,100,000	-	8,746,600,000	798,600,000	9,561,700,000	10,341,900,000
51,624,000,000	-	14,520,000,000	1,609,000,000	14,976,000,000	16,531,000,000