

**CAPITALIZATION RATE STUDY  
FOR CENTRALLY ASSESSED PROPERTIES**

**FOR: JANUARY 1, 2023**



**UTAH STATE TAX COMMISSION**

**PROPERTY TAX DIVISION  
UTILITIES & TRANSPORTATION SECTION  
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**UTAH STATE TAX COMMISSION**  
**PROPERTY TAX DIVISION**  
**DESCRIPTION OF EQUITY MODELS**

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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 Division develops several market-based equity models including various Capital Asset Pricing Models (“CAPM”) and Dividend Growth Models (“DGM”). 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.<sup>1</sup>

<sup>1</sup> This information is now provided by Kroll



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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.”<sup>2</sup> 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 Kroll.

**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.<sup>3</sup> 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.

<sup>2</sup>Ibbotson SBBI 2015 Classic Yearbook pg. 155

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



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## **DGM**

The Division uses four multi-stage DGM cost of equity models: two models based on the methodology of Dr. Aswath Damodaran and two based on the methodology of Dr. Bradford Cornell. 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)

### **Damodaran DGM**

This DGM model is based on the same mathematic structure that Dr. Damodaran uses to calculate the Implied Equity Risk Premium, but does so for each company with a positive payout ratio. The first stage of the model grows the earnings per share linearly for five years from Valueline's next year EPS estimate to the 3-5 year EPS estimate. The company's specific payout ratio is used to determine the total expected payout to shareholders. In year 5, a terminal value is calculated using a perpetual growth rate equal to the latest Congressional Budget Office's estimation of long-term economic growth. 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.

### **Damodaran DGM (AP) Adjusted Payout**

This DGM model is the same as the DGM Damodaran model but it adjusts the payout ratio to a sustainable level developed by Dr. Damodaran. This sustainable payout ratio is calculated as  $1-(g/ROE)$  where g is the Congressional Budget Office's estimation of long term economic growth and the ROE is the industry average, weighted average, or median long term ROE from Valueline. The payout ratio is adjusted linearly over five years from the company specific payout ratio to the industry specific sustainable payout ratio.

### **Cornell 3-Stage DGM and Cornell (AP) Adjusted Payout**

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. In the adjusted payout model the payout ratio is adjusted linearly over fifteen years from the company specific payout ratio to the industry specific sustainable payout ratio.



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KEY RATES AND FIGURES**

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**CORPORATE BONDS**

Aaa	4.43%
Aa	4.77%
A	5.12%
Baa	5.59%
Ba1	7.24%
Ba2	8.11%
Ba3	8.98%
B1	9.85%
B2	10.72%
B3	11.59%
Caa1	12.46%
Caa2	13.33%
Caa3	14.20%
Ca	15.07%
C	15.94%

**PUBLIC UTILITY BONDS**

Aaa	N/A
Aa	5.06%
A	5.28%
Baa	5.57%

**PREFERRED STOCKS**

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

**MISCELLANEOUS RATES**

Airline 'TEFRA' Relief Factor	7.76%
4-R Act Relief for Railroads	19.52%
4-R Act Relief (BNSF only)	7.75%
TIPS Inflationary Estimate	2.52%
Marginal Income Tax Rate	25.00%
GDP Price Deflator Forecast	N/A
Long Term Growth Rate	3.90%

**INFLATION FACTORS**

Year	4th Qtr. GDP Implicit Price Deflator	Annual Percent Change	Conversion Factor
2012	100.73	2.07%	1.284
2013	102.55	1.81%	1.262
2014	104.10	1.52%	1.243
2015	104.93	0.80%	1.233
2016	106.47	1.47%	1.215
2017	108.64	2.04%	1.191
2018	111.16	2.32%	1.164
2019	112.91	1.58%	1.146
2020	114.74	1.62%	1.128
2021	121.76	6.11%	1.063
2022	129.37	6.26%	1.000

2023 - 2013 Average Change: 2.55%

**Source:**

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

**MARKET RISK PREMIUMS**

Full Term Historical Risk Premium	7.17%
Supply Side Risk Premium	6.35%
Damodaran Implied ERP	4.96%
Risk Free Rate	4.14%

**MISCELLANEOUS INFORMATION**

Stock prices are from the last trading day of 2022. Retrieved from <http://finance.yahoo.com/>

Bond yield information derived from the January 2023 Mergent bond record.

Company and industry data was taken from the last Value Line tear sheet of 2022.

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: Kroll.



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**PASSENGER AIR CARRIERS -- EQUITY RATE SUMMARY**

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	<b>80%</b>	<b>15.11%</b>
CAPM: SUPPLY SIDE . . . . .	<b>0%</b>	<b>13.86%</b>
CAPM: IMPLIED ERP . . . . .	<b>20%</b>	<b>11.73%</b>
DGM: DAMODARAN . . . . .	<b>0%</b>	<b>7.35%</b>
DGM: DAMODARAN (AP) . . . . .	<b>0%</b>	<b>12.88%</b>
DGM: CORNELL . . . . .	<b>0%</b>	<b>nmf</b>
DGM: CORNELL (AP) . . . . .	<b>0%</b>	<b>nmf</b>
<b>Reconciled Equity Rate</b>		<b>14.43%</b>
<b>Reconciled Debt Rate</b>		<b>8.11%</b>
<b>Debt/Equity Structure</b>		<b>65% / 35%</b>
<b>WACC Conclusion</b>		<b>10.32%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Alaska Air Group	5,476.31	3,593.00	60%	40%
Allegiant Travel Co.	1,232.54	2,147.75	36%	64%
American Airlines	8,276.17	41,353.00	17%	83%
Delta Airlines	21,071.99	29,929.00	41%	59%
Jetblue Airways	2,118.96	3,586.00	37%	63%
Southwest Airlines	19,999.97	9,295.00	68%	32%
Spirit Airlines	2,122.19	5,998.92	26%	74%
United Airlines	12,325.27	34,633.00	26%	74%
<b>Selected Equity and Debt Structure</b>			<b>35%</b>	<b>65%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Alaska Air Group	24.50%	1.50	N/A	#N/A
Allegiant Travel Co.	31.00%	1.35	Ba3	8.98%
American Airlines	nmf	1.60	B2	10.72%
Delta Airlines	nmf	1.55	Baa3	5.59%
Jetblue Airways	17.00%	1.70	Ba2	8.11%
Southwest Airlines	16.00%	1.10	Baa1	5.59%
Spirit Airlines	17.00%	1.75	B1	9.85%
United Airlines	30.00%	1.65	Ba3	8.98%
<b>Selected for Industry</b>	<b>20.75%</b>	<b>1.53</b>	<b>Ba2</b>	<b>8.11%</b>

\* Amounts in Millions





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<b>CAPM: RULE 62 COMPLIANT</b>	
Market Risk Premium	7.17%
X Industry Beta	1.53
Industry Risk Premium	10.97%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>15.11%</b>

<b>CAPM: IMPLIED ERP</b>	
Market Risk Premium	4.96%
X Industry Beta	1.53
Industry Risk Premium	7.59%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>11.73%</b>

<b>CAPM: SUPPLY SIDE</b>	
Market Risk Premium	6.35%
X Industry Beta	1.53
Industry Risk Premium	9.72%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>13.86%</b>

<b>CAPM: SUPPLY SIDE</b>	
Market Risk Premium	
X Industry Beta	
Industry Risk Premium	
Add: Risk Free Rate	
<b>Indicated Rate</b>	

<b>MULTISTAGE DIVIDEND GROWTH MODEL</b>				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Alaska Air Group	N/A	N/A	N/A	N/A
Allegiant Travel Co.	N/A	N/A	N/A	N/A
American Airlines	N/A	N/A	N/A	N/A
Delta Airlines	N/A	N/A	N/A	N/A
Jetblue Airways	N/A	N/A	N/A	N/A
Southwest Airlines	7.35%	12.88%	8.00%	8.00%
Spirit Airlines	N/A	N/A	N/A	N/A
United Airlines	N/A	N/A	N/A	N/A
<b>Selected Rate</b>	<b>7.35%</b>	<b>12.88%</b>	<b>nmf</b>	<b>nmf</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Alaska Air Group	42.94	0.10	5.75	9.50	nmf
Allegiant Travel Co.	67.99	0.50	12.00	30.25	53.50%
American Airlines	12.72	nil	1.40	4.25	nmf
Delta Airlines	32.86	nil	5.00	7.50	nmf
Jetblue Airways	6.48	nil	0.70	3.00	nmf
Southwest Airlines	33.67	0.36	2.80	5.00	nmf
Spirit Airlines	19.48	nil	0.50	5.00	nmf
United Airlines	37.70	nil	5.70	13.50	nmf



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REGIONAL AIR CARRIERS -- EQUITY RATE SUMMARY

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	<b>80%</b>	<b>15.68%</b>
CAPM: SUPPLY SIDE . . . . .	<b>0%</b>	<b>14.36%</b>
CAPM: IMPLIED ERP . . . . .	<b>20%</b>	<b>12.13%</b>
DGM: DAMODARAN . . . . .	<b>0%</b>	nmf
DGM: DAMODARAN (AP) . . . . .	<b>0%</b>	nmf
DGM: CORNELL . . . . .	<b>0%</b>	nmf
DGM: CORNELL (AP) . . . . .	<b>0%</b>	nmf
<b>Reconciled Equity Rate</b>		<b>14.97%</b>
<b>Reconciled Debt Rate</b>		<b>8.11%</b>
<b>Debt/Equity Structure</b>		<b>80% / 20%</b>
<b>WACC Conclusion</b>		<b>9.48%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Mesa Air Group	55.66	650.49	8%	92%
SkyWest Inc	835.38	3,425.05	20%	80%
<b>Selected Equity and Debt Structure</b>			<b>20%</b>	<b>80%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Mesa Air Group	nmf	1.65	n/a	#N/A
SkyWest Inc	10.00%	1.60	n/a	#N/A
<b>Selected for Industry</b>		<b>1.61</b>	<b>Ba2</b>	<b>8.11%</b>

\* Amounts in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	7.17%
X Industry Beta	1.61
Industry Risk Premium	11.54%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>15.68%</b>

CAPM: IMPLIED ERP	
Market Risk Premium	4.96%
X Industry Beta	1.61
Industry Risk Premium	7.99%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>12.13%</b>

CAPM: SUPPLY SIDE	
Market Risk Premium	6.35%
X Industry Beta	1.61
Industry Risk Premium	10.22%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>14.36%</b>



MULTISTAGE DIVIDEND GROWTH MODEL				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Mesa Air Group	N/A	N/A	N/A	N/A
SkyWest Inc	N/A	N/A	N/A	N/A
<b>Selected Rate</b>	nmf	nmf	nmf	nmf



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Mesa Air Group	1.53	nmf	-0.66	nmf	nmf
SkyWest Inc	16.51	0.20	3.50	6.00	11.00%



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FREIGHT AIR CARRIERS -- EQUITY RATE SUMMARY

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	80%	10.66%
CAPM: SUPPLY SIDE . . . . .	0%	9.92%
CAPM: IMPLIED ERP . . . . .	0%	8.65%
DGM: DAMODARAN . . . . .	0%	7.66%
DGM: DAMODARAN (AP) . . . . .	10%	11.33%
DGM: CORNELL . . . . .	0%	10.20%
DGM: CORNELL (AP) . . . . .	10%	12.63%
<b>Reconciled Equity Rate</b>		<b>10.93%</b>
<b>Reconciled Debt Rate</b>		<b>5.12%</b>
<b>Debt/Equity Structure</b>		<b>20% / 80%</b>
<b>WACC Conclusion</b>		<b>9.77%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Atlas Air Worldwide Holdings	2,877.05	2,597.58	53%	47%
Fedex Corp	43,715.18	18,203.00	71%	29%
United Postal Service	149,293.79	24,400.00	86%	14%
<b>Selected Equity and Debt Structure</b>			<b>80%</b>	<b>20%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Atlas Air Worldwide Holdings	8.00%	0.75	N/A	#N/A
Fedex Corp	16.00%	1.10	Baa2	5.59%
United Postal Service	56.00%	0.85	A2	5.12%
<b>Selected for Industry</b>	<b>44.64%</b>	<b>0.91</b>	<b>A3</b>	<b>5.12%</b>

\*Amount in Millions





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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	7.17%
X Industry Beta	0.91
Industry Risk Premium	6.52%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>10.66%</b>

CAPM: IMPLIED ERP	
Market Risk Premium	4.96%
X Industry Beta	0.91
Industry Risk Premium	4.51%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>8.65%</b>

CAPM: SUPPLY SIDE	
Market Risk Premium	6.35%
X Industry Beta	0.91
Industry Risk Premium	5.78%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>9.92%</b>

CAPM: SUPPLY SIDE	

MULTISTAGE DIVIDEND GROWTH MODEL				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Atlas Air Worldwide Holding	N/A	N/A	N/A	N/A
Fedex Corp	6.75%	14.11%	9.34%	12.75%
United Postal Service	7.99%	10.34%	10.51%	12.59%
<b>Selected Rate</b>	<b>7.66%</b>	<b>11.33%</b>	<b>10.20%</b>	<b>12.63%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Atlas Air Worldwide Holdings	100.80	N/A	14.45	15.00	3.50%
Fedex Corp	173.20	4.60	14.35	27.00	13.00%
United Postal Service	173.84	6.54	12.30	15.00	11.50%



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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	<b>70%</b>	<b>10.38%</b>
CAPM: SUPPLY SIDE . . . . .	<b>0%</b>	<b>9.66%</b>
CAPM: IMPLIED ERP . . . . .	<b>0%</b>	<b>8.46%</b>
DGM: DAMODARAN . . . . .	<b>0%</b>	<b>7.96%</b>
DGM: DAMODARAN (AP) . . . . .	<b>15%</b>	<b>7.32%</b>
DGM: CORNELL . . . . .	<b>0%</b>	<b>7.91%</b>
DGM: CORNELL (AP) . . . . .	<b>15%</b>	<b>8.06%</b>
<b>Reconciled Equity Rate</b>		<b>9.57%</b>
<b>Reconciled Debt Rate</b>		<b>5.59%</b>
<b>Debt/Equity Structure</b>		<b>40% / 60%</b>
<b>WACC Conclusion</b>		<b>7.98%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Alliant Energy	13,865.16	7,491.00	65%	35%
American Electric Power	48,791.58	32,432.60	60%	40%
Avista Corp.	3,323.10	2,001.53	62%	38%
FirstEnergy Corp	23,995.17	20,079.00	54%	46%
IdaCorp	5,453.11	1,953.47	74%	26%
NorthWestern	3,754.93	2,328.60	62%	38%
PNM Resources	4,187.88	3,809.80	52%	48%
Portland General	4,374.88	3,320.00	57%	43%
PPL Corp	21,520.15	12,303.00	64%	36%
XCEL Energy	38,530.91	22,152.00	63%	37%
<b>Selected Equity and Debt Structure</b>			<b>60%</b>	<b>40%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Alliant Energy	11.50%	0.85	Baa2	5.59%
American Electric Power	11.00%	0.75	Baa2	5.59%
Avista Corp.	8.00%	0.90	Baa2	5.59%
FirstEnergy Corp	14.50%	0.85	Ba1	7.24%
IdaCorp	9.00%	0.80	Baa2	5.59%
NorthWestern	8.00%	0.90	Baa2	5.59%
PNM Resources	9.50%	0.90	Baa3	5.59%
Portland General	9.50%	0.85	A3	5.12%
PPL Corp	7.50%	1.10	Baa1	5.59%
XCEL Energy	11.00%	0.80	Baa1	5.59%
<b>Selected for Industry</b>	<b>9.95%</b>	<b>0.87</b>	<b>Baa2</b>	<b>5.59%</b>

\*Amount in Millions



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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	7.17%
X Industry Beta	0.87
Industry Risk Premium	6.24%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>10.38%</b>

CAPM: IMPLIED ERP	
Market Risk Premium	4.96%
X Industry Beta	0.87
Industry Risk Premium	4.32%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>8.46%</b>

CAPM: SUPPLY SIDE	
Market Risk Premium	6.35%
X Industry Beta	0.87
Industry Risk Premium	5.52%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>9.66%</b>

CAPM: SUPPLY SIDE	

MULTISTAGE DIVIDEND GROWTH MODEL				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Alliant Energy	7.18%	7.20%	7.81%	7.77%
American Electric Power	7.79%	7.48%	8.26%	8.27%
Avista Corp.	7.86%	7.24%	8.23%	7.67%
FirstEnergy Corp	8.88%	7.72%	8.14%	8.64%
IdaCorp	6.64%	6.80%	7.07%	6.97%
NorthWestern	7.75%	7.45%	8.25%	7.68%
PNM Resources	7.47%	7.23%	7.12%	7.53%
Portland General	7.94%	7.60%	8.29%	8.22%
PPL Corp	11.33%	7.62%	8.48%	10.53%
XCEL Energy	6.74%	6.87%	7.45%	7.33%
<b>Selected Rate</b>	<b>7.96%</b>	<b>7.32%</b>	<b>7.91%</b>	<b>8.06%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Alliant Energy	55.21	1.81	2.95	3.50	6.00%
American Electric Power	94.95	3.35	5.35	6.50	6.50%
Avista Corp.	44.34	1.83	2.45	2.80	4.50%
FirstEnergy Corp	41.94	1.56	2.55	3.00	5.50%
IdaCorp	107.85	3.25	5.25	6.00	4.50%
NorthWestern	59.34	2.56	3.55	4.00	4.00%
PNM Resources	48.79	1.49	2.70	3.10	4.50%
Portland General	49.00	1.89	2.95	3.45	5.50%
PPL Corp	29.22	0.96	1.55	1.95	8.00%
XCEL Energy	70.11	2.08	3.35	4.00	6.00%



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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	<b>70%</b>	<b>10.12%</b>
CAPM: SUPPLY SIDE . . . . .	<b>0%</b>	<b>9.43%</b>
CAPM: IMPLIED ERP . . . . .	<b>0%</b>	<b>8.27%</b>
DGM: DAMODARAN . . . . .	<b>0%</b>	<b>8.69%</b>
DGM: DAMODARAN (AP) . . . . .	<b>15%</b>	<b>7.47%</b>
DGM: CORNELL . . . . .	<b>0%</b>	<b>8.91%</b>
DGM: CORNELL (AP) . . . . .	<b>15%</b>	<b>9.23%</b>
<b>Reconciled Equity Rate</b>		<b>9.58%</b>
<b>Reconciled Debt Rate</b>		<b>5.59%</b>
<b>Debt/Equity Structure</b>		<b>40% / 60%</b>
<b>WACC Conclusion</b>		<b>7.99%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Atmos Energy Corp.	16,043.47	7,856.15	67%	33%
Chesapeake Utilities	1,672.45	505.00	77%	23%
Nisource Inc.	11,300.95	8,479.40	57%	43%
Northwest Natural	1,690.63	1,148.40	60%	40%
Southwest Gas	4,153.33	3,989.63	51%	49%
Spire Inc.	3,615.15	3,083.70	54%	46%
<b>Selected Equity and Debt Structure</b>			<b>60%</b>	<b>40%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Atmos Energy Corp.	9.00%	0.80	A1	5.12%
Chesapeake Utilities	11.50%	0.80	N/A	#N/A
Nisource Inc.	8.00%	0.85	Baa2	5.59%
Northwest Natural	8.50%	0.80	Baa1	5.59%
Southwest Gas	6.00%	0.90	Baa1	5.59%
Spire Inc.	8.00%	0.85	Baa2	5.59%
<b>Selected for Industry</b>	<b>8.50%</b>	<b>0.83</b>	<b>Baa1</b>	<b>5.59%</b>

\*Amount in Millions





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CAPM: RULE 62 COMPLIANT	
Market Risk Premium	7.17%
X Industry Beta	0.83
Industry Risk Premium	5.98%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>10.12%</b>

CAPM: IMPLIED ERP	
Market Risk Premium	4.96%
X Industry Beta	0.83
Industry Risk Premium	4.13%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>8.27%</b>

CAPM: SUPPLY SIDE	
Market Risk Premium	6.35%
X Industry Beta	0.83
Industry Risk Premium	5.29%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>9.43%</b>

CAPM: SUPPLY SIDE	

MULTISTAGE DIVIDEND GROWTH MODEL				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Atmos Energy Corp.	6.45%	6.89%	7.49%	7.65%
Chesapeake Utilities	6.16%	7.03%	7.12%	7.48%
Nisource Inc.	10.93%	7.63%	9.42%	10.55%
Northwest Natural	8.40%	7.19%	8.91%	8.31%
Southwest Gas	11.63%	8.42%	10.50%	11.86%
Spire Inc.	8.61%	7.65%	10.04%	9.52%
<b>Selected Rate</b>	<b>8.69%</b>	<b>7.47%</b>	<b>8.91%</b>	<b>9.23%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Atmos Energy Corp.	112.07	2.96	6.00	7.30	7.50%
Chesapeake Utilities	94.37	2.22	5.00	6.50	7.50%
Nisource Inc.	27.42	0.98	1.55	2.10	9.50%
Northwest Natural	47.59	1.94	2.75	3.30	6.50%
Southwest Gas	61.88	2.60	4.25	5.75	10.00%
Spire Inc.	68.86	2.88	4.35	5.50	9.00%



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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	80%	12.24%
CAPM: SUPPLY SIDE . . . . .	0%	11.32%
CAPM: IMPLIED ERP . . . . .	0%	9.74%
DGM: DAMODARAN . . . . .	0%	14.89%
DGM: DAMODARAN (AP) . . . . .	15%	10.67%
DGM: CORNELL . . . . .	0%	14.63%
DGM: CORNELL (AP) . . . . .	5%	16.82%
<b>Reconciled Equity Rate</b>		<b>12.24%</b>
<b>Reconciled Debt Rate</b>		<b>5.59%</b>
<b>Debt/Equity Structure</b>		<b>40% / 60%</b>
<b>WACC Conclusion</b>		<b>9.58%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Enbridge Inc.	79,177.50	60,872.58	57%	43%
Kinder Morgan, Inc.	40,638.08	30,070.00	57%	43%
Oneok, Inc.	29,378.27	12,720.83	70%	30%
TC Energy Corp.	40,577.48	36,151.24	53%	47%
Williams Companies, Inc.	41,223.70	21,569.00	66%	34%
<b>Selected Equity and Debt Structure</b>			<b>60%</b>	<b>40%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Enbridge Inc.	13.50%	0.85	Baa1	5.59%
Kinder Morgan, Inc.	10.00%	1.15	Baa2	5.59%
Oneok, Inc.	31.00%	1.45	Baa3	5.59%
TC Energy Corp.	13.00%	1.05	Baa2	5.59%
Williams Companies, Inc.	20.00%	1.15	Baa2	5.59%
<b>Selected for Industry</b>	<b>17.50%</b>	<b>1.13</b>	<b>Baa2</b>	<b>5.59%</b>

\*Amounts in Millions



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**CAPM: RULE 62 COMPLIANT**

Market Risk Premium	7.17%
X Industry Beta	1.13
Industry Risk Premium	8.10%
Add: Risk Free Rate	4.14%

**Indicated Rate 12.24%**

**CAPM: IMPLIED ERP**

Market Risk Premium	4.96%
X Industry Beta	1.13
Industry Risk Premium	5.60%
Add: Risk Free Rate	4.14%

**Indicated Rate 9.74%**

**CAPM: SUPPLY SIDE**

Market Risk Premium	6.35%
X Industry Beta	1.13
Industry Risk Premium	7.18%
Add: Risk Free Rate	4.14%

**Indicated Rate 11.32%**

**MULTISTAGE DIVIDEND GROWTH MODEL**

**Indicated Rates**

Company Name	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Enbridge Inc.	18.50%	12.32%	13.79%	17.68%
Kinder Morgan, Inc.	15.54%	10.64%	19.01%	22.09%
Oneok, Inc.	11.07%	9.81%	13.91%	13.14%
TC Energy Corp.	12.41%	11.32%	13.36%	12.31%
Williams Companies, Inc.	16.90%	9.30%	13.06%	18.85%

**Selected Rate 14.89% 10.67% 14.63% 16.82%**



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Enbridge Inc.	39.10	2.62	3.00	4.60	10.00%
Kinder Morgan, Inc.	18.08	1.20	1.25	1.70	19.00%
Oneok, Inc.	65.70	4.05	4.20	5.80	11.50%
TC Energy Corp.	39.86	2.90	3.00	4.50	8.00%
Williams Companies, Inc.	32.90	1.76	1.85	2.30	12.00%



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**LIQUID PIPELINES -- EQUITY RATE SUMMARY**

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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	<b>80%</b>	<b>12.17%</b>
CAPM: SUPPLY SIDE . . . . .	<b>0%</b>	<b>11.25%</b>
CAPM: IMPLIED ERP . . . . .	<b>0%</b>	<b>9.70%</b>
DGM: DAMODARAN . . . . .	<b>0%</b>	<b>19.53%</b>
DGM: DAMODARAN (AP) . . . . .	<b>15%</b>	<b>16.02%</b>
DGM: CORNELL . . . . .	<b>0%</b>	<b>11.70%</b>
DGM: CORNELL (AP) . . . . .	<b>5%</b>	<b>19.82%</b>
<b>Reconciled Equity Rate</b>		<b>13.13%</b>
<b>Reconciled Debt Rate</b>		<b>5.59%</b>
<b>Debt/Equity Structure</b>		<b>40% / 60%</b>
<b>WACC Conclusion</b>		<b>10.11%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

<b>Company</b>	<b>Market Value Of Equity*</b>	<b>Market Value Of Debt*</b>	<b>Percent Equity</b>	<b>Percent Debt</b>
Energy Transfer LP	36,731.07	45,422.00	45%	55%
Enterprise Products Partners LP	52,359.85	24,995.00	68%	32%
Holly Energy Partners, LP	2,291.10	1,520.66	60%	40%
Magellan Midstream Partners, LP	10,664.60	4,232.50	72%	28%
MPLX LP	32,872.84	18,095.00	64%	36%
Plains All American Pipeline LP	8,212.65	7,600.00	52%	48%
<b>Selected Equity and Debt Structure</b>			<b>60%</b>	<b>40%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

<b>Company</b>	<b>Return On Equity</b>	<b>Beta</b>	<b>Credit Rating</b>	<b>Debt Rate</b>
Energy Transfer LP	10.00%	1.15	Baa3	5.59%
Enterprise Products Partners LP	7.00%	1.05	N/A	#N/A
Holly Energy Partners, LP	8.00%	0.95	Ba2	8.11%
Magellan Midstream Partners, LP	7.00%	1.10	Baa1	5.59%
MPLX LP	9.00%	1.00	Baa2	5.59%
Plains All American Pipeline LP	N/A	1.45	Baa3	5.59%
<b>Selected for Industry</b>	<b>26.00%</b>	<b>1.12</b>	<b>Baa3</b>	<b>5.59%</b>

\*Amount in Millions





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<b>CAPM: RULE 62 COMPLIANT</b>	
Market Risk Premium	7.17%
X Industry Beta	1.12
Industry Risk Premium	8.03%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>12.17%</b>

<b>CAPM: IMPLIED ERP</b>	
Market Risk Premium	4.96%
X Industry Beta	1.12
Industry Risk Premium	5.56%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>9.70%</b>

<b>CAPM: SUPPLY SIDE</b>	
Market Risk Premium	6.35%
X Industry Beta	1.12
Industry Risk Premium	7.11%
Add: Risk Free Rate	4.14%
<b>Indicated Rate</b>	<b>11.25%</b>

<b>CAPM: SUPPLY SIDE</b>	

<b>MULTISTAGE DIVIDEND GROWTH MODEL</b>				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Energy Transfer LP	20.60%	18.18%	12.64%	21.73%
Enterprise Products Partner	12.97%	12.88%	11.46%	14.99%
Holly Energy Partners, LP	17.48%	15.62%	11.60%	18.18%
Magellan Midstream Partne	13.29%	12.73%	11.94%	13.78%
MPLX LP	27.38%	16.75%	13.27%	35.16%
Plains All American Pipeline	25.47%	19.96%	9.30%	15.10%
<b>Selected Rate</b>	<b>19.53%</b>	<b>16.02%</b>	<b>11.70%</b>	<b>19.82%</b>



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Energy Transfer LP	11.87	0.69	1.60	2.35	10.00%
Enterprise Products Partners LP	24.12	1.47	2.60	2.95	7.00%
Holly Energy Partners, LP	18.12	1.05	2.15	2.90	8.00%
Magellan Midstream Partners, LP	50.21	3.27	4.60	6.15	7.00%
MPLX LP	32.84	2.21	4.85	4.10	9.00%
Plains All American Pipeline LP	11.76	0.85	1.40	2.65	N/A



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**RECONCILIATION**

Equity Models	Weight	Equity Rate
CAPM: RULE 62 . . . . .	<b>80%</b>	<b>11.42%</b>
CAPM: SUPPLY SIDE . . . . .	<b>0%</b>	<b>10.59%</b>
CAPM: IMPLIED ERP . . . . .	<b>0%</b>	<b>9.18%</b>
DGM: DAMODARAN . . . . .	<b>0%</b>	<b>9.06%</b>
DGM: DAMODARAN (AP) . . . . .	<b>0%</b>	<b>9.50%</b>
DGM: CORNELL . . . . .	<b>0%</b>	<b>11.28%</b>
DGM: CORNELL (AP) . . . . .	<b>20%</b>	<b>10.91%</b>
<b>Reconciled Equity Rate</b>		<b>11.32%</b>
<b>Reconciled Debt Rate</b>		<b>5.12%</b>
<b>Debt/Equity Structure</b>		<b>20% / 80%</b>
<b>WACC Conclusion</b>		<b>10.08%</b>



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**CALCULATION OF CAPITAL STRUCTURE**

Company	Market Value Of Equity*	Market Value Of Debt*	Percent Equity	Percent Debt
Canadian National Railway	79,768.48	10,798.82	88%	12%
CSX Corp	64,016.05	16,692.00	79%	21%
Norfolk Southern	56,202.59	14,256.00	80%	20%
Union Pacific	126,808.28	29,757.00	81%	19%
<b>Selected Equity and Debt Structure</b>			<b>80%</b>	<b>20%</b>

**GUIDELINE COMPANY INFORMATION SUMMARY**

Company	Return On Equity	Beta	Credit Rating	Debt Rate
Canadian National Railway	32.00%	0.90	A2	5.12%
CSX Corp	33.50%	1.05	Baa1	5.59%
Norfolk Southern	25.00%	1.05	Baa1	5.59%
Union Pacific	55.00%	1.05	A3	5.12%
<b>Selected for Industry</b>	<b>40.11%</b>	<b>1.02</b>	<b>A3</b>	<b>5.12%</b>

\*Amounts in Millions



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CAPM: RULE 62 COMPLIANT		CAPM: IMPLIED ERP	
Market Risk Premium	7.17%	Market Risk Premium	4.96%
X Industry Beta	1.02	X Industry Beta	1.02
Industry Risk Premium	7.28%	Industry Risk Premium	5.04%
Add: Risk Free Rate	4.14%	Add: Risk Free Rate	4.14%
Indicated Rate	11.42%	Indicated Rate	9.18%

CAPM: SUPPLY SIDE			
Market Risk Premium	6.35%		
X Industry Beta	1.02		
Industry Risk Premium	6.45%		
Add: Risk Free Rate	4.14%		
Indicated Rate	10.59%		

MULTISTAGE DIVIDEND GROWTH MODEL				
Company Name	Indicated Rates			
	Damodaran's	Damodaran's AP	Cornell's	Cornell's AP
Canadian National Railway	7.75%	9.13%	9.50%	10.44%
CSX Corp	9.21%	9.93%	13.77%	11.52%
Norfolk Southern	9.83%	9.74%	11.18%	11.36%
Union Pacific	9.40%	9.39%	11.06%	10.67%
Selected Rate	9.06%	9.50%	11.28%	10.91%



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**DIVIDEND GROWTH MODEL INPUTS**

Company Name	Stock Price	Next Year's Payout	Next Year's EPS	3-5 Year EPS	Projected Growth
Canadian National Railway	118.88	3.83	5.75	8.40	11.00%
CSX Corp	30.98	2.01	1.75	2.50	10.50%
Norfolk Southern	246.42	11.60	13.10	19.00	10.00%
Union Pacific	207.07	9.92	10.30	15.00	9.50%