



# COST OF CAPITAL STUDY

**YIELD CAPITALIZATION  
2020 ASSESSMENT YEAR**

APPENDIX C

## TELECOMMUNICATIONS

<b>EQUITY RATE</b>					<b>8.00%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>						PAGE
CAPM Ex Ante		6.9%				6
<b>DIVIDEND GROWTH MODELS</b>						
Value Line, based on Dividends Growth		8.00%				7
Value Line, based on Earnings Growth		8.00%				8
Value Line, based on Return on Equity		7.75%				10
				<b>RANGE</b>	7-8%	
<b>DEBT RATE</b>					<b>4.25%</b>	11
<b>SECURED DEBT (LEASE) RATE</b>					<b>3.25%</b>	11
<b>MARKET CAPITAL STRUCTURE</b>						
Equity	60%	x	8.00%	=	4.80%	3
Debt	40%	x	4.25%	=	1.70%	3
Marginal Tax Rate	24%	=	(1-.024)	x	1.70%	<u>1.29%</u>

## WEIGHTED AVERAGE COST OF CAPITAL

**6.1%**

rounded

**SUPPORT FOR GUIDELINE COMPANIES**

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 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++	95	20	100	10.1	5.80%	182,122,470,000	52.7%	-	0.0%	163,147,000,000	47.3%	345,269,470,000
ATN International Inc	atni	0.75	B++	35	40	35	nmf	1.20%	676,060,544	88.7%	-	0.0%	86,400,000	11.3%	762,460,544
BCE Inc	bce	0.70	A	100	15	80	17.4	5.60%	16,577,526,000	51.2%	1,461,000,000	4.5%	14,348,461,538	44.3%	32,386,987,538
Charter	chtr	1.05	B++	65	95	5	65.8	nil	31,446,000,219	28.5%	-	0.0%	79,078,000,000	71.5%	110,524,000,219
CenturyLink Inc	ctl	1.10	B	40	5	55	9.4	8.00%	13,356,493,500	27.8%	-	0.0%	34,694,000,000	72.2%	48,050,493,500
Cincinnati Bell	cbb	1.75	C+	10	15	10	nmf	nil	-	nmf	-	-	102,217,000,000	55.3%	184,945,639,500
Comcast Corp	comca	0.85	A	90	90	100	13.3	2.20%	82,728,639,500	44.7%	-	0.0%	2,277,978,000	87.0%	2,619,037,339
Consolidated Communi	cnsi	1.15	C+	10	10	20	nmf	19.85%	341,059,339	13.0%	-	0.0%	14,210,769,231	62.8%	22,615,615,385
Telus Corp	tu	0.60	B++	100	70	90	18.5	4.80%	8,404,846,154	37.2%	-	0.0%	111,489,000,000	63.9%	174,354,129,426
Verizon Communicator	vz	0.70	A++	95	35	65	11.6	4.40%	62,865,129,426	36.1%	-	0.0%	-	-	-
<b>Mean</b>		<b>0.94</b>	<b>B++</b>	<b>64</b>	<b>40</b>	<b>56</b>	<b>20.9</b>	<b>6.48%</b>	<b>44,279,802,742</b>	<b>42.2%</b>		<b>0.5%</b>	<b>57,949,845,419</b>	<b>57.3%</b>	
<b>Weighted Mean</b>									<b>398,518,224,681</b>	<b>43.2%</b>	<b>1,461,000,000</b>	<b>0.16%</b>	<b>521,548,608,769</b>	<b>56.6%</b>	<b>921,527,833,450</b>
<b>Median</b>		<b>0.80</b>		<b>78</b>	<b>28</b>	<b>60</b>	<b>13</b>	<b>5.20%</b>		<b>37.2%</b>		<b>0.0%</b>		<b>62.8%</b>	
<b>Trimmed Mean</b>		<b>0.88</b>		<b>61</b>	<b>37</b>	<b>51</b>	<b>14</b>	<b>5.13%</b>		<b>39.7%</b>		<b>0.0%</b>		<b>59.6%</b>	
<b>Max</b>		<b>1.75</b>		<b>100</b>	<b>95</b>	<b>100</b>	<b>66</b>	<b>19.85%</b>		<b>88.7%</b>		<b>4.5%</b>		<b>87.0%</b>	
<b>Min</b>		<b>0.60</b>		<b>10</b>	<b>5</b>	<b>5</b>	<b>9</b>	<b>1.20%</b>		<b>13.0%</b>		<b>0.0%</b>		<b>11.3%</b>	
<b>Say</b>		<b>0.95</b>								<b>40%</b>		<b>0.0%</b>		<b>60%</b>	<b>100%</b>

**SUPPORT FOR CAPITAL STRUCTURE  
MARKET VALUE**

WASHINGTON STATE DEPARTMENT OF REVENUE  
2020 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	38.56	7,173,000,000	276,618,359,763	60.0%	-	0.0%	184,162,000,000	40.0%	460,780,359,763
ATN International Inc	atni	55.39	16,001,433	886,319,358	91.1%	-	0.0%	86,900,000	8.9%	973,219,358
BCE Inc	bce	46.35	903,900,000	41,895,763,192	70.5%	1,461,000,000	2.5%	16,080,769,231	27.1%	59,437,532,423
Charter	chtr	485.08	209,975,963	101,855,137,402	54.4%	-	0.0%	85,386,000,000	45.6%	187,241,137,402
CenturyLink Inc	ctl	13.21	1,090,326,000	14,403,206,460	28.6%	-	0.0%	35,959,000,000	71.4%	50,362,206,460
Cincinnati Bell	cbb	10.47	50,420,700	527,904,729	20.0%	129,400,000	4.9%	1,981,000,000	75.1%	2,638,304,729
Comcast Corp	cmcsa	44.76	4,553,034,645	203,787,415,484	63.8%	-	0.0%	115,800,000,000	36.2%	319,587,415,484
Consolidated Communicati	cnsi	3.88	71,953,447	279,179,374	11.5%	-	0.0%	2,149,516,000	88.5%	2,428,695,374
Telus Corp	tu	38.73	602,000,000	23,315,460,000	60.7%	-	0.0%	15,070,000,000	39.3%	38,385,460,000
Verizon Communications	vz	60.77	4,135,863,778	251,326,486,765	65.9%	-	0.0%	130,316,000,000	34.1%	381,642,486,765
			<b>Mean</b>		<b>52.6%</b>		<b>0.7%</b>		<b>46.6%</b>	
			<b>Weighted Mean</b>	<b>914,895,232,528</b>	<b>60.9%</b>	<b>1,590,400,000</b>	<b>0.11%</b>	<b>586,991,185,231</b>	<b>39.0%</b>	<b>1,503,476,817,759</b>
			<b>Median</b>		<b>60.4%</b>		<b>0.00%</b>		<b>39.6%</b>	
			<b>Trimmed Mean</b>		<b>53.0%</b>		<b>0.3%</b>		<b>46.1%</b>	
			<b>Max</b>		<b>91.1%</b>		<b>4.9%</b>		<b>88.5%</b>	
			<b>Min</b>		<b>11.5%</b>		<b>0.0%</b>		<b>8.9%</b>	
			<b>Say</b>		<b>60%</b>		<b>0%</b>		<b>40%</b>	<b>100%</b>

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

## SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

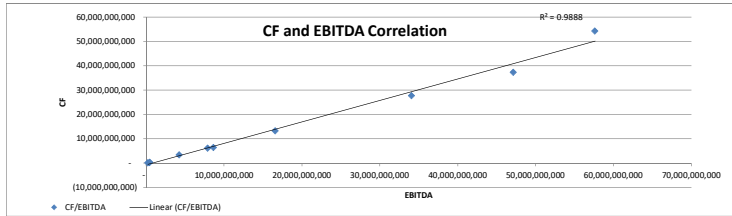
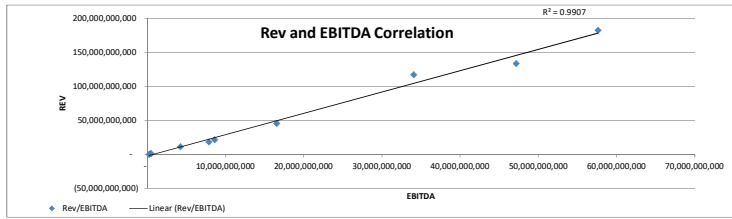
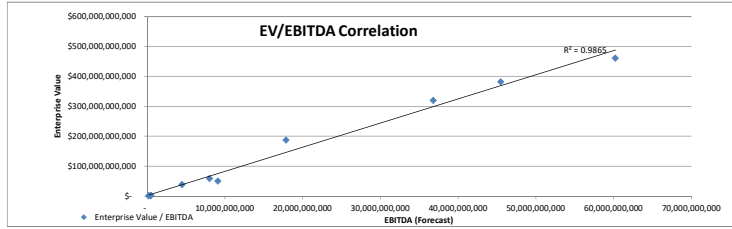
TELECOMMUNICATIONS

Company	Ticker	Stock Close	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Divds Decld	Multiple	Captl Spend	Multiple	Book Value	Multiple
AT&T Inc	t	38.56	24.98	1.5	7.52	5.1	3.58	10.8	2.04	18.9	2.71	14.2	25.39	1.5
ATN International Inc	atni	55.39	27.42	2.0	5.39	10.3	(0.17)	nmf	0.68	81.5	4.54	12.2	42.25	1.3
BCE Inc	bce	46.35	20.16	2.3	6.41	7.2	2.66	17.4	2.39	19.4	3.40	13.6	18.34	2.5
Charter	chtr	485.08	217.95	2.2	55.22	8.8	7.45	65.1	nil		34.27	14.2	149.76	3.2
CenturyLink Inc	ctl	13.21	20.35	0.6	5.65	2.3	1.32	10.0	1.00	13.2	3.30	4.0	12.25	1.1
Cincinnati Bell	cbb	10.47	30.75	0.3	4.95	2.1	(1.13)	nmf	nil		4.50	2.3	(2.60)	nmf
Comcast Corp	cmcsa	44.76	23.93	1.9	5.66	7.9	3.13	14.3	0.84	53.3	2.43	18.4	18.17	2.5
Consolidated Communic	cnsi	3.88	18.57	0.2	5.01	0.8	(0.29)	nmf	0.77	5.0	3.23	1.2	4.74	0.8
Telus Corp	tu	38.73	18.54	2.1	5.31	7.3	2.08	18.6	1.71	22.7	3.62	10.7	13.96	2.8
Verizon Communications	vz	60.77	31.88	1.9	8.90	6.8	4.81	12.6	2.42	25.1	4.34	14.0	15.20	4.0
				<b>1.5</b>		<b>5.9</b>		<b>21.3</b>		<b>29.9</b>		<b>10.5</b>		<b>2.2</b>
				<b>1.9</b>		<b>7.0</b>		<b>14.3</b>		<b>21.0</b>		<b>12.9</b>		<b>2.5</b>
				<b>1.6</b>		<b>6.0</b>		<b>14.8</b>		<b>25.4</b>		<b>10.7</b>		<b>2.1</b>
				<b>2.3</b>		<b>10.3</b>		<b>65.1</b>		<b>81.5</b>		<b>18.4</b>		<b>4.0</b>
				<b>0.2</b>		<b>0.8</b>		<b>10.0</b>		<b>5.0</b>		<b>1.2</b>		<b>0.8</b>
				<b>0.8</b>		<b>3.2</b>		<b>19.6</b>		<b>25.1</b>		<b>5.9</b>		<b>1.1</b>
				<b>0.5</b>		<b>0.5</b>		<b>0.9</b>		<b>0.8</b>		<b>0.6</b>		<b>0.5</b>
				<b>0.8</b>		<b>3.2</b>		<b>17.0</b>		<b>16.2</b>		<b>4.9</b>		<b>1.7</b>
				<b>0.9</b>		<b>3.0</b>		<b>11.7</b>		<b>17.5</b>		<b>5.7</b>		<b>1.3</b>
				<b>2.1</b>		<b>7.8</b>		<b>18.0</b>		<b>32.2</b>		<b>14.1</b>		<b>2.8</b>
				<b>1.50</b>		<b>6.00</b>		<b>17.00</b>		<b>20.00</b>		<b>11.00</b>		<b>2.00</b>

**ENTERPRISE VALUE MULTIPLES**  
 WASHINGTON STATE DEPARTMENT OF REVENUE  
 2020 ASSESSMENT YEAR  
 TELECOMMUNICATIONS

Guideline Companies	Ticker	EV	EBITDA	EBITDA	EV / EBITDA	EV / EBITDA	Annual Change Rate	EBITDA	EV / EBITDA	Sales (Revenue)	EV / Sales	CF	Debt Service	EV / CF
		historic	historic M*	historic	historic M*	(CF growth)	forecast	forecast	forecast	forecast	forecast			
AT&T Inc	t	\$ 460,780,359,763	\$7,630,000,000	\$7,630,000,000	60.00	7.42	-4.50%	60,223,350,000	7.65	183,040,000,000	2.52	54,340,000,000	7,826,885,000	7.41
ATN International Inc	atni	\$ 973,219,358	\$21,809,000	\$21,809,000	4.39	8.94	0.50%	222,918,045	4.37	475,145,000	2.05	96,985,000	3,693,250	9.67
BCE Inc	bce	\$ 59,437,532,423	\$7,880,000,000	\$7,773,846,154	7.54	7.65	2.00%	8,037,600,000	7.39	18,655,000,000	3.19	6,188,000,000	683,432,692	8.65
Charter	chtr	\$ 187,241,137,492	\$6,540,000,000	\$6,855,000,000	11.32	11.11	8.00%	17,863,200,000	10.48	46,145,500,000	4.06	13,222,500,000	3,628,995,000	11.11
CenturyLink Inc	ctl	\$ 50,362,206,460	\$8,609,000,000	\$9,070,000,000	5.85	5.55	6.00%	9,125,540,000	5.52	21,780,000,000	2.31	6,380,000,000	1,528,257,500	6.37
Cincinnati Bell	ccb	\$ 2,638,304,729	\$97,700,000	\$405,100,000	6.63	6.51	5.50%	419,573,500	6.29	1,560,000,000	1.69	275,000,000	84,192,500	7.35
Comcast Corp	comca	\$ 319,587,415,484	\$4,078,000,000	\$4,258,000,000	9.38	9.33	8.00%	38,804,240,000	8.68	117,450,000,000	2.72	27,675,000,000	4,921,500,000	9.80
Consolidated Communication	cnsl	\$ 2,428,695,374	\$462,518,000	\$23,540,000	5.25	4.64	10.00%	508,769,800	4.77	1,345,050,000	1.81	433,650,000	91,354,430	4.63
Telus Corp	tu	\$ 38,985,460,000	\$4,237,692,308	\$4,379,230,769	9.06	8.77	6.50%	4,513,142,208	8.51	11,523,846,154	3.33	3,341,153,846	640,475,000	9.64
Verizon Communications	vz	\$ 381,642,486,765	\$7,152,000,000	\$41,143,000,000	8.99	8.65	-3.50%	45,501,680,000	8.99	134,045,000,000	2.85	37,350,000,000	5,538,450,000	8.90
<b>Mean</b>					<b>7.55</b>	<b>7.86</b>	<b>4.75%</b>		<b>7.21</b>		<b>2.65</b>		<b>8.35</b>	
<b>Median</b>					<b>7.77</b>	<b>8.15</b>	<b>5.75%</b>		<b>7.52</b>		<b>2.62</b>		<b>8.77</b>	
<b>Trimmed Mean</b>					<b>7.48</b>	<b>7.85</b>	<b>5.13%</b>		<b>7.15</b>		<b>2.60</b>		<b>8.47</b>	
<b>Max</b>					<b>11.32</b>	<b>11.11</b>	<b>10.00%</b>		<b>10.48</b>		<b>4.06</b>		<b>11.11</b>	
<b>Min</b>					<b>4.39</b>	<b>4.64</b>	<b>-3.50%</b>		<b>4.37</b>		<b>1.69</b>		<b>4.63</b>	
<b>Std Dev</b>					<b>2.09</b>	<b>1.92</b>	<b>0.04</b>		<b>1.94</b>		<b>0.74</b>		<b>1.92</b>	
<b>Coefficient of Variation</b>					<b>0.28</b>	<b>0.24</b>	<b>0.85</b>		<b>0.27</b>		<b>0.28</b>		<b>0.23</b>	
<b>Harmonic Mean</b>					<b>7.01</b>	<b>7.39</b>	<b>NUM</b>		<b>6.70</b>		<b>2.47</b>		<b>7.87</b>	
<b>Say</b>					<b>7.50</b>	<b>7.50</b>	<b>4.75%</b>		<b>7.25</b>		<b>2.50</b>		<b>8.50</b>	

EBITDA from Morningstar  
 Morningstar-data page



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast
ATN International Inc	4.37
Consolidated Communication	4.77
CenturyLink Inc	5.52
Cincinnati Bell	6.29
BCE Inc	7.39
AT&T Inc	7.65
Verizon Communications	8.35
Telus Corp	8.51
Comcast Corp	8.68
Charter	10.48
Low Average	5.67
Low Median	5.52
Say	5.99
High Average	8.74
High Median	8.50
Say	8.50

Guideline Companies	EV/Sales
Cincinnati Bell	1.69
Consolidated Communication	1.81
ATN International Inc	2.05
CenturyLink Inc	2.31
AT&T Inc	2.52
Comcast Corp	2.72
Verizon Communications	2.85
BCE Inc	3.19
Telus Corp	3.33
Charter	4.06
Low Average	2.07
Low Median	2.05
Say	2.0
High Average	3.23
High Median	3.19
Say	3.0

Guideline Companies	EV/CF
Consolidated Communication	4.63
CenturyLink Inc	6.37
Cincinnati Bell	7.35
AT&T Inc	7.41
BCE Inc	8.65
Verizon Communications	8.90
Telus Corp	8.94
ATN International Inc	9.67
Comcast Corp	9.80
Charter	11.11
Low Average	6.88
Low Median	7.35
Say	7.0
High Average	9.82
High Median	9.67
Say	9.75

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE  
2020 ASSESSMENT YEAR  
TELECOMMUNICATIONS

$$\text{Ex Ante} \\ \text{Ke} = \text{Rf} + \text{B} (\text{Rp})$$

<b>Ke = Cost of Equity</b>				<b>6.9%</b>
				to page 1
Rm =	rate of return	7.15%		
Rf =	risk free rate	2.40%		
Rp =	risk premium	4.75%		
B =	Beta	0.95		page 2

<b>Rp = Risk Premium</b>				<b>4.75%</b>
				to above
<b>Shannon Pratt and Roger Grabowski</b>	Cost of Capital, Applications and Examples, Third Edition, 2008, Page 113	3.5 - 6%		
<b>Dr. Aswath Damodaran</b>	<a href="http://pages.stern.nyu.edu/~adamodar/">http://pages.stern.nyu.edu/~adamodar/</a> 2019 Implied Premium	5.20% 4.72%	chart page 15 adjusted for Rf	
<b>John Graham and Campbell Harvey</b>	Duke CFO magazine Global Business Outlook 4th Qtr 2019	6.81% 6.23% 1.82%	10 year expected return adjusted for Rf Rf rate used in survey	

<b>Rf = Risk Free Rate</b>				<b>2.40%</b>
				to above
<b>Value Line Investment Survey, Selected Yields January 10, 2020, page 1313</b>				
as of 12-31-19	US Treasury Securities year end data			
	5 year	1.69%		
	10 year	1.92%		
	30 year	2.39%		
	30 year Zero	2.42%		

<b>Federal Reserve Statistical Release (<a href="http://www.federalreserve.gov/Releases/H15/Current/">http://www.federalreserve.gov/Releases/H15/Current/</a>)</b>				
January 2, 2020 as of 12-31-19	Treasury Constant Maturities			
	5 year	1.69%		
	10 year	1.92%		
	20 year	2.25%		
	30 year	2.39%		
	20 year TIPS	0.39%	1.86%	
	30 year TIPS	0.58%	1.81%	
				TIPS inflation indication

<b>Inflation</b>				<b>2.00%</b>
				to appraisal template
<b>Value Line Investment Survey, Economic Series January 3, 2020, page 1500</b>	Consumer Price Index Annual Rate of Change 2022-2024		2.50%	
<b>The Livingston Survey December 13, 2019, page 4, 10</b>	Inflation median (measured by the Consumer Price Index) over next 10 years		2.22%	

<b>Gross Domestic Product (GDP) Nominal</b>				<b>3.90%</b>
				real GDP + inflation est
<b>Federal Reserve Projected Long Run Real GDP Growth</b>	Median Projection Value From Dec 11, 2019 Report <a href="https://www.federalreserve.gov/monetarypolicy/files/fomcprojt20191211.pdf">https://www.federalreserve.gov/monetarypolicy/files/fomcprojt20191211.pdf</a>		1.90%	
<b>Congressional Budget Office Real GDP Economic Projections</b>	The Budget and Economic Outlook 2020-2030			Table B-1, pg 75
	Average Percentage Change Year To Year	2020-2024	1.80%	
	<a href="http://www.cbo.gov/publication/56020">http://www.cbo.gov/publication/56020</a>	2025-2030	1.65%	
<b>Federal Reserve Bank of Philadelphia</b>	The Livingston Survey, December 13, 2019, page 4, 10			
	Average Annual Real GDP Growth Rate for Next 10 Years		2.00%	
	<a href="https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey">https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey</a>			

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE  
2020 ASSESSMENT YEAR  
TELECOMMUNICATIONS

## Based on Dividend Growth

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

Ke = Cost of Equity  
D1 = Expected Dividends  
Po = Current Price  
G = Sustainable 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	38.56	2.08	5.39%	4.50%	9.89%	3.90%	9.29%
ATN International Inc	atni	55.39	0.68	1.23%	nil	nmf	2.00%	3.23%
BCE Inc	bce	46.35	2.50	5.39%	4.50%	9.89%	3.90%	9.29%
Charter	chtr	485.08	nil		nil			
CenturyLink Inc	ctl	13.21	1.00	7.57%	-12.50%	nmf	2.00%	9.57%
Cincinnati Bell	cbb	10.47	nil		nil			
Comcast Corp	cmcsa	44.76	0.90	2.01%	11.00%	13.01%	3.90%	5.91%
Consolidated Communications	cnsl	3.88	nil					
Telus Corp	tu	38.73	1.82	4.71%	7.00%	11.71%	3.90%	8.61%
Verizon Communications	vz	60.77	2.42	3.98%	2.00%	5.98%		5.98%
						<b>10.10%</b>	<b>Mean</b>	<b>7.41%</b>
						<b>9.89%</b>	<b>Median</b>	<b>8.61%</b>
						<b>10.50%</b>	<b>Trimmed Mean</b>	<b>7.82%</b>
						<b>13.01%</b>	<b>Max</b>	<b>9.57%</b>
						<b>5.98%</b>	<b>Min</b>	<b>3.23%</b>
						<b>10.00%</b>		<b>8.00%</b>
						<b>Say</b>	<b>8.00%</b>	

Source: Value Line Projections 17-19 to 23-25

## SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

TELECOMMUNICATIONS

### Based on Earnings Growth

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

$K_e$  = Cost of Equity

$D1$  = Expected Dividends

$P_o$  = Current Price

$G$  = Sustainable 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	38.56	2.08	5.39%	5.50%	10.89%	3.90%	9.29%
ATN International Inc	atni	55.39	0.68	1.23%	29.00%	30.23%	3.90%	5.13%
BCE Inc	bce	46.35	2.50	5.39%	5.00%	10.39%	3.90%	9.29%
Charter	chtr	485.08	nil					
CenturyLink Inc	ctl	13.21	1.00	7.57%	1.00%	8.57%	2.00%	9.57%
Cincinnati Bell	cbb	10.47	nil					
Comcast Corp	cmcsa	44.76	0.90	2.01%	13.50%	15.51%	3.90%	5.91%
Consolidated Communications	cnsi	3.88	nil					
Telus Corp	tu	38.73	1.82	4.71%	7.50%	12.21%	3.90%	8.61%
Verizon Communications	vz	60.77	2.42	3.98%	4.00%	7.98%	3.90%	7.88%
						<b>13.68%</b>	<b>Mean</b>	<b>7.96%</b>
						<b>10.89%</b>	<b>Median</b>	<b>8.61%</b>
						<b>11.52%</b>	<b>Trimmed Mean</b>	<b>8.20%</b>
						<b>30.23%</b>	<b>Max</b>	<b>9.57%</b>
						<b>7.98%</b>	<b>Min</b>	<b>5.13%</b>

Source: Value Line Projections 17-19 to 23-25

**11.50%**

**Say**

**8.00%**

**8.00%**



# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE  
2020 ASSESSMENT YEAR  
TELECOMMUNICATIONS

## Based on Earnings Growth

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

$K_e$  = Cost of Equity  
 $D_1$  = Expected Dividends  
 $P_0$  = Current Price  
 $G$  = Sustainable 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	38.56	2.08	5.39%	4.16%	9.55%	3.90%	9.29%
ATN International Inc	atni	55.39	0.68	1.23%	20.00%	21.23%	3.90%	5.13%
BCE Inc	bce	46.35	2.50	5.39%	2.74%	8.13%		8.13%
Charter	chtr	485.08	nil		45.01%			
CenturyLink Inc	ctl	13.21	1.00	7.57%	7.40%	14.97%	3.90%	11.47%
Cincinnati Bell	cbb	10.47	nil		35.80%			
Comcast Corp	cmcsa	44.76	0.90	2.01%	8.61%	10.62%	3.90%	5.91%
Consolidated Communication	cnsi	3.88	nil		2.00%			
Telus Corp	tu	38.73	1.82	4.71%	7.40%	12.11%	3.90%	8.61%
Verizon Communications	vz	60.77	2.42	3.98%	2.34%	6.32%		6.32%
						<b>11.85%</b>	<b>Mean</b>	<b>7.84%</b>
						<b>10.62%</b>	<b>Median</b>	<b>8.13%</b>
						<b>11.08%</b>	<b>Trimmed Mean</b>	<b>7.65%</b>
						<b>21.23%</b>	<b>Max</b>	<b>11.47%</b>
						<b>6.32%</b>	<b>Min</b>	<b>5.13%</b>
Source: Yahoo Finance 5 year growth est						<b>11.00%</b>		<b>8.00%</b>
						<b>Say</b>	<b>8.00%</b>	

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

WASHINGTON STATE DEPARTMENT OF REVENUE  
2020 ASSESSMENT YEAR  
TELECOMMUNICATIONS

**Based on Return on Equity**

**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

$$Ke = (D1 / Po) + G$$

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	b (1-payout ratio)	ROE book	Proj Earnings (E1)	=ROE market	mk:bk	=ROE market	Growth (b*ROE)	Growth (b*ROE)	Growth (b*ROE) book	Ke	Sustainable Reinvestment Growth	Ke (Sus)
AT&T Inc	t	38.56	2.08	5.39%	43.0%	14.00%	3.65	9.46%	1.52	9.22%	4.07%	4.0%	6.02%	9.46%	3.90%	9.29%
ATN International Inc	atni	55.39	0.68	1.23%		0.50%	0.25	0.45%	1.31	0.38%						
BCE Inc	bce	46.35	2.50	5.39%	10.0%	15.50%	2.85	6.15%	2.53	6.13%	0.61%	0.6%	1.55%	6.01%	2.00%	7.39%
Charter	chtr	485.08	nil			8.50%	13.50	2.78%	3.24	2.62%						
CenturyLink Inc	ctl	13.21	1.00	7.57%	24.0%	10.50%	1.35	10.22%	1.08	9.74%	2.45%	2.3%	2.52%	10.02%		10.02%
Cincinnati Bell	cbi	10.47	nil				(0.60)									
Comcast Corp	cmcsa	44.76	0.90	2.01%	74.0%	16.50%	3.35	7.48%	2.46	6.70%	5.54%	5.0%	12.21%	7.55%	3.90%	5.91%
Consolidated Communicati	cnsl	3.88	nil			1.00%	0.45	11.60%	0.82	1.22%						
Telus Corp	tu	38.73	1.82	4.71%	18.0%	15.00%	2.19	5.66%	2.77	5.41%	1.02%	1.0%	2.70%	5.73%	2.00%	6.71%
Verizon Communications	vz	60.77	2.42	3.98%	49.0%	37%	4.95	8.15%	4.00	9.25%	3.99%	4.5%	18.13%	7.97%	3.90%	7.88%
														<b>7.79%</b>	<b>Mean</b>	<b>7.87%</b>
														<b>7.76%</b>	<b>Median</b>	<b>7.64%</b>
														<b>7.75%</b>	<b>Trimmed Mean</b>	<b>7.82%</b>
														<b>10.02%</b>	<b>Max</b>	<b>10.02%</b>
														<b>5.73%</b>	<b>Min</b>	<b>5.91%</b>
														<b>7.75%</b>	<b>Say</b>	<b>7.75%</b>

# SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

TELECOMMUNICATIONS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM
AT&T Inc	t	Baa2	BBB	3.87%
ATN International Inc	atni			
BCE Inc	bce	Baa1	BBB+	
Charter	chtr	Ba1	BB+	4.49%
CenturyLink Inc	ctl	Ba2	BB	6.74%
Cincinnati Bell	cbb		B	
Comcast Corp	cmcsa	A3	A-	3.20%
Consolidated Communications Ho	cnsl		B	
Telus Corp	tu	Baa1	BBB+	3.51%
Verizon Communications	vz	Baa1	BBB+	3.35%
<b>Overall Average Debt Rating</b>		<b>Baa2</b>	<b>BBB-</b>	<b>4.19%</b>

bond analysis, A-BBB- bonds

All issues 20+ year maturities.

<b>Guideline Companies, All Ratings</b>	<b>3.68%</b>	<b>4.00%</b>
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bond analysis page 12

## Mergent's Bond Record January 2020, page 234

Corporate	Aaa	Aa	A	Baa
October	3.01%	3.13%	3.37%	3.93%
November	3.06%	3.16%	3.40%	3.94%
December	3.01%	3.11%	3.36%	3.88%
<b>4th Qtr Average</b>	<b>3.03%</b>	<b>3.13%</b>	<b>3.38%</b>	<b>3.92%</b>
<b>2019 Average</b>	<b>3.39%</b>	<b>3.53%</b>	<b>3.77%</b>	<b>4.38%</b>
Public Utilities	Aaa	Aa	A	Baa
October		3.24%	3.39%	3.72%
November		3.25%	3.43%	3.76%
December		3.22%	3.40%	3.73%
<b>4th Qtr Average</b>		<b>3.24%</b>	<b>3.41%</b>	<b>3.74%</b>
<b>2019 Average</b>		<b>3.61%</b>	<b>3.77%</b>	<b>4.19%</b>
Industrials	Aaa	Aa	A	Baa
October	3.01%	3.01%	3.35%	4.12%
November	3.06%	3.06%	3.37%	4.12%
December	3.01%	3.00%	3.32%	4.03%
<b>4th Qtr Average</b>	<b>3.03%</b>	<b>3.02%</b>	<b>3.35%</b>	<b>4.09%</b>
<b>2019 Average</b>	<b>3.39%</b>	<b>3.45%</b>	<b>3.76%</b>	<b>4.55%</b>

<b>Debt Yield Rate</b>	<b>4.25%</b>
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<b>Secured Debt (Lease) Rate</b>	based on Aa rate <b>3.25%</b>
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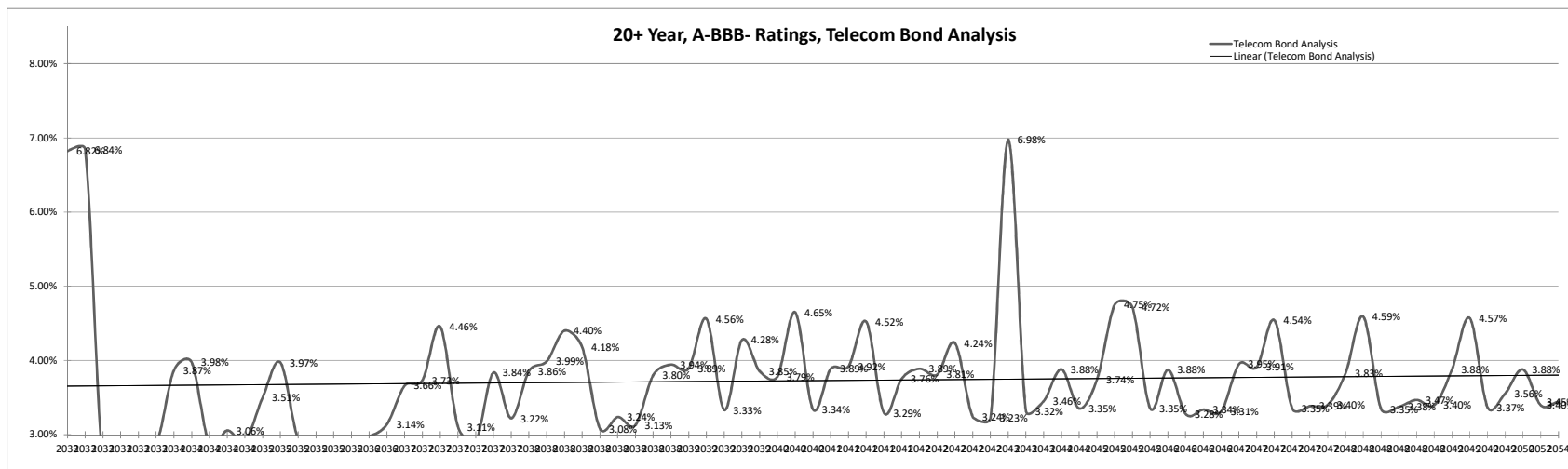
to page 1



Telus	Sr unsecured note	4.600	2048	119.84 \$	750,000,000	3.84%	3.47%	0.01%	Baa1	\$	898,800,000	119.84%	\$	34,500,000	0.000147219	0.02081381	3.49		
Telus	Sr unsecured note	4.300	2049	113.12 \$	500,000,000	3.80%	3.56%	0.01%	Baa2	\$	565,600,000	113.12%	\$	21,500,000	0.000100716	0.01423923	3.57		
	<b>2 Book Value</b>	<b>200</b>	<b>sum</b>	<b>232.96 \$</b>	<b>1,250,000,000</b>	<b>Percent of book</b>	<b>116.48%</b>	<b>0.02%</b>		<b>\$</b>	<b>1,464,400,000</b>	<b>117.15%</b>	<b>4.48%</b>			<b>3.505%</b>			
Verizon Communications	fx rt Notes	4.672	2055	122.46 \$	5,500,000,000	3.82%	3.54%	0.11%	BBB+	\$	6,735,300,000	122.46%		256,960,000	0.001100181	0.002896880	3.55		
Verizon Communications	fx rt Notes	5.012	2054	130.84 \$	5,500,000,000	3.83%	3.45%	0.11%	BBB+	\$	7,196,200,000	130.84%		275,660,000	0.001072413	0.002823754	3.47		
Verizon Communications	sr rt	4.522	2048	119.89 \$	5,000,000,000	3.77%	3.40%	0.10%	BBB+	\$	5,994,500,000	119.89%		226,100,000	0.000961263	0.002551094	3.43		
Verizon Communications	fx rt Notes	5.500	2047	136.24 \$	1,500,000,000	4.04%	3.40%	0.03%	BBB+	\$	2,043,600,000	136.24%		82,500,000	0.000288819	0.000760488	3.44		
Verizon Communications	nt	4.862	2046	125.85 \$	4,500,000,000	3.86%	3.34%	0.09%	BBB+	\$	5,663,250,000	125.85%		218,790,000	0.000865057	0.002239464	3.38		
Verizon Communications	fx rt Notes	4.125	2046	113.81 \$	1,500,000,000	3.62%	3.31%	0.03%	BBB+	\$	1,707,150,000	113.81%		61,875,000	0.000281309	0.000740714	3.34		
Verizon Communications	fx rt Notes	6.550	2043	147.86 \$	15,000,000,000	4.43%	3.46%	0.29%	BBB+	\$	22,179,000,000	147.86%		982,500,000	0.002922692	0.007722051	3.55		
Verizon Communications	Notes	3.850	2042	109.57 \$	1,250,000,000	3.51%	3.23%	0.02%	BBB+	\$	1,369,625,000	109.57%		48,125,000	0.000228176	0.000609080	3.24		
Verizon Communications	fixed rate notes	4.750	2041	121.45 \$	1,750,000,000	3.91%	3.29%	0.01%	BBB+	\$	910,875,000	121.45%		35,625,000	0.000139898	0.000368128	3.36		
Verizon Communications	fixed rate notes	6.000	2041	131.68 \$	1,000,000,000	4.56%	3.76%	0.02%	BBB+	\$	1,316,800,000	131.68%		60,000,000	0.000212561	0.000559653	3.81		
Verizon Communications	Notes	7.350	2039	138.73 \$	1,000,000,000	5.30%	4.28%	0.02%	BBB+	\$	1,387,300,000	138.73%		73,500,000	0.000242054	0.000637351	4.36		
Verizon Communications	Notes	8.950	2039	166.52 \$	1,250,000,000	5.37%	3.85%	0.03%	BBB+	\$	2,081,500,000	166.52%		111,875,000	0.000272666	0.000717956	3.97		
Verizon Communications	Notes	6.400	2038	132.74 \$	1,750,000,000	4.82%	3.80%	0.04%	BBB+	\$	2,322,950,000	132.74%		112,000,000	0.000376665	0.000991793	3.87		
Verizon Communications	Notes	6.900	2038	136.85 \$	1,250,000,000	5.04%	3.94%	0.03%	BBB+	\$	1,710,625,000	136.85%		86,250,000	0.000279020	0.000734686	4.03		
Verizon Communications	Notes	6.250	2037	129.07 \$	750,000,000	4.84%	3.84%	0.02%	BBB+	\$	968,025,000	129.07%		46,875,000	0.000162927	0.000429003	3.92		
Verizon Communications	fx rt Notes	5.250	2037	125.65 \$	3,000,000,000	4.18%	3.22%	0.05%	BBB+	\$	3,769,500,000	125.65%		157,500,000	0.000546870	0.001439959	3.29		
Verizon Communications	fx rt Notes	4.272	2036	113.69 \$	2,867,000,000	3.76%	3.14%	0.05%	BBB+	\$	3,259,492,300	113.69%		122,478,240	0.000559840	0.001342457	3.18		
Verizon Global Funding	Notes	5.850	2035	134.06 \$	1,000,000,000	4.36%	2.93%	0.02%	BBB+	\$	1,340,600,000	134.06%		58,500,000	0.000165939	0.000436933	3.1		
Verizon Communications	fx rt Notes	5.050	2034	121.76 \$	1,250,000,000	4.15%	3.06%	0.02%	BBB+	\$	1,522,000,000	121.76%		63,125,000	0.000216323	0.000569598	3.11		
Verizon Communications	fx rt Notes	4.400	2034	116.57 \$	2,500,000,000	3.78%	2.92%	0.04%	BBB+	\$	2,909,250,000	116.57%		110,000,000	0.000412471	0.001036075	2.99		
Verizon Communications	fx rate nt	6.400	2033	135.7 \$	6,000,000,000	4.72%	2.94%	0.10%	BBB+	\$	8,142,000,000	135.70%		384,000,000	0.000999786	0.002632531	3.17		
Verizon Communications	fx rt Notes	4.500	2033	116.84 \$	3,000,000,000	3.85%	2.88%	0.05%	BBB+	\$	3,505,200,000	116.84%		130,000,000	0.000488383	0.001285957	2.98		
	<b>22 Book Val</b>	<b>2200</b>	<b>sum</b>	<b>2827.63 \$</b>	<b>67,117,000,000</b>	<b>Percent of book</b>	<b>128.53%</b>	<b>1.27%</b>		<b>\$</b>	<b>88,034,742,300</b>	<b>131.17%</b>	<b>5.53%</b>	<b>\$</b>	<b>3,709,238,240</b>		<b>3.95%</b>		
	<b>Total</b>			<b>\$</b>	<b>176,725,322,000</b>					<b>Total</b>	<b>\$</b>	<b>219,961,218,620.40</b>	<b>124.47%</b>	<b>5.41%</b>	<b>\$</b>	<b>9,563,400,602</b>	<b>3.68%</b>	<b>4.254%</b>	<b>3.944</b>

Source: FINRA , March 2020, 2019 Yr End Prices

Embedded debt rate 5.4114%  
 Weighted average yield to maturity 3.6819%  
 Debt service / Market value 4.3478%





**DATA INPUT**

WASHINGTON STATE DEPARTMENT OF REVENUE  
2020 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	Payout Ratio	Payout Ratio	ROE	Timeliness	Safety	Technical	Income Tax Rate	Return on Total Capital	CF growth	
Name	Ticker	(YE Adj) Close	Per Share	Per Share	Per Share	Per Share	per share	Stock	Shares	mk to bk		calculated	V L	V L	VL	VL	VL	VL	VL	VL	
AT&T Inc	t	38.564	24.98	7.52	3.58	2.04	2.71	25.39	7,173,000,000	120.15%	3.875%	57%	57%	14.3%	3	1	2	18.9%	9.10%	3.5%	
ATN International Inc	atni	55.390	27.42	5.39	(0.17)	0.68	4.54	42.25	16,001,433	100.58%		-400%	nmf	nmf	4	3	5	44.8%	nmf	7.0%	
BCE Inc	bce	46.350	20.16	6.41	2.66	2.39	3.40	18.34	903,900,000	112.07%		90%	90%	14.5%	2	2	3	25.5%	7.10%	5.0%	
Charter	chtr	485.080	217.95	55.22	7.45	nil	34.27	149.76	209,975,963	119.04%	4.487%		nil	5.3%	2	3	3	18.1%	3.30%	9.5%	
CenturyLink Inc	ctl	13.210	20.35	5.65	1.32	1.00	3.30	12.25	1,090,326,000	103.92%	7.102%	76%	76%	10.5%	3	3	3	25.0%	2.50%	0.5%	
Cincinnati Bell	cbi	10.470	30.75	4.95	(1.13)	nil	4.50	(2.60)	50,420,700	101.29%			nmf	nmf		4			nmf	nmf	4.0%
Comcast Corp	cmcsa	44.759	23.93	5.66	3.13	0.84	2.43	18.17	4,553,034,645	123.28%	3.201%	27%	26%	17.4%	2	2	3	20.6%	9.00%	9.5%	
Consolidated Communications H	cnst	3.880	18.57	5.01	(0.29)	0.77	3.23	4.74	71,953,447	94.36%		-266%	nmf	nmf		4			nmf	nmf	11.5%
Telus Corp	tu	38.730	18.54	5.31	2.08	1.71	3.62	13.96	602,000,000	117.15%	3.505%	82%	82%	15.0%	2	2	3	19.5%	8.00%	7.5%	
Verizon Communications	vz	60.768	31.88	8.90	4.81	2.42	4.34	15.20	4,135,863,778	131.17%	3.355%	50%	51%	37.0%	1	1	2	25.0%	16.50%	2.0%	
Value Line March 13, 2020	Yahoo		Value Line	Value Line	Value Line	Value Line	Value Line	Value Line	Value Line	Bond analysis	Bond analysis	calculated	Value Line	Value Line				25%	7.33%	6.00%	8.00%
										112.30%									7.30%	6.00%	6.00%
										124.47%		-35%	64%	16.3%					7.00%	6.00%	6.00%
										124.47%		53.6%	66.5%	14.5%					7.00%	6.00%	6.00%
										119.12%			53.5%	12.2%					5.60%	6.00%	6.00%

2020 Forecast						Forecast Dividends % Change						Forecast Earnings % Change						Forecast Cash Flow % Change							
Revenues	CF	Earnings	Dividends	Common	P/E	2020	2021	2022	2023	2024	2025	2020	2021	2022	2023	2024	2025	2020	2021	2022	2023	2024	2025		
VL	VL	VL	VL	Shares	calc	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	
25.60	7.60	3.65	2.08	7,150,000,000	10.57																				
29.15	5.95	0.25	0.68	16,300,000	221.56	4	4.5	4	4.5	4.5	4.5	7	6.5	5.5	7	5.5	5.5	4.5	4.5	4.5	2.5	4.5	4.5	4.5	4.5
20.50	6.80	2.85	2.50	910,000,000	16.26	6.5	6.5	5.5	-6	-4	-4	10.5	12	10.5	14	16	16	0.5	10	8	9.5	4.5	4.5	4.5	4.5
225.10	64.50	13.50	nil	205,000,000	35.93		1	4	4.5	4.5	4	7	3	4	5	4.5	4.5	2	1	3.5	5.5	5	5.5	5.5	5.5
19.80	5.80	1.35	1.00	1,100,000,000	9.79	-3.5	-1.5	-8.5	-9.5	-12	-12	19.5	14	6.5	2.5	1	1	6	3.5	0.5	-0.5	0.5	0.5	0.5	0.5
31.20	5.50	(0.60)	nil	50,000,000	nmf	0	0	0	0	0	0		-1	-10.5	-23	-1.5	-1.5	5.5	5	-2.5	-3	4	4	4	4
26.10	6.15	3.35	0.90	4,500,000,000	13.36	13	10	8	12	11	11	10	8	11	12.5	13.5	13.5	8	8	8.5	9.5	9.5	9.5	9.5	9.5
18.30	5.90	0.45	nil	73,500,000	8.62	0	0	0	0	0	0	15.5	28.5	34	34			10	11	14.5	16	13	13	13	13
19.38	5.62	2.19	1.82	595,000,000	17.67	10	9	8	7	7	7	10	9	9	8.5	7.5	7.5	6.5	7	7	7.5	7	8	8	8
32.30	9.00	4.95	2.42	4,150,000,000	12.28	2.5	2	2	2	2	2	8	3	2	4.5	4	4	-3.5	-3	-4	-3.5	2	2	2	2
					avg	38.45																			
					med	13.36																			
					trimmed	16.55																			
					max	221.56																			
					min	8.62																			
					std	69.16																			



Forecast Revenue % Change						Income		Balance Sheet						Cash Flow		Fair Value	
2020	2021	2022	2023	2024	2025	Operating Income		Current Assets		PP & E Gross	Intang	Current Liabilities		Long Term Debt	curr long term debt	Depreciation & Amortization	Debt
VL	VL	VL	VL	VL	VL	M*	M*	M*	M*	M*	M*	M*	M*	M*	M*	M*	10-K
3.5	3.5	2	1	1	1	29,413,000,000	62,137,000,000	<b>54,761,000,000</b>	357,577,000,000	183,009,000,000	<b>68,911,000,000</b>	151,309,000,000	11,834,000,000	28,217,000,000	184,162,000,000		
-8.5	10.5	7.5	7.5	3.5	3.5	132,684,000	108,866,000	<b>228,723,000</b>	1,306,318,000	101,127,000	<b>119,669,000</b>	82,676,000	3,750,000	89,125,000	86,900,000		
2	-1.5	1.5	2	2	2	4,496,923,077	7,773,846,154	<b>4,246,153,846</b>	59,510,000,000	16,742,307,692	<b>7,520,769,231</b>	14,348,461,538		3,383,076,923	16,080,769,231		
4	12	12.5	10	11	11	6,614,000,000	16,855,000,000	<b>6,471,000,000</b>	63,339,000,000	86,116,000,000	<b>12,385,000,000</b>	76,557,000,000	3,714,000,000	9,926,000,000	85,386,000,000		
3	2	-1	-3.5	-2.5	-2.5	3,780,000,000	9,070,000,000	<b>4,768,000,000</b>	57,111,000,000	22,424,000,000	<b>7,258,000,000</b>	33,736,000,000	2,716,000,000	4,829,000,000	35,959,000,000		
-2	2	2	5.5	2	2	92,800,000	405,100,000	<b>403,800,000</b>	4,781,200,000	192,000,000	<b>523,500,000</b>	1,933,400,000	22,300,000	304,900,000	1,981,000,000		
6	8.5	10	7.5	9	9	21,125,000,000	34,258,000,000	<b>25,392,000,000</b>	101,561,000,000	121,643,000,000	<b>30,292,000,000</b>	97,765,000,000	4,452,000,000	12,953,000,000	115,800,000,000		
8.5	7	11	7	4	4	81,281,000	523,540,000	<b>176,867,000</b>	4,064,359,000	331,890,000	<b>244,296,000</b>	2,250,677,000	27,301,000	381,237,000	2,149,516,000		
6.5	6.5	5.5	5.5	7	7	2,255,384,615	4,379,230,769	<b>3,348,461,538</b>	29,550,000,000	13,227,692,308	<b>4,287,692,308</b>	13,186,153,846	1,101,538,462	1,982,307,692	15,070,000,000		
-1.5	2	0.5	1.5	1.5	1.5	30,470,000,000	44,145,000,000	<b>37,473,000,000</b>	288,428,000,000	121,452,000,000	<b>44,868,000,000</b>	100,712,000,000	10,777,000,000	16,682,000,000	130,316,000,000		

## AVERAGE FOURTH QUARTER STOCK PRICE

WASHINGTON STATE DEPARTMENT OF REVENUE

2020 ASSESSMENT YEAR

TELECOMMUNICATIONS

								<b>12/31/2019</b>
ATT	T							<b>Adj Close</b>
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	39.01	39.11	38.86	39.08	38.56383	20216500	<b>38.56</b>	
CenturyLink	CTL							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	13.08	13.23	12.97	13.21	13.21	8941500	<b>13.21</b>	
Cincinnati Bell	CBB							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	10.49	10.51	10.47	10.47	10.47	1006500	<b>10.47</b>	
Comcast	CMCSA							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	45.12	45.18	44.77	44.97	44.75859	13881700	<b>44.76</b>	
Verizon	VZ							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	61.21	61.4	60.94	61.4	60.76759	8466700	<b>60.77</b>	
Telus	TU							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	38.56	38.82	38.56	38.73	38.73	416200	<b>38.73</b>	
BCE	BCE							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	46.28	46.39	46.19	46.35	46.35	597600	<b>46.35</b>	
Consolidated (CNSL								
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	3.86	3.93	3.83	3.88	3.88	820500	<b>3.88</b>	
ATN Internatic	ATNI							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	55.9	56.85	55.39	55.39	55.39	147400	<b>55.39</b>	
CHTR								
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2019	482.3	487.08	481.97	485.08	485.08	757100	<b>485.08</b>	

Source:

finance.yahoo.com

Historical Stock Quotes

01/14/2020

# IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2020

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	ends + Buy	Change in Earnings	Change in Dividend	T.Bill Rate	T.Bond Rate	Bond-Bill	Adjusted Growth	Growth Excl Premium	Implied Premium	ERP/Riskfree	
1960	5.34%	3.41%	58.11	3.10	1.98				2.66%	2.76%	0.10%	2.45%				
1961	4.71%	2.85%	71.55	3.37	2.04		8.60%	2.91%	2.13%	2.35%	0.22%	2.41%	2.92%		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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.45	
1995	5.74%	2.30%	615.93	37.70	14.17		18.74%	6.00%	3.50%	5.57%	2.07%	5.65%	2.44%	6.50%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	2.32	
2017	4.67%	1.86%	2673.61	124.94	49.73	108.28	14.77%	10.44%	1.39%	2.41%	1.02%	3.22%	2.36%	7.05%	2.11	
2018	5.92%	2.14%	2506.85	148.34	53.61	136.65	18.73%	7.80%	2.37%	2.68%	0.31%	3.24%	2.50%	4.12%	2.22	
2019	5.03%	1.82%	3230.78	162.35	58.80	150.50	9.44%	9.68%	1.55%	1.92%	0.37%	2.57%	3.96%	5.20%	2.71	

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