



COST OF CAPITAL STUDY

**YIELD CAPITALIZATION
2017 ASSESSMENT YEAR**

APPENDIX C

TELECOMMUNICATIONS

EQUITY RATE						8.75%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		8.0%				6
DIVIDEND GROWTH MODELS							
	Value Line, based on Dividends Growth		8.50%				7
	Value Line, based on Earnings Growth		9.50%				8
	Value Line, based on Return on Equity		6.00%				10
				RANGE	6.0% - 9.5%		
DEBT RATE						5.00%	11
SECURED DEBT (LEASE) RATE						4.00%	11
MARKET CAPITAL STRUCTURE							
	Equity	60%	x	8.75%	=	5.25%	3
	Debt	40%	x	5.00%	=	2.00%	3
	Marginal Tax Rate	38%	=	(1-.038)	x	2.00%	<u>1.24%</u>

WEIGHTED AVERAGE COST OF CAPITAL **6.5%**

rounded

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE
 2017 ASSESSMENT YEAR
 TELECOMMUNICATIONS

Capital Structure at Book Value

Company	Ticker	Beta	Fin'l Strength	Price Stability	Growth Persist	Earnings Predict	P/E Ratio	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
AT&T Inc	t	0.75	A++	100	25	100	14.7	4.70%	123,188,460,000	49.9%	-	0.0%	123,509,000,000	50.1%	246,697,460,000
ATN International Inc	atni	0.85	B++	55	65	45	41.0	2.00%	809,394,772	83.8%	-	0.0%	156,800,000	16.2%	966,194,772
BCE Inc	bce	0.70	B++	100	40	80	17.1	5.10%	12,407,475,000	46.9%	1,480,000,000	5.6%	12,544,000,000	47.5%	26,431,475,000
Charter	chtr	0.95	B	65	100	40	20.6	nil	40,138,373,561	39.4%	-	0.0%	61,747,000,000	60.6%	101,885,373,561
CenturyLink Inc	ctl	0.95	B++	70	15	45	19.4	9.60%	13,399,232,000	40.1%	-	0.0%	19,993,000,000	59.9%	33,392,232,000
Cincinnati Bell	cbb	1.20	C+	25	15	5	81.7	nil		nmf					
Comcast Corp	cmcsa	0.95	A	90	100	90	21.5	1.50%	53,930,698,431	46.9%	-	0.0%	61,046,000,000	53.1%	114,976,698,431
Consolidated Communi	cnsl	0.90	C++	65	40	20	nmf	6.90%	171,061,800	10.8%	-	0.0%	1,405,643,000	89.2%	1,576,704,800
Frontier	fr	1.15	C++	30	5	45	nmf	16.00%	2,591,446,000	12.6%	-	0.0%	17,923,000,000	87.4%	20,514,446,000
General Communication	ancma	1.00	C++	40	40	15	nmf	nil	22,554,000	1.6%	-	0.0%	1,396,419,000	98.4%	1,418,973,000
Level 3 Communication	lvlt	1.20	B+	35	35	15	31.6	nil	10,923,739,380	50.1%	-	0.0%	10,884,000,000	49.9%	21,807,739,380
Telus Corp	tu	0.55	B++	100	90	95	20.9	4.60%	5,908,805,970	40.6%	-	0.0%	8,659,701,493	59.4%	14,568,507,463
Verizon Communication	vz	0.75	A++	100	45	65	12.8	4.70%	16,306,927,008	13.1%	-	0.0%	108,379,000,000	86.9%	124,685,927,008
Windstream	win	nmf	C+	nmf	nmf	nmf	nmf	8.90%	170,451,000	1.7%	-	0.0%	9,864,200,000	98.3%	10,034,651,000
Mean		0.92	B+	67	47	51	28.1	6.40%	21,536,047,609	33.7%		0.4%	33,654,443,346	65.9%	
Weighted Mean									279,968,618,922	38.9%	1,480,000,000	0.21%	437,507,763,493	60.9%	718,956,382,415
Median		0.95						4.90%				0.0%			
Trimmed Mean		0.92						5.81%				0.0%			
Max		1.20						16.00%				5.6%			
Min		0.55						1.50%				0.0%			
Say		0.95								40%		0.0%		60%	100%

**SUPPORT FOR CAPITAL STRUCTURE
MARKET VALUE**

WASHINGTON STATE DEPARTMENT OF REVENUE
2017 ASSESSMENT YEAR
TELECOMMUNICATIONS

Capital Structure at Market Value

Company	Ticker	Stock Close	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt (FV)	%	Total Debt & Equity
AT&T Inc	t	42.041	6,141,000,000	258,176,102,298	66.5%	-	0.0%	129,858,000,000	33.5%	388,034,102,298
ATN International Inc	atni	80.130	16,139,477	1,293,256,244	89.0%	-	0.0%	159,900,000	11.0%	1,453,156,244
BCE Inc	bce	43.240	870,700,000	37,649,069,741	69.6%	1,480,000,000	2.7%	14,994,776,119	27.7%	54,123,845,861
Charter	chtr	287.920	268,897,793	77,421,056,056	54.7%	-	0.0%	64,146,000,000	45.3%	141,567,056,056
CenturyLink Inc	ctl	23.780	543,800,000	12,931,564,544	39.2%	-	0.0%	20,079,000,000	60.8%	33,010,564,544
Cincinnati Bell	cbi	22.350	42,026,791	939,298,779	40.7%	129,400,000	5.6%	1,239,900,000	53.7%	2,308,598,779
Comcast Corp	cmcsa	34.525	4,751,603,386	164,049,116,405	71.2%	-	0.0%	66,300,000,000	28.8%	230,349,116,405
Consolidated Communicatio	cnsi	26.461	50,610,000	1,339,211,859	48.8%	-	0.0%	1,407,630,000	51.2%	2,746,841,859
Frontier	fr	3.380	1,172,600,000	3,963,388,000	18.1%	-	0.0%	17,902,000,000	81.9%	21,865,388,000
General Communications In	gncma	19.450	35,800,000	696,310,036	32.4%	-	0.0%	1,453,512,000	67.6%	2,149,822,036
Level 3 Communications	lvl	56.360	359,925,515	20,285,402,385	64.6%	-	0.0%	11,137,000,000	35.4%	31,422,402,385
Telus Corp	tu	31.850	590,000,000	18,791,500,000	65.0%	-	0.0%	10,099,253,731	35.0%	28,890,753,731
Verizon Communications	vz	52.815	4,076,731,752	215,313,932,803	64.5%	-	0.0%	118,534,000,000	35.5%	333,847,932,803
Windstream	win	7.330	96,300,000	705,879,000	6.7%	-	0.0%	9,885,000,000	93.3%	10,590,879,000
			Mean		52.2%		0.6%		47.2%	
			Weighted Mean	813,555,088,150	63.4%	1,609,400,000	0.13%	467,195,971,851	36.4%	1,282,360,460,001
			Median		59.6%		0.00%		40.4%	
			Trimmed Mean		52.9%		0.2%		46.4%	
			Max		89.0%		5.6%		93.3%	
			Min		6.7%		0.0%		11.0%	
			Say		60%		0%		40%	100%

Source: Yahoo
Stock Price: Yahoo
Market Value Debt: Fair Value 10k

SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

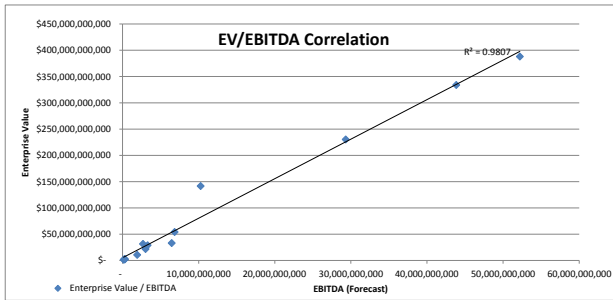
TELECOMMUNICATIONS

Company	Ticker	Stock Close	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Divds Decld	Multiple	Captl Spend	Multiple	Book Value	Multiple
AT&T Inc	t	42.041	26.68	1.6	7.07	5.9	2.84	14.8	1.92	21.9	3.50	12.0	20.06	2.1
ATN International Inc	atni	80.130	28.35	2.8	6.40	12.5	1.67	48.0	1.30	61.6	7.70	10.4	50.15	1.6
BCE Inc	bce	43.240	18.95	2.3	5.84	7.4	2.54	17.0	2.04	21.2	3.20	13.5	14.25	3.0
Charter	chtr	287.920	107.86	2.7	38.78	7.4	1.67	172.4	nil		19.80	14.5	149.27	1.9
CenturyLink Inc	ctl	23.780	32.13	0.7	9.64	2.5	2.45	9.7	2.16	11.0	5.48	4.3	24.64	0.97
Cincinnati Bell	cbb	22.350	28.15	0.79	4.51	5.0	0.18	124.2	nil		6.79	3.3	(11.25)	nmf
Comcast Corp	cmcsa	34.525	16.92	2.0	3.80	9.1	1.74	19.8	0.55	62.8	1.92	18.0	11.35	3.04
Consolidated Communic	cnsl	26.461	14.68	1.8	3.73	7.1	0.29	91.2	1.55	17.1	2.47	10.7	3.38	7.8
Frontier	fr	3.380	7.59	0.4	1.60	2.1	(0.14)	nmf	0.42	8.0	1.19	2.8	2.21	1.53
General Communications	gncma	19.450	26.09	0.7	5.31	3.7	(0.15)	nmf	nil		5.43	3.6	0.63	30.9
Level 3 Communications	lvl	56.360	22.70	2.5	5.35	10.5	1.87	30.1	nil		3.70	15.2	30.35	1.9
Telus Corp	tu	31.850	16.19	2.0	4.15	7.7	1.54	20.7	1.34	23.7	3.48	9.2	10.01	3.2
Verizon Communications	vz	52.815	30.90	1.7	5.80	9.1	3.87	13.6	2.29	23.1	4.18	12.6	4.00	13.2
Windstream	win	7.330	55.94	0.13	9.14	0.8	(4.17)	nmf	0.60	12.2	10.28	0.7	1.77	4.1
				Mean	1.6	6.5		51.1		26.3		9.4		5.8
				Median	1.8	7.2		20.7		21.5		10.6		3.0
				Trimmed Mean	1.6	6.5		42.2		24.0		9.4		3.9
				Max	2.8	12.5		172.4		62.8		18.0		30.9
				Min	0.13	0.8		9.7		8.0		0.7		0.97
				Std Dev	0.9	3.4		54.4		19.7		5.5		8.2
				Coefficient of Variation	0.5	0.5		1.1		0.8		0.6		1.4
				Harmonic Mean	0.8	3.8		22.9		17.7		4.3		2.5
				Percentile .25	0.8	4.0		15.9		13.4		3.8		1.9
				Percentile .75	2.2	8.7		69.6		23.5		13.3		4.1
				Say	1.50	6.50		21.00		20.00		9.50		3.00

ENTERPRISE VALUE MULTIPLES
 WASHINGTON STATE DEPARTMENT OF REVENUE
 2017 ASSESSMENT YEAR
 TELECOMMUNICATIONS

Guideline Companies	Ticker	EV	EBITDA	EV / EBITDA	Annual	EBITDA	EV / EBITDA	Sales (Revenue)	EV / Sales	CF	Debt Service	EV / CF
					Change Rate							
			historic	historic	(CF growth)	forecast	forecast	forecast	forecast	forecast		
AT&T Inc	t	\$ 388,034,102,298	50,194,000,000	7.73	4.00%	52,201,760,000	7.43	166,087,000,000	2.34	43,901,000,000	6,492,900,000	7.70
ATN International Inc	atni	\$ 1,453,156,244	125,777,000	11.55	14.00%	143,385,780	10.13	550,265,000	2.64	127,755,000	7,995,000	10.70
BCE Inc	bce	\$ 54,123,845,861	6,391,044,776	8.47	7.00%	6,838,417,910	7.91	16,800,000,000	3.22	5,118,750,000	749,738,806	9.22
Charter	char	\$ 141,567,056,956	10,262,000,000	13.80		10,262,000,000	13.80	42,151,500,000	3.36	8,920,500,000	3,207,300,000	11.67
CenturyLink Inc	cl	\$ 33,010,564,544	6,247,000,000	5.28	3.50%	6,465,645,000	5.11	17,113,000,000	1.93	4,959,500,000	1,003,950,000	5.54
Cincinnati Bell	cbb	\$ 2,308,598,779	275,200,000	8.39	8.00%	297,216,000	7.77	1,209,600,000	1.91	184,800,000	61,995,000	9.35
Comcast Corp	cmcsa	\$ 230,349,116,405	26,417,000,000	8.72	11.00%	29,322,870,000	7.86	83,904,000,000	2.75	19,152,000,000	3,315,000,000	10.25
Consolidated Communications	csd	\$ 2,746,841,839	261,459,000	10.51	5.00%	274,522,500	10.01	749,925,000	3.66	199,475,000	70,281,500	10.18
Frontier	fr	\$ 21,865,388,000	2,919,000,000	7.49	3.50%	3,021,165,000	7.24	9,835,500,000	2.22	2,310,750,000	895,100,000	6.82
General Communications Inc	gncma	\$ 2,149,822,036	272,878,000	7.88	6.50%	290,615,070	7.40	925,750,000	2.32	203,000,000	72,675,600	7.80
Level 3 Communications	lvl	\$ 21,422,402,385	2,694,000,000	11.66		2,694,000,000	11.66	8,765,000,000	3.80	1,913,300,000	556,850,000	12.72
Telus Corp	tl	\$ 28,890,753,731	3,155,970,149	9.15	4.50%	3,297,988,806	8.76	9,825,373,134	2.94	2,683,582,050	504,962,687	9.06
Verizon Communications	vz	\$ 333,847,932,803	42,987,000,000	7.77	2.00%	43,846,740,000	7.61	130,612,500,000	2.56	23,490,000,000	5,926,700,000	11.35
Windstream	wm	\$ 10,590,879,000	1,778,900,000	5.95	8.50%	1,930,106,500	5.49	6,211,200,000	1.73	979,200,000	494,250,000	7.19
Mean				8.88	6.46%		8.44		2.67			9.25
Median				8.43	5.75%		7.81		2.60			9.29
Trimmed Mean				8.77	6.15%		8.27		2.65			9.28
Max				13.80	14.00%		13.80		3.80			12.72
Min				5.28	2.00%		5.11		1.71			5.54
Std Dev				2.31	0.03		2.31		0.66			2.05
Coefficient of Variation				0.26	0.54		0.27		0.25			0.22
Harmonic Mean				8.35	4.91%		7.91		2.52			8.80
Sav				8.50	5.00%		7.75		2.50			9.00

EBITDA from Morningstar
 Morningstar-data page



Guideline Companies	EV/EBITDA forecast	CF	Sales	Rank	Help
CenturyLink Inc	5.11	5.54	1.93	5	
Windstream	5.49	7.19	1.71	12	
Frontier	7.24	6.82	2.22	9	
General Communications Inc	7.40	7.80	2.32	14	
AT&T Inc	7.43	7.70	2.34	1	
Verizon Communications	7.61	11.35	2.56	7	
Cincinnati Bell	7.77	9.35	1.91	8	
Comcast Corp	7.86	10.25	2.75	11	
BCE Inc	7.91	9.22	3.22	3	
Telus Corp	8.76	9.06	2.94	4	
Consolidated Communications Holdi	10.01	10.18	3.66	13	
ATN International Inc	10.13	10.70	3.64	10	
Level 3 Communications	11.66	12.72	3.80	6	
Charter	13.80	11.67	3.36	2	
Low Average	6.86	7.96	2.14		
Low Median	7.40	7.70	2.22		
Sav	7.00	7.75	2.20		
High Average	10.02	10.54	3.20		
High Median	10.01	10.25	3.22		
Sav	10.00	10.50	3.20		

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

WASHINGTON STATE DEPARTMENT OF REVENUE
2017 ASSESSMENT YEAR
TELECOMMUNICATIONS

Ex Ante
Ke = Rf + B (Rp)

Ke = Cost of Equity **8.0%**

	Rm =	rate of return	8.25%	
	Rf =	risk free rate	3.00%	
	Rp =	risk premium	5.25%	
	B =	Beta	0.95	page 2

to page 1

Rp = Risk Premium **5.25%**

	3.5 - 6%	
Shannon Pratt and Roger Grabowski Cost of Capital, Applications and Examples, Third Edition, 2008, Page 113		
Dr. Aswath Damodaran http://pages.stern.nyu.edu/~adamodar/ 2016 Implied Premium	5.69% 5.14%	chart page 15 adjusted for Rf
John Graham and Campbell Harvey Duke CFO magazine Global Business Outlook 4th Qtr 2016	5.70% 5.4%-6% 4.93% 2.23%	10 year expected return 95% Interval 10 year expected adjusted for Rf Rf rate used in survey

to above

Rf = Risk Free Rate **3.00%**

Value Line Investment Survey, Selected Yields January 6, 2017, page 3197 as of 12-28-16		
US Treasury Securities year end data		
	5 year	2.00%
	10 year	2.51%
	30 year	3.09%
	30 year Zero	3.17%

to above

Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>)
January 4, 2017 as of 12-30-16

Treasury Constant Maturities		
	5 year	1.93%
	10 year	2.45%
	20 year	2.79%
	30 year	3.06%
	20 year TIPS	<u>0.82%</u> 1.97%
	30 year TIPS	<u>0.99%</u> 2.07%
		TIPS inflation indication

Inflation **2.00%**

Value Line Investment Survey, Economic Series January 6, 2017, page 1500 Consumer Price Index Annual Rate of Change 2019-2021		
		2.50%
The Livingston Survey December 9, 2016 page 4, 10 Inflation median (measured by the Consumer Price Index) over next 10 years		
		2.30%

to appraisal template

Gross Domestic Product (GDP) Nominal **3.80%**

Federal Reserve Projected Long Run Real GDP Growth Median Projection Value From Dec 14, 2016 Report https://www.federalreserve.gov/monetarypolicy/files/fomcprojtab120161214.pdf		
		1.80%
Congressional Budget Office Real GDP Economic Projections The Budget and Economic Outlook 2017-2027		
	Average Percentage Change Year To Year	Table C-1, pg 88
	2017-2021	1.86%
	2022-2027	1.90%
Federal Reserve Bank of Philadelphia The Livingston Survey, December 9, 2016, Pg 4 Average Annual Real GDP Growth Rate for Next 10 Years https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey		
		2.20%

real GDP + inflation est

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2017 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Dividend Growth

$$K_e = (D1 / P_0) + G$$

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Growth

Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Dividend Growth (G)	Ke	Sustainable Dividend Growth	Ke (Sus)
AT&T Inc	t	42.041	1.96	4.66%	4.00%	8.66%	3.80%	8.46%
ATN International Inc	atni	80.130	1.38	1.72%	6.00%	7.72%	3.80%	5.52%
BCE Inc	bce	43.240	2.12	4.90%	3.00%	7.90%		7.90%
Charter	chtr	287.920	nil		nil			
CenturyLink Inc	ctl	23.780	2.16	9.08%	nil	9.08%	2.00%	11.08%
Cincinnati Bell	cbb	22.350	nil		nil			
Comcast Corp	cmcsa	34.525	0.60	1.74%	9.00%	10.74%	3.80%	5.54%
Consolidated Communications H	cnsi	26.461	1.55	5.86%	nil	5.86%	2.00%	7.86%
Frontier	frt	3.380	0.42	12.43%	0.50%	12.93%	2.00%	14.43%
General Communications Inc	gncma	19.450	nil		nil			
Level 3 Communications	lvl	56.360	nil		nil			
Telus Corp	tu	31.850	1.46	4.59%	8.00%	12.59%	3.80%	8.39%
Verizon Communications	vz	52.815	2.32	4.39%	2.00%	6.39%		6.39%
Windstream	win	7.330	0.60	8.19%	nfm	8.19%	2.00%	10.19%
						9.01%	Mean	8.58%
						8.42%	Median	8.15%
						8.95%	Trimmed Mean	8.23%
						12.93%	Max	14.43%
						5.86%	Min	5.52%

Source: Value Line Projections 14-16 to 20-22

8.50%
Say **8.50%** **8.50%**

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
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Based on Earnings Growth

$$K_e = (D_1 / P_0) + G$$

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Growth

Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Ke	Sustainable Earnings Growth	Ke (Sus)
AT&T Inc	t	42.041	1.96	4.66%	5.50%	10.16%	3.80%	8.46%
ATN International Inc	atni	80.130	1.38	1.72%	11.00%	12.72%	3.80%	5.52%
BCE Inc	bce	43.240	2.12	4.90%	6.50%	11.40%	3.80%	8.70%
Charter	chtr	287.920	nil					
CenturyLink Inc	ctl	23.780	2.16	9.08%	9.50%	18.58%	3.80%	12.88%
Cincinnati Bell	cbb	22.350	nil					
Comcast Corp	cmcsa	34.525	0.60	1.74%	8.00%	9.74%	3.80%	5.54%
Consolidated Communications	cnsi	26.461	1.55	5.86%		5.86%	2.00%	7.86%
Frontier	frt	3.380	0.42	12.43%		12.43%	2.00%	14.43%
General Communications Inc	gncma	19.450	nil					
Level 3 Communications	lvl	56.360	nil		29.50%			
Telus Corp	tu	31.850	1.46	4.59%	9.00%	13.59%	3.80%	8.39%
Verizon Communications	vz	52.815	2.32	4.39%	3.00%	7.39%		7.39%
Windstream	win	7.330	0.60	8.19%		8.19%	2.00%	10.19%
						11.01%	Mean	8.94%
						10.78%	Median	8.43%
						10.70%	Trimmed Mean	8.68%
						18.58%	Max	14.43%
						5.86%	Min	5.52%

Source: Value Line Projections 14-16 to 20-22

10.75%

Say

9.50%

8.75%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2017 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Earnings Growth

$$K_e = (D_1 / P_0) + G$$

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Growth

Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Ke	Sustainable Earnings Growth	Ke (Sus)
AT&T Inc	t	42.041	1.96	4.66%	8.43%	13.09%	3.80%	8.46%
ATN International Inc	atni	80.130	1.38	1.72%	3.00%	4.72%		4.72%
BCE Inc	bce	43.240	2.12	4.90%	4.88%	9.78%	3.80%	8.70%
Charter	chtr	287.92	nil		9.30%			
CenturyLink Inc	ctl	23.780	2.16	9.08%	0.03%	9.11%	2.00%	11.08%
Cincinnati Bell	cbb	22.350	nil		13.15%			
Comcast Corp	cmcsa	34.525	0.60	1.74%	11.70%	13.44%	3.80%	5.54%
Consolidated Communications	cnsi	26.461	1.55	5.86%	2.00%	7.86%		7.86%
Frontier	frt	3.380	0.42	12.43%	7.30%	19.73%	3.80%	16.23%
General Communications Inc	gncma	19.450	nil		16.00%			
Level 3 Communications	lvl	56.360	nil		-37.10%			
Telus Corp	tu	31.850	1.46	4.59%	5.37%	9.96%	3.80%	8.39%
Verizon Communications	vz	52.815	2.32	4.39%	1.94%	6.33%	2.00%	6.39%
Windstream	win	7.330	0.60	8.19%	20.50%	28.69%	3.80%	11.99%
						12.27%	Mean	8.94%
						9.87%	Median	8.43%
						11.16%	Trimmed Mean	8.55%
						28.69%	Max	16.23%
						4.72%	Min	4.72%

Source: Yahoo Finance 5 year growth est

10.00%

Say

9.50%

8.75%

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL**

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

TELECOMMUNICATIONS

Based on Return on Equity

$$K_e = (D1 / P_o) + G$$

- Ke** = Cost of Equity
- D1** = Expected Dividends
- E1** = Expected Earnings
- Po** = Current Price
- G** = Sustainable Growth
- b** = Retained Earnings % (plowback) (1 - payout ratio)
- ROE** = Return on Equity

Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

											Value Line
Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	b (1-payout ratio)	Proj Earnings (E1)	=ROE market	Growth (b*ROE)	Ke	Sustainable Reinvestment	Ke (Sus)
AT&T Inc	t	42.041	1.96	4.66%	33.0%	2.95	7.02%	2.32%	6.98%		6.98%
ATN International Inc	atni	80.130	1.38	1.72%	23.0%	2.30	2.87%	0.66%	2.38%	2.00%	3.72%
BCE Inc	bce	43.240	2.12	4.90%	20.0%	2.40	5.55%	1.11%	6.01%	2.00%	6.90%
Charter	chtr	287.920	nil			6.30	2.19%				
CenturyLink Inc	ctl	23.780	2.16	9.08%	12.0%	2.15	9.04%	1.08%	10.17%	2.00%	11.08%
Cincinnati Bell	cbb	22.350	nil			0.05	0.22%				
Comcast Corp	cmcsa	34.525	0.60	1.74%	69.0%	1.90	5.50%	3.80%	5.54%		5.54%
Consolidated Communicati	cnsl	26.461	1.55	5.86%		0.40	1.51%				
Frontier	fr	3.380	0.42	12.43%		(0.05)	-1.48%				
General Communications In	gncma	19.450	nil			(0.05)	-0.26%				
Level 3 Communications	lvit	56.360	nil			1.55	2.75%				
Telus Corp	tu	31.850	1.46	4.59%	13.0%	1.90	5.97%	0.78%	5.37%	2.00%	6.59%
Verizon Communications	vz	52.815	2.32	4.39%	31.0%	3.90	7.38%	2.29%	6.68%		6.68%
Windstream	win	7.330	0.60	8.19%		(3.25)	-44.34%				
									6.16%	Mean	6.79%
									6.01%	Median	6.68%
									6.12%	Med Mean	6.54%
									10.17%	Max	11.08%
									2.38%	Min	3.72%
									6.00%		6.75%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

TELECOMMUNICATIONS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM
AT&T Inc	t	Baa1	BBB+	4.78%
ATN International Inc	atni			
BCE Inc	bce		BBB+	
Charter	chtr		BB+	
CenturyLink Inc	ctl	Ba3	BB	7.37%
Cincinnati Bell	cbb		B	
Comcast Corp	cmcsa	A3	A-	3.86%
Consolidated Communications Ho	cnsl	B3	B+	
Frontier	ftr	B1	BB-	
General Communications Inc	gncma			
Level 3 Communications	lvlt	B1	BB	
Telus Corp	tu	Baa1	BBB+	4.40%
Verizon Communications	vz	Baa1	BBB+	4.46%
Windstream	win	B2	B+	
Overall Average Debt Rating		Ba1	BB+	4.98%

bond analysis, A-BBB bonds

All issues 20+ year maturities

Guideline Companies, All Ratings	4.90%	5.00%
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bond analysis page 12

Mergent's Bond Record January 2017, page 201

Corporate	Aaa	Aa	A	Baa
October	3.51%	3.61%	3.78%	4.38%
November	3.86%	3.94%	4.11%	4.71%
December	4.06%	4.12%	4.28%	4.83%
4th Qtr Average	3.81%	3.89%	4.06%	4.64%
2016 Average	3.67%	3.75%	3.96%	4.72%
Public Utilities	Aaa	Aa	A	Baa
October		3.59%	3.77%	4.34%
November		3.91%	4.08%	4.64%
December		4.11%	4.27%	4.79%
4th Qtr Average		3.87%	4.04%	4.59%
2016 Average		3.73%	3.93%	4.68%
Industrials	Aaa	Aa	A	Baa
October	3.51%	3.63%	3.79%	4.40%
November	3.86%	3.97%	4.14%	4.77%
December	4.06%	4.13%	4.29%	4.85%
4th Qtr Average	3.81%	3.91%	4.07%	4.67%
2016 Average	3.67%	3.77%	3.98%	4.75%

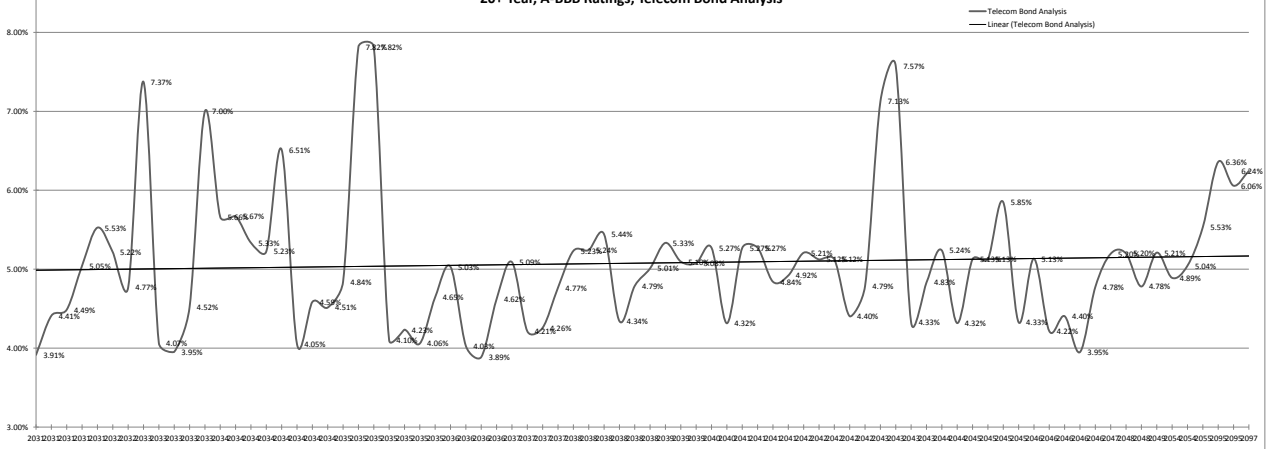
Debt Yield Rate	5.00%
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Secured Debt (Lease) Rate	based on Aa rate 4.00%
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to page 1

Verizon Communications	fx rate nt	6.400	2033	120.65 \$	6,000,000,000	5.30%	4.52%	0.10%	BBB+	\$	7,230,000,000	120.85%	384,000,000	0.001048838	0.002780210	4.68	
Verizon Communications	Notes	2.450	2022	96.59 \$	1,750,000,000	2.64%	3.28%	0.02%	BBB+	\$	1,690,325,000	96.59%	42,875,000	0.00021884	0.000588663	3.12	
Verizon Communications	fx r Notes	5.150	2023	110.57 \$	11,000,000,000	4.66%	3.03%	0.13%	BBB+	\$	12,162,700,000	110.57%	566,500,000	0.001291313	0.003432800	3.48	
Verizon Communications	fx r Notes	4.150	2024	104.49 \$	1,250,000,000	3.97%	3.37%	0.02%	BBB+	\$	1,306,125,000	104.49%	51,875,000	0.000162335	0.000433144	3.46	
Verizon Communications	fx r Notes	5.950	2034	105.3 \$	1,250,000,000	4.80%	4.59%	0.02%	BBB+	\$	1,316,250,000	105.30%	63,125,000	0.000221731	0.000588445	4.62	
Verizon Communications	Notes z100	6.250	2037	118.56 \$	750,000,000	5.27%	4.77%	0.01%	BBB+	\$	889,200,000	118.56%	46,875,000	0.000138322	0.000367714	4.81	
Verizon Communications	Notes	6.400	2038	120.74 \$	1,750,000,000	5.30%	4.79%	0.03%	BBB+	\$	2,112,950,000	120.74%	112,000,000	0.000324253	0.00081687	4.83	
Verizon Communications	Notes	6.900	2038	123.86 \$	1,250,000,000	5.97%	5.01%	0.02%	BBB+	\$	1,568,250,000	123.86%	86,250,000	0.00024231	0.000644207	5.06	
Verizon Communications	Notes	7.350	2039	129.03 \$	1,000,000,000	5.70%	5.10%	0.02%	BBB+	\$	1,290,300,000	129.03%	73,500,000	0.000191710	0.000524153	5.15	
Verizon Communications	Notes	8.950	2039	148.99 \$	1,250,000,000	5.97%	5.08%	0.02%	BBB+	\$	1,674,875,000	148.99%	111,875,000	0.000254922	0.000652611	5.15	
Verizon Communications	fixed rate notes	4.750	2041	98.74 \$	750,000,000	4.81%	4.84%	0.01%	BBB+	\$	740,550,000	98.74%	35,625,000	0.000140461	0.000373398	4.87	
Verizon Communications	fixed rate notes	6.000	2041	114.85 \$	1,000,000,000	5.22%	4.92%	0.02%	BBB+	\$	1,148,500,000	114.85%	60,000,000	0.000190342	0.000506001	4.95	
Verizon Communications	Notes	3.850	2042	96.65 \$	1,250,000,000	4.44%	4.79%	0.02%	BBB+	\$	1,083,125,000	96.65%	48,125,000	0.000231498	0.000615409	4.83	
Verizon Communications	fx r Notes	6.550	2043	124.89 \$	15,000,000,000	5.24%	4.63%	0.28%	BBB+	\$	16,733,500,000	124.89%	882,500,000	0.002603733	0.007453390	4.90	
Verizon Communications	nt	4.272	2036	105.01 \$	2,869,000,000	4.07%	3.89%	0.04%	BBB+	\$	3,012,736,900	105.01%	122,563,680	0.000431455	0.001146971	3.90	
Verizon Communications	nt	4.272	2036	95.71 \$	2,867,000,000	4.46%	4.62%	0.05%	NR	\$	2,744,005,700	95.71%	122,478,240	0.000512652	0.001362825	4.64	
Verizon Communications	nt	4.862	2046	115.43 \$	4,500,000,000	4.21%	3.95%	0.07%	NR	\$	5,194,350,000	115.43%	218,790,000	0.000687702	0.001828173	3.98	
Verizon Communications	fx r Notes	5.012	2054	102.05 \$	5,500,000,000	4.91%	4.89%	0.10%	NR	\$	5,612,750,000	102.05%	276,660,000	0.001046587	0.002766276	4.89	
Verizon Communications	fx r Notes	4.862	2046	101.32 \$	4,489,000,000	4.80%	4.78%	0.08%	NR	\$	4,558,386,800	101.32%	218,741,380	0.000931323	0.002299874	4.81	
Verizon Communications	fx r Notes	5.012	2054	99.47 \$	5,474,000,000	5.04%	5.04%	0.11%	NR	\$	5,444,987,800	99.47%	274,356,880	0.001068191	0.002836659	5.07	
Verizon Communications	fx r Notes	4.400	2034	98.69 \$	2,500,000,000	4.46%	4.51%	0.04%	BBB+	\$	2,467,250,000	98.69%	110,000,000	0.000436611	0.001160679	4.56	
Verizon Communications	fx r Notes	3.500	2024	99.67 \$	2,500,000,000	3.51%	3.58%	0.03%	BBB+	\$	2,491,750,000	99.67%	87,500,000	0.000344097	0.000914742	3.59	
Verizon Communications	nt	4.522	2048	95.89 \$	5,000,000,000	4.72%	4.78%	0.09%	BBB+	\$	4,784,500,000	95.89%	226,100,000	0.000924766	0.002458381	4.81	
Verizon Communications	nt	4.672	2055	86.51 \$	5,500,000,000	5.40%	5.53%	0.12%	BBB+	\$	4,758,050,000	86.51%	258,960,000	0.001177213	0.003129480	4.56	
Verizon Global Funding	deb	7.750	2030	135.26 \$	5,000,000,000	5.73%	4.09%	0.08%	BBB+	\$	6,763,000,000	135.26%	387,500,000	0.000791266	0.002103539	4.38	
Verizon Global Funding	Notes z100	7.750	2032	130.71 \$	400,000,000	5.93%	4.77%	0.01%	BBB+	\$	522,840,000	130.71%	31,000,000	0.000073784	0.000196147	5.00	
Verizon Global Funding	Notes z100	5.850	2035	114.20 \$	1,500,000,000	5.12%	4.65%	0.03%	BBB+	\$	1,713,000,000	114.20%	87,750,000	0.000269650	0.000716832	4.78	
Verizon Perm (bell atlantic)	deb	6.000	2028	104.85 \$	125,000,000	5.72%	5.38%	0.00%	BBB+	\$	131,682,500	104.85%	7,500,000	0.000028033	0.000069206	5.44	
Verizon NE	deb	7.875	2029	122.26 \$	350,000,000	6.44%	5.25%	0.01%	BBB+	\$	427,910,000	122.26%	27,562,500	0.000071060	0.000188904	5.49	
Verizon NJ	deb	8.000	2022	120.56 \$	200,000,000	6.64%	3.04%	0.00%	BBB+	\$	241,120,000	120.56%	16,000,000	0.000023539	0.000062575	3.49	
Verizon NJ	deb	7.850	2029	123.61 \$	150,000,000	6.35%	5.90%	0.00%	BBB+	\$	165,415,000	123.61%	11,775,000	0.000029524	0.000078487	5.34	
Verizon NY (NY Telephone)	deb	7.000	2033	100.00 \$	200,000,000	7.00%	7.00%	0.01%	BBB+	\$	200,000,000	100.00%	14,000,000	0.000054162	0.000143983	7.00	
Verizon NY (NY Telephone)	deb	6.700	2023	100.00 \$	250,000,000	6.70%	6.70%	0.01%	BBB+	\$	250,000,000	100.00%	16,750,000	0.000064801	0.000172265	6.70	
Verizon NY (NY Telephone)	deb	6.500	2028	110.22 \$	100,000,000	5.90%	5.21%	0.00%	BBB+	\$	110,220,000	110.22%	6,500,000	0.000020162	0.000035595	5.29	
GTE Corp	deb	6.840	2028	124.67 \$	2,100,000,000	5.57%	4.01%	0.03%	BBB+	\$	2,618,070,000	124.67%	145,740,000	0.000326143	0.000867013	4.10	
GTE Southwest	1st mtg	8.500	2031	101.71 \$	100,000,000	8.36%	8.28%	0.00%	BB+	\$	101,710,000	101.71%	8,500,000	0.000032052	0.000065206	8.30	
Bell Tel PA	deb	8.350	2030	121.56 \$	175,000,000	6.97%	5.97%	0.00%	BBB+	\$	212,730,000	121.56%	14,612,500	0.000030728	0.000105611	6.03	
Bell Tel PA	deb	8.750	2031	130.11 \$	125,000,000	6.73%	5.53%	0.00%	BBB+	\$	162,637,500	130.11%	10,937,500	0.000026726	0.000071049	5.71	
38 Book Val	3800	sum	4244.38 \$	97,234,000,000	Percent of book	111.69%	1.68%	0.00%	BBB+	\$	107,854,132,200	110.92%	5,52%	\$	5,364,402,680	4.65%	
Windstream Corp	Sr Notes	6.375	2023	89.25 \$	700,000,000	7.14%	8.93%	0.02%	B+	\$	624,750,000	89.25%	44,625,000	0.000241921	0.00201321	8.47	
Windstream Corp	Gid Sr Notes	7.500	2022	93.25 \$	500,000,000	8.04%	9.41%	0.02%	B+	\$	466,250,000	93.25%	37,500,000	0.000181991	0.01881679	9.00	
Windstream Corp	Sr Notes	6.375	2023	93.00 \$	700,000,000	6.85%	8.00%	0.02%	B+	\$	651,000,000	93.00%	44,625,000	0.000216581	0.00230318	7.39	
Windstream Corp	ad Sr Notes	7.500	2023	96.25 \$	600,000,000	7.79%	8.38%	0.02%	B+	\$	577,500,000	96.25%	45,000,000	0.000194487	0.00210875	8.32	
4 Book Val	400	sum	371.75 \$	2,500,000,000	Percent of book	92.94%	0.88%	0.00%	BBB+	\$	2,319,500,000	92.78%	6.87%	\$	171,750,000	8.63%	
Total		\$	258,485,000,000							Total	\$	278,429,458,800	107.72%	5.66%	\$	14,618,524,180	4.90%
Source: Standard & Poor's Bond Guide, January 2017, 2016 Yr End Prices																	
This includes short term. For 20+ year maturities see below																	
Embedded debt rate																	
Weighted average yield to maturity																	
Debt service / Market value																	
5.655%																	
4.8993%																	
5.2504%																	

20+ Year, A-BBB Ratings, Telecom Bond Analysis



DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

TELECOMMUNICATIONS

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

Guideline Companies		Stock Price	Revenues	Cash Flow	Earnings	Dividends	Capital Spending	Bk Value	Common	Calculated Debt	Wtd Avg YTM
Name	Ticker	(YE Adj Close)	Per Share	Per Share	Per Share	Per Share	per share	Stock	Shares	mk to bk	
AT&T Inc	t	42.041	26.68	7.07	2.84	1.92	3.50	20.06	6,141,000,000	106.05%	4.784%
ATN International Inc	atni	80.130	28.35	6.40	1.67	1.30	7.70	50.15	16,139,477	101.98%	
BCE Inc	bce	43.240	18.95	5.84	2.54	2.04	3.20	14.25	870,700,000	119.54%	
Charter	chtr	287.920	107.86	38.78	1.67	nil	19.80	149.27	268,897,793	103.89%	
CenturyLink Inc	ctl	23.780	32.13	9.64	2.45	2.16	5.48	24.64	543,800,000	98.79%	7.095%
Cincinnati Bell	cbb	22.350	28.15	4.51	0.18	nil	6.79	(11.25)	42,026,791	97.50%	6.300%
Comcast Corp	cmcsa	34.525	16.92	3.80	1.74	0.55	1.92	11.35	4,751,603,386	112.41%	3.860%
Consolidated Communications	cnsi	26.461	14.68	3.73	0.29	1.55	2.47	3.38	50,610,000	100.14%	
Frontier	fr	3.380	7.59	1.60	(0.14)	0.42	1.19	2.21	1,172,600,000	98.68%	9.681%
General Communications Inc	gncma	19.450	26.09	5.31	(0.15)	nil	5.43	0.63	35,800,000	104.09%	
Level 3 Communications	lvlt	56.360	22.70	5.35	1.87	nil	3.70	30.35	359,925,515	101.17%	5.097%
Telus Corp	tu	31.850	16.19	4.15	1.54	1.34	3.48	10.01	590,000,000	99.93%	4.404%
Verizon Communications	vz	52.815	30.90	5.80	3.87	2.29	4.18	4.00	4,076,731,752	110.92%	4.456%
Windstream	win	7.330	55.94	9.14	(4.17)	0.60	10.28	1.77	96,300,000	92.78%	8.633%

Value Line March 17, 2017

Yahoo

Value Line

Value Line

Value Line

Value Line

Value Line

Value Line

Value Line

Bond analysis

Bond analysis

									2017 Forecast				
Payout Ratio	Payout Ratio	ROE	Timeliness	Safety	Technical	Income Tax Rate	Return on Total Capital	CF growth	Revenues	CF	Earnings	Dividends	Common
calculated	V L	V L	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	Shares
68%	67%	14.3%	3	1	3	32.7%	8.50%	4.5%	27.05	7.15	2.95	1.96	6,140,000,000
78%	77%	3.4%	4	3	3	42.6%	3.10%	9.0%	32.95	7.65	2.30	1.38	16,700,000
80%	80%	17.8%	2	3	3	26.5%	9.00%	3.0%	19.20	5.85	2.40	2.12	875,000,000
	nil	8.8%	4	3	2	nmf	4.80%	nmf	147.90	31.30	6.30	nil	285,000,000
88%	88%	9.9%		3		38.6%	4.00%	6.0%	31.40	9.10	2.15	2.16	545,000,000
	nmf	nmf	2	4	1	37.5%	nmf	5.5%	28.80	4.40	0.05	nil	42,000,000
32%	31%	15.7%	4	2	3	37.0%	9.10%	6.5%	18.40	4.20	1.90	0.60	4,560,000,000
	nmf	8.7%	3	3	3	60.2%	3.50%	11.0%	14.85	3.95	0.40	1.55	50,500,000
	nmf	1.4%	1	4	2	34.4%	3.30%	10.5%	8.30	1.95	(0.05)	0.42	1,185,000,000
	nil	nmf	4	3	2	nmf	nmf	9.5%	26.45	5.80	(0.05)	nil	35,000,000
	nil	6.2%		3		19.6%	4.40%	11.5%	22.90	5.30	1.55	nil	361,000,000
87%	87%	15.6%	3	2	2	25.6%	7.70%	7.0%	16.94	4.63	1.90	1.46	580,000,000
59%	69%	nmf	2	1	3	32.5%	11.50%	nmf	32.25	5.80	3.90	2.32	4,050,000,000
	nmf	nmf		4		nmf	nmf	2.0%	64.70	10.20	(3.25)	0.60	96,000,000
calculated	Value Line	Value Line	3	3	2	35%	6.26%	7.17%					
							4.80%	6.75%					
							5.74%	7.25%					
							6.25%	7.0%					

Forecast Cash Flow % Change						Forecast Revenue % Change						Income	
2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022	Operating Income	EBITDA
VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	M*	M*
4	4.5	4.5	4.5	4.5	4.5	2	4.5	3.5	3.5	3.5	3.5	24,347,000,000	50,569,000,000
14	3	-1	0.5	10	10.5	7	0.5	-8	-8.5	10.5	10.5	49,797,000	126,716,000
7	4.5	3.5	2	1	2	5	2.5	3	2	-1.5	0.5	3,773,134,328	6,473,134,328
	10	9.5	8	15	15		4.5	5	4	12	12	3,355,000,000	10,262,000,000
3.5	5	4.5	6	3.5	2.5	1	3.5	3.5	3	2	2	2,331,000,000	6,254,000,000
8	4.5	4	5.5	5	-0.5	4	-3	-2.5	-2	2	1.5	93,000,000	420,800,000
11	8.5	8.5	8	8	9	12.5	8.5	7.5	6	8.5	8.5	16,859,000,000	26,853,000,000
5	10	9	10	11	11	6	9.5	8	8.5	7	7	87,440,000	288,994,000
3.5	2	2.5	6.5	10	11	-4	-0.5	0.5	3	11.5	11.5	888,000,000	2,939,000,000
6.5	7	8.5	11.5	11.5	11.5	5	4.5	9	8.5	5.5	5.5	79,103,000	280,927,000
	26.5	24.5	25	13.5	11.5		3	3	1.5	3	2	1,444,000,000	2,638,000,000
4.5	6	6	6.5	7	7	3.5	5.5	6.5	6.5	6.5	6.5	1,628,358,209	3,142,537,313
2	2	-4	-3.5	-3	-3	2.5	3	-2.5	-1.5	2	2	27,059,000,000	41,290,000,000
8.5	4.5	2	2	-0.5	NA	8.5	4.5	3	1.5	1	1	515,400,000	1,600,600,000

Balance Sheet						Cash Flow	Fair Value	
Current Assets	PP & E Gross	Intang	Current Liabilities	Long Term Debt	curr long term debt	Depreciation & Amortization	Debt	
M*	M*	M*	M*	M*	M*	M*	10-K	
38,369,000,000	319,648,000,000	131,103,000,000	50,576,000,000	113,681,000,000	9,832,000,000	25,847,000,000	129,858,000,000	105.1%
367,369,000	1,138,362,000	63,320,000	150,105,000	144,383,000	12,440,000	75,980,000	159,900,000	102.0%
3,623,134,328	48,974,626,866	8,953,731,343	7,543,283,582	12,367,164,179	3,647,014,925	2,617,910,448	14,994,776,119	119.5%
3,300,000,000	44,066,000,000	81,924,000,000	9,572,000,000	59,719,000,000	2,028,000,000	6,907,000,000	64,146,000,000	103.9%
5,162,000,000	39,194,000,000	5,166,000,000	5,349,000,000	18,185,000,000	1,503,000,000	3,916,000,000	20,079,000,000	100.4%
229,900,000	3,511,300,000	0	232,900,000	1,199,100,000	7,500,000	182,200,000	1,239,900,000	110.2%
16,361,000,000	85,947,000,000	79,407,000,000	21,535,000,000	55,566,000,000	5,480,000,000	9,558,000,000	66,300,000,000	108.6%
133,201,000	2,400,737,000	31,612,000	150,085,000	0	14,922,000	174,010,000	1,407,630,000	100.1%
1,656,000,000	25,541,000,000	2,662,000,000	2,444,000,000	17,560,000,000	363,000,000	2,031,000,000	17,902,000,000	99.9%
265,395,000	2,614,875,000	358,426,000	183,661,000	1,383,762,000	13,229,000	193,775,000	1,453,512,000	104.1%
2,653,000,000	21,388,000,000	915,000,000	1,471,000,000	10,877,000,000	7,000,000	1,250,000,000	11,137,000,000	102.3%
1,846,268,657	24,556,716,418	7,734,328,358	3,694,776,119	8,659,701,493	1,064,925,373	1,527,611,940	10,099,253,731	116.6%
26,395,000,000	232,215,000,000	95,570,000,000	30,340,000,000	105,433,000,000	2,645,000,000	15,928,000,000	118,534,000,000	109.4%
866,900,000	16,990,400,000	1,320,500,000	1,254,600,000	9,680,600,000	183,600,000	1,263,500,000	9,885,000,000	100.2%
								105.9%
								104.0%

AVERAGE FOURTH QUARTER STOCK PRICE

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

TELECOMMUNICATIONS

								12/30/2016
								Adj Close
ATT	T							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	42.76	42.83	42.45	42.53	16674000	42.04138		42.04
Alaska	ALSK							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	1.65	1.65	1.6	1.64	116700	1.64		1.64
CenturyLink	CTL							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	24.02	24.18	23.68	23.78	6939000	23.78		23.78
Cincinnati Bel	CBB							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	22.45	22.65	22.05	22.35	153800	22.35		22.35
Frontier	FTR							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	3.38	3.42	3.35	3.38	20394600	3.38		3.38
Comcast	CMCSA							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	69.95	70.05	68.93	69.05	24376800	34.525		34.53
Level 3	LVLT							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	56.92	57.14	56.18	56.36	1679200	56.36		56.36
Verizon	VZ							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	53.55	53.64	53.17	53.38	12440800	52.81533		52.82
Windstream	WIN							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	7.52	7.56	7.28	7.33	1577200	7.33		7.33
Telus	TU							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	31.95	31.99	31.7	31.85	263200	31.85		31.85

BCE	BCE							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	43.36	43.44	43.06	43.24	657700	43.24		43.24

Consolidated	CNSL							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	27.05	27.06	26.56	26.85	228400	26.46141		26.46

Shenandoah	SHEN							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	29.05	29.05	26.83	27.3	233900	27.3		27.30

Source:
 finance.yahoo.com
 Historical Stock Quotes
 03/01/2017

Time Warner	TWC							
Date	Open							
12/31/2015	184.97							

Atlantic Tele-	ATNI							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	81.16	81.26	79.47	80.13	52900	80.13		80.13

General Comi	GNCMA							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	19.37	19.55	19.07	19.45	135600	19.45		19.45

Inteliquent	IQNT							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	22.94	22.97	22.83	22.92	123200	22.92		22.92

CHTR								
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	292.16	292.99	285.05	287.92	1327600	287.92		287.92

MBT.TO	CAD							
Date	Open	High	Low	Close	Volume	Adj Close		
12/30/2016	37.97	38.09	37.96	37.96	61900	28.32836		28.33

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2017.

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends *	Dividends + Buybacks	Change in Earnings	Change in Dividends	T.Bill Rate	T.Bond Rate	Bond-Bill	Smoothed Growth	Implied Premium (DDM)	Analyst Growth Estimate	Implied Premium (FCFE)	Implied Premium	ERP/Riskfree Rate
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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%				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%	6.56%	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

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