

**CAPITALIZATION RATE STUDY
FOR CENTRALLY ASSESSED PROPERTIES**

FOR: JANUARY 1, 2019



UTAH STATE TAX COMMISSION

PROPERTY TAX DIVISION
UTILITIES & TRANSPORTATION SECTION
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UTAH STATE TAX COMMISSION
PROPERTY TAX DIVISION
SUMMARY OF EQUITY RATES AND CAPITAL STRUCTURE

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Industry	Page	Equity Yield Rate	Debt/Equity	Effective Income Tax Rate
PASSENGER AIR CARRIERS	6	11.30%	45% / 55%	22.8%
REGIONAL AIR CARRIERS	10	12.51%	60% / 40%	24.0%
FREIGHT AIR CARRIERS	14	9.54%	30% / 70%	23.8%
ELECTRIC UTILITIES	18	7.04%	35% / 65%	10.5%
NATURAL GAS UTILITIES	22	7.42%	35% / 65%	22.7%
NATURAL GAS PIPELINES	26	12.06%	45% / 55%	12.0%
LIQUID PIPELINES	30	12.41%	40% / 60%	7.0%
RAILROAD	34	10.65%	20% / 80%	24.0%
RAILROAD - SHORTLINE	38	10.86%	25% / 75%	25.0%
WIRELESS TELECOMS	42	9.30%	45% / 55%	23.8%
WIRELINTELECOMS	46	10.30%	65% / 35%	20.3%
COMBINED TELECOMS	50	8.86%	45% / 55%	23.1%



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The Property Tax Division of the Utah State Tax Commission (“Division”) estimates the market cost of equity for the industries it is required to assess for property tax purposes according to Utah Law. The Division estimates the market cost of equity using recognized equity models based on financial literature, research, and guidance from Utah Tax Commission Administrative Rule R884-24P-62 (“Rule 62”). The equity models used by the Division include various Capital Asset Pricing Models (“CAPM”), various Dividend Growth Models (“DGM”), and a Risk Premium Model. The following is a summary of each of these models.

CAPM

The Division uses three CAPM cost of equity models: CAPM: Rule 62, CAPM: Supply Side, and CAPM: Implied Equity Risk Premium. Each of these CAPMs are based on the formula:

$$K(e) = R(f) + (\text{Beta} \times \text{Equity Risk Premium})$$

Where:

K(e) = the estimated market cost of equity

R(f) = the current risk free rate

Beta = a measure of the volatility of an individual stock compared to the volatility of the market as a whole.

Equity Risk Premium = the premium investors require above the return on a risk free investment. In other words, the additional return investors require for investing in risky securities vs. risk free securities. The Equity Risk Premium is also commonly referred to as the Market Risk Premium.

The difference between the three CAPMs that the Division calculates is how the Equity Risk Premium is estimated.

CAPM: RULE 62

Utah Tax Commission Administrative Code R884-24P-62 (“Rule 62”) states that the CAPM is the “preferred method for estimating the cost of equity” (Utah Tax Code R884-24P-62 (5)(b)(i)(B)(II)(Aa)). Rule 62 also states that “more than one method may be used to correlate a cost of equity, but only if the CAPM method is weighted at least 50% in the correlation” (Utah Tax Code R884-24P-64

Rule 62 requires the Division to use or estimate the inputs for this CAPM as follows:

- The risk free rate shall be the current market rate on 20-year Treasury bonds.
- The beta should reflect an average or value-weighted average of comparable companies and should be drawn from Value Line or an equivalent source.
- The Risk Premium shall be the arithmetic average of the spread between the return on stocks and the income return on long-term bonds for the entire historical period contained in the Ibbotson Yearbook published immediately following the lien date.¹

¹ This information is now provided by Duff and Phelps



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CAPM: Supply Side

The CAPM: Supply Side uses the same inputs as the CAPM: Rule 62 except that the Supply Side uses an Equity Risk Premium that is based on the historical returns of companies in the form of earnings, dividends, and capital gains. Ibbotson states that “investors should not expect a much higher or lower return than that produced by the companies in the real economy.”² This earnings model separates the Equity Risk Premium into four sections: inflation, income growth, growth in real earnings, and growth of the Price Earnings Ratio (“P/E Ratio”). In other words, CAPM: Supply Side ignores the historical returns that have resulted in the change in the P/E ratio. The Division uses the Supply Side Equity Risk Premium published by Duff and Phelps.

CAPM: Implied Equity Risk Premium

Professor Damodaran from the Stern School of Business at New York University estimates the Equity Risk Premium by using current market data to extract the premium currently required by investors. Dr. Damodaran relies on the price of the S&P 500 index and the expected future cash flows of the index (including dividends and share repurchases) to estimate the current implied expected return on the market.³ This expected return is then compared to the current return on the risk free rate to derive an implied equity risk premium. The Division adjusts Dr. Damodaran’s model, which is compared to a 10-year Treasury bond, to compare it to the 20-year Treasury bond that the Division uses in its other CAPM models.

Division’s Risk Premium Model

The Division uses a risk premium model that is very similar to the CAPM model. In the place of Beta, a risk premium is calculated based on the financial strength score given by Value Line. The Risk Premium Model formula is:

$$K(e) = R(f) + (\text{Financial Strength} \times \text{Equity Risk Premium})$$

Where:

K(e) = the estimated market cost of equity

R(f) = the current risk free rate

Financial Strength = The Division takes the financial strength score given by Value Line and converts it to a numeric value. The higher the financial strength score the lower the number, and vice versa. The theory behind this is that a company with a high financial strength is less risky than a company with with poor financial strength.

Equity Risk Premium = the premium investors require above the return on a risk free investment. In other words, the additional return investors require for investing in risky securities vs. risk free securities. The Equity Risk Premium is also commonly referred to as the Market Risk Premium.

²Ibbotson SBBI 2015 Classic Yearbook pg. 155

³<http://pages.stern.nyu.edu/~adamodar/>



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DGM

The Division uses three multi-stage DGM cost of equity models: the Division's 3-Stage DGM, the 3-Stage IRR, and the Cornell 3-Stage DGM. All of these models start with a short-term growth rate that is then adjusted, over a period of years, to a more sustainable long-term growth rate. The basic formula for a DGM is:

$$K(e) = (D1/P0) + g$$

Where:

K(e) = the estimated cost of equity

D1 = next years expected dividend (including stock buybacks)

P0 = current stock price

g = the expected growth in dividends (including stock buybacks)

Division's 3-Stage DGM

The Division uses a 3-stage dividend growth model as a way to calculate the cost of equity. Value Line provides a 3-5 year earnings growth estimate that the Division uses as the growth rate for the first 5 years. This growth rate converges to the long-term growth rate over the next 5 years. The long-term growth rate is calculated by taking the average of the long-term risk free rate and Value Line's projected 3-5 year nominal GDP growth. The long-term growth rate is used for the next 20 years in the final stage. The growth rates in the early years are weighted more than the later years. This weighted average growth rate estimate is then added to a payout yield. The payout yield is next year's expected dividends and buybacks divided by the current stock price. The result is the estimated cost of equity.

3-Stage IRR

This 3-stage DGM uses an internal rate of return to calculate the cost of equity. The Division derives a growth rate from the current and future estimated EPS values given by Value Line. With this growth rate and Value Line's projected 3-5 year Return on Equity, the Division calculates a payout ratio using the "plowback" method. The payout ratio is applied to the earnings per share to estimate the free cash flow available to equity holders. The growth rate is stepped up or down to the long-term growth rate between years 6 through 10. In year 10, a terminal value is calculated by applying Value Line's 3-5 year projected P/E ratio. An internal rate of return calculation is then applied to the estimate of cash flows available to equity holders (including the terminal value) to determine the implied cost of equity that will equal the current stock price.

Cornell 3-Stage DGM

This 3-stage DGM follows the model put forth in "The Equity Risk Premium" by Bradford Cornell. This model uses the 5 year growth estimate provided by Value Line, then that growth rate converges linearly to the long-term growth rate over a 15 year period. In year 20, a terminal value is calculated iteratively using the $V = (CF_{n+1}) / (k-g)$ formula. An internal rate of return calculation is then applied to the estimate of cash flows available to equity holders (including the terminal value) to determine the implied cost of equity that will equal the current stock price.



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PROPERTY TAX DIVISION
KEY RATES AND FIGURES**

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CORPORATE BONDS

Aaa	4.02%
Aa	4.20%
A	4.37%
Baa	5.13%
Ba1	6.40%
Ba2	6.82%
Ba3	7.24%
B1	7.66%
B2	8.08%
B3	8.50%
Caa1	8.92%
Caa2	9.34%
Caa3	9.76%
Ca	10.18%
C	10.60%

PUBLIC UTILITY BONDS

Aaa	N/A
Aa	4.24%
A	4.37%
Baa	4.92%

PREFERRED STOCKS

Aaa	N/A
Aa	N/A
A	N/A
Baa	N/A

MISCELLANEOUS RATES

Airline 'TEFRA' Relief Factor	5.78%
4-R Act Relief for Railroads	15.37%
4-R Act Relief (BNSF only)	5.77%
Rural Telephone Equity Rate Adj.	4.00%
Marginal Income Tax Rate	25.00%
GDP Price Deflator Forecast	2.50%
Long Term Growth Rate	3.54%

INFLATION FACTORS

Year	4th Qtr. GDP Implicit Price Deflator	Annual Percent Change	Conversion Factor
2008	94.90	1.87%	1.171
2009	95.27	0.39%	1.167
2010	96.78	1.59%	1.149
2011	98.68	1.96%	1.127
2012	100.73	2.08%	1.104
2013	102.55	1.81%	1.084
2014	104.18	1.59%	1.067
2015	105.10	0.88%	1.058
2016	106.70	1.53%	1.042
2017	108.81	1.97%	1.022
2018	111.16	2.16%	1.000

2019 - 2009 Average Change: 1.62%

Source:

U.S. Department of Commerce: Bureau of Economic Analysis
Gross Domestic Product: Implicit Price Deflator

MARKET RISK PREMIUMS

Full Term Historical Risk Premium	6.91%
Supply Side Risk Premium	6.14%
Damodaran Implied ERP	5.59%
Risk Free Rate	2.87%

MISCELLANEOUS INFORMATION

Stock prices are from the last trading day of 2018. Retrieved from <http://finance.yahoo.com/>

Bond yield information derived from the January 2019 Mergent bond record.

Company and industry data was taken from the last Value Line tear sheet of 2018.

Damodaran Implied Risk Premium Model Calculated Based on Model Found at: <http://pages.stern.nyu.edu/~adamodar/>

Full term historical and supply side RP are taken from: Duff and Phelps.



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PASSENGER AIR CARRIERS -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	65%	11.28%
CAPM: Supply Side	0%	10.34%
CAPM: Implied ERP	15%	9.67%
Division's Risk Premium	0%	9.68%
Division's 3-Stage	10%	11.86%
Cornell's DGM	10%	13.38%
3-Stage IRR	0%	17.33%
Reconciled Equity Rate		11.30%
Debt/Equity Structure		45% / 55%



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Alaska Air Group, Inc.	7,496.38	4,412.04	63%	37%
Allegiant Travel Co.	1,621.89	1,227.82	57%	43%
American Airlines Group	14,790.22	33,855.41	30%	70%
Delta Air Lines, Inc.	33,929.23	16,919.45	67%	33%
Hawaiian Holdings, Inc.	1,281.95	1,236.18	51%	49%
JetBlue Airways Corp.	4,914.36	2,526.69	66%	34%
Southwest Airlines	25,685.00	4,939.34	84%	16%
Spirit Airlines	3,954.17	3,267.01	55%	45%
United Continental Holdings, Inc.	22,599.96	27,320.99	45%	55%
Selected Equity and Debt Structure			55%	45%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate
Alaska Air Group, Inc.	1.05	(1.00) B+	Ba3	24.00%
Allegiant Travel Co.	0.85	(0.89) B++	Ba3	20.00%
American Airlines Group	1.30	(1.00) B+	Ba3	24.00%
Delta Air Lines, Inc.	1.20	(1.00) B+	Baa3	23.00%
Hawaiian Holdings, Inc.	1.25	(1.00) B+	B1	22.50%
JetBlue Airways Corp.	1.20	(0.89) B++	Ba1	24.00%
Southwest Airlines	1.15	(0.78) A	A3	23.00%
Spirit Airlines	1.25	(0.89) B++	Ba3	23.00%
United Continental Holdings, Inc.	1.25	(1.11) B	Ba2	21.00%
Selected for Industry	1.22	0.99	Ba2	22.80%

* Amounts in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	1.22
Industry Risk Premium	8.41%
Add: Risk Free Rate	2.87%
Indicated Rate	11.28%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	1.22
Industry Risk Premium	6.80%
Add: Risk Free Rate	2.87%
Indicated Rate	9.67%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	1.22
Industry Risk Premium	7.47%
Add: Risk Free Rate	2.87%
Indicated Rate	10.34%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.99
Industry Risk Premium	6.81%
Add: Risk Free Rate	2.87%
Indicated Rate	9.68%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Alaska Air Group, Inc.	7.19%	7.08%	13.03%
Allegiant Travel Co.	6.52%	6.27%	15.32%
American Airlines Group	10.72%	10.72%	21.12%
Delta Air Lines, Inc.	15.64%	17.15%	18.71%
Hawaiian Holdings, Inc.	12.99%	13.25%	23.44%
JetBlue Airways Corp.	11.06%	11.23%	14.42%
Southwest Airlines	13.85%	15.00%	14.01%
Spirit Airlines	N/A	N/A	9.38%
United Continental Holdings, Inc.	9.38%	N/A	16.67%
Selected Rate	11.86%	13.38%	17.33%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Alaska Air Group, Inc.	60.85	1.99	4.5%	19.0%	12.00	3.54%
Allegiant Travel Co.	100.22	2.40	5.0%	22.5%	16.00	3.54%
American Airlines Group	32.11	2.31	3.5%	N/A	10.00	3.54%
Delta Air Lines, Inc.	49.90	4.64	10.5%	25.5%	10.00	3.54%
Hawaiian Holdings, Inc.	26.41	2.34	5.0%	23.5%	12.00	3.54%
JetBlue Airways Corp.	16.06	1.08	5.5%	12.0%	12.00	3.54%
Southwest Airlines	46.48	3.30	11.5%	23.0%	15.00	3.54%
Spirit Airlines	57.92	N/A	5.0%	16.5%	12.00	3.54%
United Continental Holdings,	83.73	5.24	2.5%	25.5%	10.00	3.54%
Selected for Industry				23.5%	11.08	



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REGIONAL AIR CARRIERS -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	80%	12.89%
CAPM: Supply Side	0%	11.77%
CAPM: Implied ERP	20%	10.98%
Division's Risk Premium	0%	9.78%
Division's 3-Stage	0%	8.87%
Cornell's DGM	0%	5.97%
3-Stage IRR	0%	16.42%
Reconciled Equity Rate		12.51%
Debt/Equity Structure		60% / 40%



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
SkyWest Inc.	2,285.24	3,554.97	39%	61%
Selected Equity and Debt Structure			40%	60%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate
SkyWest Inc.	1.45	(1.00) B+	NR	24.00%
Selected for Industry	1.45	1.00	Ba1	24.00%

* Amounts in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	1.45
Industry Risk Premium	10.02%
Add: Risk Free Rate	2.87%
Indicated Rate	12.89%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	1.45
Industry Risk Premium	8.11%
Add: Risk Free Rate	2.87%
Indicated Rate	10.98%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	1.45
Industry Risk Premium	8.90%
Add: Risk Free Rate	2.87%
Indicated Rate	11.77%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	1.00
Industry Risk Premium	6.91%
Add: Risk Free Rate	2.87%
Indicated Rate	9.78%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
SkyWest Inc.	8.87%	5.97%	16.42%
Selected Rate	8.87%	5.97%	16.42%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
SkyWest Inc.	44.47	0.40	14.5%	16.5%	11.00	3.54%
Selected for Industry				16.5%	11.00	



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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	80%	9.71%
CAPM: Supply Side	0%	8.95%
CAPM: Implied ERP	10%	8.40%
Division's Risk Premium	0%	7.85%
Division's 3-Stage	10%	9.30%
Cornell's DGM	0%	8.57%
3-Stage IRR	0%	14.42%
Reconciled Equity Rate		9.54%
Debt/Equity Structure		30% / 70%



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Atlas Air Worldwide Holdings	1,079.65	3,135.30	26%	74%
FedEx Corp	42,114.17	17,361.48	71%	29%
United Parcel Service, Inc.	83,680.74	25,950.60	76%	24%
Selected Equity and Debt Structure			70%	30%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate	
Atlas Air Worldwide Holdings	1.35	(1.00) B+	NR	15.00%	
FedEx Corp	1.15	(0.56) A++	Baa2	25.00%	
United Parcel Service, Inc.	0.90	(0.78) A	A1	23.50%	
Selected for Industry		0.99	0.72	A3	23.81%

*Amount in Millions



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FREIGHT AIR CARRIERS -- EQUITY MODELS

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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	0.99
Industry Risk Premium	6.84%
Add: Risk Free Rate	2.87%
Indicated Rate	9.71%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	0.99
Industry Risk Premium	5.53%
Add: Risk Free Rate	2.87%
Indicated Rate	8.40%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	0.99
Industry Risk Premium	6.08%
Add: Risk Free Rate	2.87%
Indicated Rate	8.95%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.72
Industry Risk Premium	4.98%
Add: Risk Free Rate	2.87%
Indicated Rate	7.85%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Atlas Air Worldwide Holding	19.07%	14.76%	26.17%
FedEx Corp	8.16%	6.65%	16.80%
United Parcel Service, Inc.	9.54%	9.38%	12.68%
Selected Rate	9.30%	8.57%	14.42%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Atlas Air Worldwide Holdings	42.19	0.42	39.5%	11.5%	10.00	3.54%
FedEx Corp	161.33	2.60	11.0%	18.0%	17.00	3.54%
United Parcel Service, Inc.	97.53	3.90	8.5%	N/A	17.00	3.54%
Selected for Industry				17.6%	16.83	



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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	80%	6.87%
CAPM: Supply Side	0%	6.42%
CAPM: Implied ERP	0%	6.10%
Division's Risk Premium	0%	7.86%
Division's 3-Stage	10%	7.81%
Cornell's DGM	10%	7.61%
3-Stage IRR	0%	5.82%
Reconciled Equity Rate		7.04%
Debt/Equity Structure		35% / 65%



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Alliant Energy	9,973.67	5,860.80	63%	37%
IdaCorp Inc.	4,689.57	1,942.77	71%	29%
NorthWestern	2,991.24	2,140.13	58%	42%
OGE Energy	7,826.24	3,322.30	70%	30%
Portland General	4,092.94	2,760.00	60%	40%
WEC Energy Group	21,853.14	10,578.20	67%	33%
XCEL Energy	25,326.59	16,755.00	60%	40%
Selected Equity and Debt Structure			65%	35%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate
Alliant Energy	0.60	(0.78) A	Baa1	9.00%
IdaCorp Inc.	0.60	(0.78) A	Baa1	10.50%
NorthWestern	0.60	(0.89) B++	A3	8.50%
OGE Energy	0.85	(0.78) A	Baa1	14.50%
Portland General	0.60	(0.89) B++	A3	13.00%
WEC Energy Group	0.50	(0.67) A+	Baa1	11.50%
XCEL Energy	0.55	(0.67) A+	A3	9.00%
Selected for Industry	0.58	0.72	Baa1	10.48%

*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	0.58
Industry Risk Premium	4.00%
Add: Risk Free Rate	2.87%
Indicated Rate	6.87%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	0.58
Industry Risk Premium	3.23%
Add: Risk Free Rate	2.87%
Indicated Rate	6.10%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	0.58
Industry Risk Premium	3.55%
Add: Risk Free Rate	2.87%
Indicated Rate	6.42%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.72
Industry Risk Premium	4.99%
Add: Risk Free Rate	2.87%
Indicated Rate	7.86%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Alliant Energy	8.09%	7.83%	5.96%
IdaCorp Inc.	6.07%	6.16%	3.92%
NorthWestern	7.39%	7.39%	7.22%
OGE Energy	8.46%	8.32%	6.38%
Portland General	7.04%	6.99%	5.79%
WEC Energy Group	8.34%	8.05%	5.70%
XCEL Energy	7.58%	7.37%	5.84%
Selected Rate	7.81%	7.61%	5.82%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Alliant Energy	42.25	1.42	6.50%	10.50%	15.00	3.54%
IdaCorp Inc.	93.06	2.56	3.00%	9.00%	17.00	3.54%
NorthWestern	59.44	2.30	3.50%	9.00%	16.50	3.54%
OGE Energy	39.19	1.54	6.00%	11.50%	17.00	3.54%
Portland General	45.85	1.52	4.00%	9.00%	16.50	3.54%
WEC Energy Group	69.26	2.36	7.00%	12.00%	16.00	3.54%
XCEL Energy	49.27	1.60	5.50%	10.50%	16.50	3.54%
Selected for Industry				10.50%	16.50	



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NATURAL GAS UTILITIES -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	80%	6.92%
CAPM: Supply Side	0%	6.47%
CAPM: Implied ERP	0%	6.15%
Division's Risk Premium	0%	8.51%
Division's 3-Stage	10%	9.63%
Cornell's DGM	10%	9.22%
3-Stage IRR	0%	6.99%
Reconciled Equity Rate		7.42%
Debt/Equity Structure		35% / 65%



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NATURAL GAS UTILITIES -- COMPANY INFORMATION

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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Atmos Energy Corp	10,838.32	3,746.70	74%	26%
Chesapeake Utilities	1,331.58	324.56	80%	20%
Nisource Inc	9,439.42	7,228.30	57%	43%
Northwest Natural	1,746.08	762.34	70%	30%
Southwest Gas	4,056.55	2,236.32	64%	36%
Spire Inc.	3,755.86	2,133.90	64%	36%
Selected Equity and Debt Structure			65%	35%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate	
Atmos Energy Corp	0.60	(0.67) A+	A2	24.50%	
Chesapeake Utilities	0.65	(0.89) B++	N/A	27.50%	
Nisource Inc	0.50	(0.89) B++	Baa2	21.00%	
Northwest Natural	0.60	(0.78) A	A3	21.00%	
Southwest Gas	0.70	(0.89) B++	A3	21.00%	
Spire Inc.	0.65	(0.89) B++	Baa2	24.00%	
Selected for Industry		0.59	0.82	Baa1	22.67%

*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	0.59
Industry Risk Premium	4.05%
Add: Risk Free Rate	2.87%
Indicated Rate	6.92%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	0.59
Industry Risk Premium	3.28%
Add: Risk Free Rate	2.87%
Indicated Rate	6.15%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	0.59
Industry Risk Premium	3.60%
Add: Risk Free Rate	2.87%
Indicated Rate	6.47%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.82
Industry Risk Premium	5.64%
Add: Risk Free Rate	2.87%
Indicated Rate	8.51%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Atmos Energy Corp	7.40%	6.74%	5.44%
Chesapeake Utilities	7.44%	6.48%	5.08%
Nisource Inc	12.78%	12.68%	8.13%
Northwest Natural	N/A	N/A	5.42%
Southwest Gas	8.59%	8.00%	8.06%
Spire Inc.	7.93%	7.63%	7.64%
Selected Rate	9.63%	9.22%	6.99%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Atmos Energy Corp	92.72	2.10	7.5%	11.0%	21.50	3.54%
Chesapeake Utilities	81.30	1.54	8.5%	10.0%	23.50	3.54%
Nisource Inc	25.35	0.86	18.0%	11.5%	16.00	3.54%
Northwest Natural	60.46	1.93	N/A	7.5%	17.00	3.54%
Southwest Gas	76.50	2.18	9.0%	9.5%	16.00	3.54%
Spire Inc.	74.08	2.37	6.5%	10.0%	18.00	3.54%
Selected for Industry				10.63%	18.25	



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
DCP Midstream	3,796.48	5,170.00	42%	58%
Enbridge Inc	62,843.76	47,198.89	57%	43%
Enterprise Products	53,725.93	25,998.20	67%	33%
Kinder Morgan	34,792.11	37,469.00	48%	52%
ONEOK Inc	22,202.18	9,600.00	70%	30%
Transcanada Corporation	32,772.60	30,990.03	51%	49%
Selected Equity and Debt Structure			55%	45%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate
DCP Midstream	1.60	(1.00) B+	Ba2	1.00%
Enbridge Inc	1.00	(0.89) B++	Baa3	7.00%
Enterprise Products	1.30	(1.00) B+	Baa1	1.00%
Kinder Morgan	1.45	(1.11) B	Baa2	18.00%
ONEOK Inc	1.55	(1.00) B+	Baa3	13.00%
Transcanada Corporation	1.10	(0.89) B++	Baa1	28.50%
Selected for Industry	1.23	0.97	Baa2	11.98%

*Amounts in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	1.23
Industry Risk Premium	8.53%
Add: Risk Free Rate	2.87%
Indicated Rate	11.40%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	1.23
Industry Risk Premium	6.90%
Add: Risk Free Rate	2.87%
Indicated Rate	9.77%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	1.23
Industry Risk Premium	7.58%
Add: Risk Free Rate	2.87%
Indicated Rate	10.45%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.97
Industry Risk Premium	6.70%
Add: Risk Free Rate	2.87%
Indicated Rate	9.57%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
DCP Midstream	19.64%	22.60%	9.71%
Enbridge Inc	12.81%	12.97%	14.70%
Enterprise Products	14.32%	15.65%	14.71%
Kinder Morgan	8.28%	0.00%	13.30%
ONEOK Inc	17.07%	19.92%	11.11%
Transcanada Corporation	8.83%	0.00%	13.62%
Selected Rate	14.18%	15.23%	13.81%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
DCP Midstream	26.49	3.20	13.5%	2.5%	27.00	3.54%
Enbridge Inc	31.08	2.76	4.5%	3.5%	23.00	3.54%
Enterprise Products	24.59	1.81	12.0%	13.5%	20.00	3.54%
Kinder Morgan	15.38	0.95	N/A	7.5%	30.00	3.54%
ONEOK Inc	53.95	3.60	20.5%	13.0%	20.00	3.54%
Transcanada Corporation	35.70	2.40	N/A	12.0%	19.00	3.54%
Selected for Industry				8.7%	22.87	



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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	80%	11.85%
CAPM: Supply Side	0%	10.85%
CAPM: Implied ERP	0%	10.14%
Division's Risk Premium	0%	9.64%
Division's 3-Stage	10%	14.09%
Cornell's DGM	10%	15.14%
3-Stage IRR	0%	14.29%
Reconciled Equity Rate		12.41%
Debt/Equity Structure		40% / 60%



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LIQUID PIPELINES -- COMPANY INFORMATION

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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Buckeye Partners	4,457.36	4,536.88	50%	50%
Enbridge Inc	62,843.76	64,400.00	49%	51%
Enterprise Products	53,725.93	25,998.20	67%	33%
Kinder Morgan	34,792.11	37,469.00	48%	52%
Magellan Midstream	13,011.11	5,080.10	72%	28%
ONEOK Inc	22,202.18	9,600.00	70%	30%
Plains All American	14,556.29	8,743.00	62%	38%
Selected Equity and Debt Structure			60%	40%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate
Buckeye Partners	1.25	(1.00) B+	Baa3	0.50%
Enbridge Inc	1.00	(0.89) B++	Baa3	7.00%
Enterprise Products	1.30	(1.00) B+	Baa1	1.00%
Kinder Morgan	1.45	(1.11) B	Baa2	18.00%
Magellan Midstream	1.20	(0.89) B++	Baa1	0.50%
ONEOK Inc	1.55	(1.00) B+	Baa3	13.00%
Plains All American	1.50	(1.00) B+	Ba1	4.00%
Selected for Industry	1.30	0.98	Baa2	7.00%

*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	1.30
Industry Risk Premium	8.98%
Add: Risk Free Rate	2.87%
Indicated Rate	11.85%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	1.30
Industry Risk Premium	7.27%
Add: Risk Free Rate	2.87%
Indicated Rate	10.14%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	1.30
Industry Risk Premium	7.98%
Add: Risk Free Rate	2.87%
Indicated Rate	10.85%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.98
Industry Risk Premium	6.77%
Add: Risk Free Rate	2.87%
Indicated Rate	9.64%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Buckeye Partners	13.26%	12.95%	17.07%
Enbridge Inc	12.81%	12.97%	14.77%
Enterprise Products	14.32%	15.65%	14.74%
Kinder Morgan	N/A	0.00%	13.26%
Magellan Midstream	12.44%	12.99%	13.84%
ONEOK Inc	17.07%	19.92%	11.11%
Plains All American	17.89%	21.21%	16.95%
Selected Rate	14.09%	15.14%	14.29%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Dividend	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Buckeye Partners	28.99	3.00	2.0%	8.5%	18.00	3.54%
Enbridge Inc	31.08	2.76	4.5%	3.5%	23.00	3.54%
Enterprise Products	24.59	1.81	12.0%	13.5%	20.00	3.54%
Kinder Morgan	15.38	0.95	N/A	7.5%	30.00	3.54%
Magellan Midstream	57.06	4.05	8.0%	18.0%	22.00	3.54%
ONEOK Inc	53.95	3.60	20.5%	13.0%	20.00	3.54%
Plains All American	20.04	1.30	23.0%	9.0%	20.00	3.54%
Selected for Industry				8.5%	23.11	



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RAILROAD -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	80%	10.68%
CAPM: Supply Side	0%	9.81%
CAPM: Implied ERP	0%	9.19%
Division's Risk Premium	0%	7.78%
Division's 3-Stage	0%	10.67%
Cornell's DGM	20%	10.53%
3-Stage IRR	0%	12.05%
Reconciled Equity Rate		10.65%
Debt/Equity Structure		20% / 80%



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PROPERTY TAX DIVISION
RAILROAD -- COMPANY INFORMATION

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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Canadian National Railway	53,751.98	9,759.32	85%	15%
Canadian Pacific Railway	24,955.61	7,064.44	78%	22%
CSX Corp	50,822.34	14,914.00	77%	23%
Norfolk Southern	40,091.45	12,203.00	77%	23%
Union Pacific	100,224.59	22,891.00	81%	19%
Selected Equity and Debt Structure			80%	20%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate	
Canadian National Railway	1.05	(0.78) A	A2	25.00%	
Canadian Pacific Railway	1.20	(0.89) B++	Baa1	25.00%	
CSX Corp	1.20	(0.89) B++	Baa1	24.00%	
Norfolk Southern	1.15	(0.67) A+	Baa1	24.00%	
Union Pacific	1.10	(0.56) A++	Baa1	24.00%	
Selected for Industry		1.13	0.71	Ba1	24.00%

*Amounts in Millions



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CAPM: RULE 62 COMPLIANT		CAPM: IMPLIED ERP	
Market Risk Premium	6.91%	Market Risk Premium	5.59%
X Industry Beta	1.13	X Industry Beta	1.13
Industry Risk Premium	7.81%	Industry Risk Premium	6.32%
Add: Risk Free Rate	2.87%	Add: Risk Free Rate	2.87%
Indicated Rate	10.68%	Indicated Rate	9.19%

CAPM: SUPPLY SIDE		DIVISION'S RISK PREMIUM	
Market Risk Premium	6.14%	Market Risk Premium	6.91%
X Industry Beta	1.13	X Industry Financial Strength	0.71
Industry Risk Premium	6.94%	Industry Risk Premium	4.91%
Add: Risk Free Rate	2.87%	Add: Risk Free Rate	2.87%
Indicated Rate	9.81%	Indicated Rate	7.78%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Canadian National Railway	10.19%	10.08%	12.01%
Canadian Pacific Railway	10.73%	10.63%	13.02%
CSX Corp	10.55%	9.90%	12.72%
Norfolk Southern	11.02%	11.07%	11.51%
Union Pacific	10.82%	10.84%	11.69%
Selected Rate	10.67%	10.53%	12.05%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Canadian National Railway	74.11	3.00	10.00%	25.00%	17.00	3.54%
Canadian Pacific Railway	177.62	7.05	11.50%	27.00%	17.00	3.54%
CSX Corp	62.13	1.86	13.50%	30.50%	17.00	3.54%
Norfolk Southern	149.54	6.38	11.50%	17.00%	16.00	3.54%
Union Pacific	138.23	5.90	11.00%	43.00%	17.00	3.54%
Selected for Industry				31.60%	17.00	



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RAILROAD - SHORTLINE -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	85%	11.09%
CAPM: Supply Side	0%	10.18%
CAPM: Implied ERP	0%	9.52%
Division's Risk Premium	0%	8.40%
Division's 3-Stage	0%	10.09%
Cornell's DGM	15%	9.57%
3-Stage IRR	0%	11.87%
Reconciled Equity Rate		10.86%
Debt/Equity Structure		25% / 75%



UTAH STATE TAX COMMISSION
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RAILROAD - SHORTLINE -- COMPANY INFORMATION

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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Canadian National Railway	53,751.98	9,759.32	85%	15%
Canadian Pacific Railway	24,955.61	7,064.44	78%	22%
CSX Corp	50,822.34	14,914.00	77%	23%
Genesee & Wyoming	4,209.26	2,468.51	63%	37%
Kansas City Southern	9,630.59	2,661.30	78%	22%
Norfolk Southern	40,091.45	12,203.00	77%	23%
Union Pacific	100,224.59	22,891.00	81%	19%
Selected Equity and Debt Structure			75%	25%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate	
Canadian National Railway	1.05	(0.78) A	A2	25.00%	
Canadian Pacific Railway	1.20	(0.89) B++	Baa1	25.00%	
CSX Corp	1.20	(0.89) B++	Baa1	24.00%	
Genesee & Wyoming	1.50	(1.00) B+	Ba2	27.00%	
Kansas City Southern	1.10	(0.78) A	Baa2	29.00%	
Norfolk Southern	1.15	(0.67) A+	Baa1	24.00%	
Union Pacific	1.10	(0.56) A++	Baa1	24.00%	
Selected for Industry		1.19	0.80	Baa1	25.00%

*Amounts in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	1.19
Industry Risk Premium	8.22%
Add: Risk Free Rate	2.87%
Indicated Rate	11.09%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	1.19
Industry Risk Premium	6.65%
Add: Risk Free Rate	2.87%
Indicated Rate	9.52%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	1.19
Industry Risk Premium	7.31%
Add: Risk Free Rate	2.87%
Indicated Rate	10.18%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.80
Industry Risk Premium	5.53%
Add: Risk Free Rate	2.87%
Indicated Rate	8.40%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
Canadian National Railway	10.19%	10.08%	11.63%
Canadian Pacific Railway	10.73%	10.63%	12.60%
CSX Corp	10.55%	9.90%	12.31%
Genesee & Wyoming	N/A	N/A	10.54%
Kansas City Southern	9.80%	8.91%	13.50%
Norfolk Southern	11.02%	11.07%	11.22%
Union Pacific	8.28%	6.84%	11.32%
Selected Rate	10.09%	9.57%	11.87%



UTAH STATE TAX COMMISSION
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RAILROAD - SHORTLINE -- DGM INPUTS

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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
Canadian National Railway	74.11	3.00	10.0%	25.0%	17.00	3.54%
Canadian Pacific Railway	177.62	7.05	11.5%	27.0%	17.00	3.54%
CSX Corp	62.13	1.86	13.5%	30.5%	17.00	3.54%
Genesee & Wyoming	74.02	N/A	6.0%	7.5%	18.00	3.54%
Kansas City Southern	95.45	2.52	12.5%	16.5%	18.00	3.54%
Norfolk Southern	149.54	6.38	11.5%	17.0%	16.00	3.54%
Union Pacific	138.23	2.38	11.0%	43.0%	17.00	3.54%
Selected for Industry				24.00%	17.00	



UTAH STATE TAX COMMISSION
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WIRELESS TELECOMS -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	65%	9.30%
CAPM: Supply Side	0%	8.58%
CAPM: Implied ERP	15%	8.07%
Division's Risk Premium	0%	8.67%
Division's 3-Stage	10%	10.15%
Cornell's DGM	10%	10.33%
3-Stage IRR	0%	12.71%
Reconciled Equity Rate		9.30%
Debt/Equity Structure		45% / 55%



UTAH STATE TAX COMMISSION
PROPERTY TAX DIVISION
WIRELESS TELECOMS -- COMPANY INFORMATION

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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
AT&T Inc.	207,817.68	177,263.00	54%	46%
Sprint Corp.	23,699.04	40,326.00	37%	63%
T-Mobile US Inc.	54,079.97	30,902.00	64%	36%
Verizon Communications	232,302.92	119,439.00	66%	34%
Selected Equity and Debt Structure			55%	45%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate	
AT&T Inc.	0.75	(0.56) A++	Baa2	23.00%	
Sprint Corp.	1.2	(1.22) C++	B2	19.50%	
T-Mobile US Inc.	1	(1.00) B+	Ba2	27.50%	
Verizon Communications	0.75	(0.56) A++	Baa1	25.00%	
Selected for Industry		0.93	0.84	Ba1	23.75%

*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	0.93
Industry Risk Premium	6.43%
Add: Risk Free Rate	2.87%
Indicated Rate	9.30%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	0.93
Industry Risk Premium	5.20%
Add: Risk Free Rate	2.87%
Indicated Rate	8.07%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	0.93
Industry Risk Premium	5.71%
Add: Risk Free Rate	2.87%
Indicated Rate	8.58%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.84
Industry Risk Premium	5.80%
Add: Risk Free Rate	2.87%
Indicated Rate	8.67%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
AT&T Inc.	12.08%	12.50%	20.16%
Sprint Corp.	N/A	N/A	6.63%
T-Mobile US Inc.	N/A	N/A	11.49%
Verizon Communications	8.21%	8.17%	12.56%
Selected Rate	10.15%	10.33%	12.71%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
AT&T Inc.	28.54	2.04	7.00%	14.00%	13.00	3.54%
Sprint Corp.	5.82	N/A	N/A	5.00%	N/A	3.54%
T-Mobile US Inc.	63.61	N/A	27.00%	15.00%	21.00	3.54%
Verizon Communications	56.22	2.41	4.50%	40.00%	17.50	3.54%
Selected for Industry						



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WIRELINTELECOMS -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	65%	9.99%
CAPM: Supply Side	0%	9.19%
CAPM: Implied ERP	15%	8.63%
Division's Risk Premium	0%	10.13%
Division's 3-Stage	10%	12.56%
Cornell's DGM	10%	12.57%
3-Stage IRR	0%	13.58%
Reconciled Equity Rate		10.30%
Debt/Equity Structure		65% / 35%



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
AT&T Inc.	207817.68	177263.00	54%	46%
Centurylink Inc.	16364.53	33716.00	33%	67%
Cincinnati Bell	390.43	1722.40	18%	82%
Consolidated Communications	703.33	2174.10	24%	76%
Frontier Communications	251.18	12756.00	2%	98%
Verizon Communications	232302.92	119439.00	66%	34%
Zayo Group	5364.01	5689.60	49%	51%
Selected Equity and Debt Structure			35%	65%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate
AT&T Inc.	0.75	(0.56) A++	Baa2	23.00%
Centurylink Inc.	1.00	(1.11) B	Ba3	18.00%
Cincinnati Bell	1.35	(1.33) C+	B2	NMF
Consolidated Communications	1.00	(1.22) C++	N/A	NMF
Frontier Communications	1.40	(1.44) C	B3	NMF
Verizon Communications	0.75	(0.56) A++	Baa1	25.00%
Zayo Group	0.95	(1.11) B	B2	15.00%
Selected for Industry	1.03	1.05	Ba3	20.25%

*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	1.03
Industry Risk Premium	7.12%
Add: Risk Free Rate	2.87%
Indicated Rate	9.99%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	1.03
Industry Risk Premium	5.76%
Add: Risk Free Rate	2.87%
Indicated Rate	8.63%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	1.03
Industry Risk Premium	6.32%
Add: Risk Free Rate	2.87%
Indicated Rate	9.19%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	1.05
Industry Risk Premium	7.26%
Add: Risk Free Rate	2.87%
Indicated Rate	10.13%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
AT&T Inc.	12.08%	12.50%	21.16%
Centurylink Inc.	17.37%	17.05%	15.22%
Cincinnati Bell	N/A	N/A	N/A
Consolidated Communicatio	N/A	N/A	N/A
Frontier Communications	N/A	N/A	N/A
Verizon Communications	8.21%	8.17%	13.74%
Zayo Group	N/A	N/A	4.19%
Selected Rate	12.56%	12.57%	13.58%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
AT&T Inc.	28.54	2.04	7.00%	14.00%	13.00	3.54%
Centurylink Inc.	15.15	2.16	2.50%	7.00%	15.00	3.54%
Cincinnati Bell	7.78	2.26	N/A	N/A	30.00	3.54%
Consolidated Communications	9.88	1.55	N/A	9.50%	25.00	3.54%
Frontier Communications	2.38	N/A	N/A	11.00%	5.00	3.54%
Verizon Communications	56.22	2.41	4.50%	40.00%	17.50	3.54%
Zayo Group	22.84	N/A	46.00%	13.00%	35.00	3.54%
Selected for Industry						



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COMBINED TELECOMS -- EQUITY RATE SUMMARY

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RECONCILIATION

Equity Models	Weight	Equity Rate
CAPM: Rule 62	65%	8.61%
CAPM: Supply Side	0%	7.97%
CAPM: Implied ERP	15%	7.51%
Division's Risk Premium	0%	7.71%
Division's 3-Stage	10%	10.63%
Cornell's DGM	10%	10.81%
3-Stage IRR	0%	14.56%
Reconciled Equity Rate		8.86%
Debt/Equity Structure		45% / 55%



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CALCULATION OF CAPITAL STRUCTURE

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
AT&T Inc.	207,817.68	177,263.00	54%	46%
Centurylink Inc.	16,364.53	33,716.00	33%	67%
Cincinnati Bell	390.43	1,722.40	18%	82%
Consolidated Communications	703.33	2,174.10	24%	76%
Frontier Communications	251.18	12,756.00	2%	98%
Sprint Corp.	23,699.04	40,326.00	37%	63%
T-Mobile US Inc.	54,079.97	30,902.00	64%	36%
Telephone and Data Systems	3,709.56	2,309.00	62%	38%
Verizon Communications	232,302.92	119,439.00	66%	34%
Zayo Group	5,364.01	5,689.60	49%	51%
Selected Equity and Debt Structure			55%	45%

GUIDELINE COMPANY INFORMATION SUMMARY

Company	Beta	Financial Strength	Credit Rating	Effective Tax Rate	
AT&T Inc.	0.75	(0.56) A++	Baa2	23.00%	
Centurylink Inc.	1.00	(1.11) B	Ba3	18.00%	
Cincinnati Bell	1.35	(1.33) C+	B2	NMF	
Consolidated Communications	1.00	(1.22) C++	N/A	NMF	
Frontier Communications	1.40	(1.44) C	B3	NMF	
Sprint Corp.	1.20	(1.22) C++	B2	19.50%	
T-Mobile US Inc.	1.00	(1.00) B+	Ba2	27.50%	
Telephone and Data Systems	1.15	(1.11) B	Ba1	26.00%	
Verizon Communications	0.75	(0.56) A++	Baa1	25.00%	
Zayo Group	0.95	(1.11) B	B2	15.00%	
Selected for Industry		0.83	0.70	Baa3	23.13%

*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	6.91%
X Industry Beta	0.83
Industry Risk Premium	5.74%
Add: Risk Free Rate	2.87%
Indicated Rate	8.61%

CAPM: IMPLIED ERP	
Market Risk Premium	5.59%
X Industry Beta	0.83
Industry Risk Premium	4.64%
Add: Risk Free Rate	2.87%
Indicated Rate	7.51%

CAPM: SUPPLY SIDE	
Market Risk Premium	6.14%
X Industry Beta	0.83
Industry Risk Premium	5.10%
Add: Risk Free Rate	2.87%
Indicated Rate	7.97%

DIVISION'S RISK PREMIUM	
Market Risk Premium	6.91%
X Industry Financial Strength	0.70
Industry Risk Premium	4.84%
Add: Risk Free Rate	2.87%
Indicated Rate	7.71%

MULTISTAGE DIVIDEND GROWTH MODEL			
Company Name	Indicated Rates		
	Division's	Dr. Cornell's	IRR
AT&T Inc.	12.08%	12.50%	19.92%
Centurylink Inc.	17.37%	17.05%	14.04%
Cincinnati Bell	N/A	N/A	N/A
Consolidated Communications	N/A	N/A	N/A
Frontier Communications	N/A	N/A	N/A
Sprint Corp.	N/A	N/A	6.57%
T-Mobile US Inc.	N/A	N/A	11.21%
Telephone and Data Systems	2.78%	4.57%	2.23%
Verizon Communications	8.21%	8.17%	12.10%
Zayo Group	N/A	N/A	2.92%
Selected Rate	10.63%	10.81%	14.56%



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DIVIDEND GROWTH MODEL INPUTS

Company Name	Stock Price	Next Year's Payout	Earning's Growth	Projected ROE	Projected P/E Ratio	Long Term Growth Rate
AT&T Inc.	28.54	2.04	7.00%	14.00%	13.00	3.54%
Centurylink Inc.	15.15	2.16	2.50%	7.00%	15.00	3.54%
Cincinnati Bell	7.78	2.26	N/A	N/A	30.00	3.54%
Consolidated Communications	9.88	1.55	N/A	9.50%	25.00	3.54%
Frontier Communications	2.38	N/A	N/A	11.00%	5.00	3.54%
Sprint Corp.	5.82	N/A	N/A	5.00%	N/A	3.54%
T-Mobile US Inc.	63.61	N/A	27.00%	15.00%	21.00	3.54%
Telephone and Data Systems	32.54	0.68	-3.50%	2.00%	27.50	3.54%
Verizon Communications	56.22	2.41	4.50%	40.00%	17.50	3.54%
Zayo Group	22.84	N/A	46.00%	13.00%	35.00	3.54%
Selected for Industry						