

EMPIRICAL CAPM

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CURRENT BOND YIELD

Company	(a) (b) (c) (d) (e) (d) (e) (g)										ECAPM Result			
	Market Return (R _m)			Risk-Free Rate	Risk Premium Weight	Unadjusted RP	Beta	Adjusted RP	Total RP	Unadjusted K _e		Market Cap	Size Adjustment	
	Div Yield	Proj. Growth	Cost of Equity											
1 Algonquin Pwr & Util.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	n/a	75%	n/a	n/a	\$5,520	0.82%	n/a
2 ALLETE	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.65	75%	4.9%	7.4%	\$4,200	1.26%	11.8%
3 Ameren Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.60	75%	4.5%	7.1%	\$17,000	0.50%	10.7%
4 Avangrid, Inc.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.40	75%	3.0%	5.6%	\$15,000	0.50%	9.2%
5 Avista Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.65	75%	4.9%	7.4%	\$2,700	1.54%	12.1%
6 Black Hills Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.80	75%	6.1%	8.6%	\$4,300	1.26%	12.9%
7 CenterPoint Energy	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.80	75%	6.1%	8.6%	\$15,000	0.50%	12.2%
8 CMS Energy Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.55	75%	4.2%	6.7%	\$15,000	0.50%	10.3%
9 Dominion Energy	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.55	75%	4.2%	6.7%	\$60,000	-0.29%	9.5%
10 DTE Energy Co.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.55	75%	4.2%	6.7%	\$22,000	0.50%	10.3%
11 El Paso Electric Co.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.70	75%	5.3%	7.8%	\$2,400	1.54%	12.5%
12 Emera Inc.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.55	75%	4.2%	6.7%	\$11,500	0.84%	10.6%
13 Entergy Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.60	75%	4.5%	7.1%	\$17,000	0.50%	10.7%
14 Exelon Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.70	75%	5.3%	7.8%	\$48,000	-0.29%	10.6%
15 FirstEnergy Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.65	75%	4.9%	7.4%	\$22,000	0.50%	11.1%
16 Hawaiian Elec. Ind.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.60	75%	4.5%	7.1%	\$4,500	1.26%	11.4%
17 IDACORP, Inc.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.60	75%	4.5%	7.1%	\$4,900	0.82%	11.0%
18 NorthWestern Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.60	75%	4.5%	7.1%	\$3,500	1.26%	11.4%
19 OGE Energy Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.85	75%	6.4%	9.0%	\$8,400	0.84%	12.9%
20 Otter Tail Corp.	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.70	75%	5.3%	7.8%	\$2,000	1.54%	12.5%
21 PNM Resources	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.65	75%	4.9%	7.4%	\$3,600	1.26%	11.8%
22 Sempra Energy	2.5%	10.7%	13.2%	3.1%	10.1%	25%	2.5%	0.75	75%	5.7%	8.2%	\$35,000	-0.29%	11.0%
Average														11.3%
Midpoint (b)														11.1%

- (a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.zacks.com (retrieved Mar. 11, 2019).
- (b) Average of weighted average earnings growth rates from Value Line Investment Survey, IBIS, and Zacks Investment Research for dividend-paying stocks in the S&P 500 based on data from www.value-line.com (retrieved Mar. 11, 2019), <http://finance.yahoo.com> (retrieved Mar. 11, 2019), and www.zacks.com (retrieved Mar. 11, 2019).
- (c) Average yield on 30-year Treasury bonds for the six-months ending Apr. 2019 based on data from the Federal Reserve at <https://fred.stlouisfed.org/>.
- (d) Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 190.
- (e) The Value Line Investment Survey (Feb. 15, Mar. 15, Mar. 22, & Apr. 26, 2019).
- (f) Duff & Phelps, 2019 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
- (g) Average of low and high values.

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PROJECTED BOND YIELD

Company	Market Return (R _m)				Risk Premium	Unadjusted RP		Beta Adjusted RP		Total RP	Unadjusted K _e	Market Cap	Size Adjustment	ECAPM Result
	Div	Proj.	Cost of Equity	Risk-Free Rate		Beta	Adjusted RP							
	Yield	Growth	Equity	Rate		Weight	RP ¹	Beta	Weight					
1 Algonquin Pwr & Util.	2.5%	10.7%	13.2%	3.6%	9.6%	25%	2.4%	n/a	75%	n/a	n/a	\$5,520	0.82%	n/a
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Average														11.4%
Midpoint (g)														11.2%

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- (c) Average yield on 30-year Treasury bonds for 2019-23 based on data from the Value Line Investment Survey, Forecast for the U.S. Economy (Mar. 1, 2019); IHS Global Insight, Long-Term Macro Forecast - Baseline (Apr. 30, 2019); & Wolters Kluwer, Blue Chip Financial Forecasts, (Dec. 1, 2018).
- (d) Roger A. Morn, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 190.
- (e) The Value Line Investment Survey (Feb. 15, Mar. 15, Mar. 22, & Apr. 26, 2019).
- (f) Duff & Phelps, 2019 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
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