



# COST OF CAPITAL STUDY

**YIELD CAPITALIZATION  
2018 ASSESSMENT YEAR**

APPENDIX C

## TELECOMMUNICATIONS

<b>EQUITY RATE</b>					<b>8.75%</b>	
<b>CAPITAL ASSET PRICING MODEL</b>						PAGE
CAPM Ex Ante		7.0%				6
<b>DIVIDEND GROWTH MODELS</b>						
Value Line, based on Dividends Growth		9.00%				7
Value Line, based on Earnings Growth		9.00%				8
Value Line, based on Return on Equity		6.50%				10
			<b>RANGE</b>		6.5% - 9.0%	
<b>DEBT RATE</b>					<b>4.80%</b>	11
<b>SECURED DEBT (LEASE) RATE</b>					<b>3.75%</b>	11
<b>MARKET CAPITAL STRUCTURE</b>						
Equity	60%	x	8.75%	=	5.25%	3
Debt	40%	x	4.80%	=	1.92%	3
Marginal Tax Rate	24%	=	(1-.024)	x	1.92%	<u>1.46%</u>

**WEIGHTED AVERAGE COST OF CAPITAL** **6.7%**

rounded

**SUPPORT FOR GUIDELINE COMPANIES**

WASHINGTON STATE DEPARTMENT OF REVENUE

2018 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	12.1	5.50%	140,897,480,000	46.2%	-	0.0%	164,346,000,000	53.8%	305,243,480,000
ATN International Inc	atni	0.75	B++	55	50	45	38.8	1.10%	824,645,488	84.1%	-	0.0%	155,792,000	15.9%	980,437,488
BCE Inc	bce	0.75	B++	100	25	75	18.0	5.50%	15,587,300,000	48.1%	1,480,000,000	4.6%	15,334,126,984	47.3%	32,401,426,984
Charter	chtr	0.95	B	60	100	5	nmf	nil	39,083,988,052	35.8%	-	0.0%	70,231,000,000	64.2%	109,314,988,052
CenturyLink Inc	ctl	1.00	B	50	10	45	11.4	12.00%	23,521,718,000	38.4%	-	0.0%	37,726,000,000	61.6%	61,247,718,000
Cincinnati Bell	cbb	1.30	C+	25	15	5	nmf	nil	-	nmf	-	0.0%	-	-	-
Comcast Corp	comca	0.90	A	90	100	90	17.9	2.10%	68,599,383,411	51.5%	-	0.0%	64,556,000,000	48.5%	133,155,383,411
Consolidated Communi	cnsi	0.95	C++	45	30	15	nmf	13.12%	568,331,633	19.5%	-	0.0%	2,341,210,000	80.5%	2,909,541,633
Frontier	frt	1.20	C	10	5	15	nmf	nil	2,602,451,860	12.9%	-	0.0%	17,626,000,000	87.1%	20,228,451,860
Telus Corp	tu	0.60	B++	100	85	90	19.1	4.50%	6,526,111,111	37.4%	-	0.0%	10,920,634,921	62.6%	17,446,746,032
Verizon Communicatio	vz	0.80	A++	95	30	65	13.0	4.80%	44,670,373,375	27.6%	-	0.0%	117,095,000,000	72.4%	161,765,373,375
<b>Mean</b>		<b>0.90</b>	<b>B+</b>	<b>66</b>	<b>43</b>	<b>50</b>	<b>18.6</b>	<b>6.08%</b>	<b>34,288,178,293</b>	<b>40.1%</b>		<b>0.5%</b>	<b>50,033,176,390</b>	<b>59.4%</b>	
<b>Weighted Mean</b>		<b>0.90</b>							<b>342,881,782,931</b>	<b>40.6%</b>	<b>1,480,000,000</b>	<b>0.18%</b>	<b>500,331,763,905</b>	<b>59.2%</b>	<b>844,693,546,836</b>
<b>Median</b>		<b>0.89</b>						<b>5.15%</b>		<b>37.9%</b>	<b>0.0%</b>		<b>62.1%</b>		
<b>Trimmed Mean</b>		<b>0.89</b>						<b>5.73%</b>		<b>38.1%</b>	<b>0.0%</b>		<b>61.4%</b>		
<b>Max</b>		<b>1.30</b>						<b>13.12%</b>		<b>84.1%</b>	<b>4.6%</b>		<b>87.1%</b>		
<b>Min</b>		<b>0.60</b>						<b>1.10%</b>		<b>12.9%</b>	<b>0.0%</b>		<b>15.9%</b>		
<b>Say</b>		<b>0.90</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  
2018 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	38.372	6,142,000,000	235,679,380,630	57.6%	-	0.0%	173,758,000,000	42.4%	409,437,380,630
ATN International Inc	atni	55.260	16,028,095	885,712,498	84.8%	-	0.0%	159,200,000	15.2%	1,044,912,498
BCE Inc	bce	48.010	901,000,000	43,257,008,198	70.2%	1,480,000,000	2.4%	16,903,174,603	27.4%	61,640,182,801
Charter	chtr	335.960	238,506,060	80,128,493,771	52.4%	-	0.0%	72,883,000,000	47.6%	153,011,493,771
CenturyLink Inc	ctl	16.680	1,069,169,000	17,833,738,920	32.4%	-	0.0%	37,293,000,000	67.6%	55,126,738,920
Cincinnati Bell	cbb	20.850	42,182,031	879,495,346	31.8%	129,400,000	4.7%	1,758,000,000	63.5%	2,766,895,346
Comcast Corp	cmcsa	39.892	4,644,508,017	185,278,704,525	72.1%	-	0.0%	71,700,000,000	27.9%	256,978,704,525
Consolidated Communication	cnsl	11.813	70,776,044	836,070,330	26.9%	-	0.0%	2,277,435,000	73.1%	3,113,505,330
Frontier	fttr	6.760	78,458,000	530,376,080	3.5%	-	0.0%	14,650,000,000	96.5%	15,180,376,080
Telus Corp	tu	37.870	595,000,000	22,532,649,405	66.6%	-	0.0%	11,313,492,063	33.4%	33,846,141,468
Verizon Communications	vz	52.334	4,079,486,153	213,495,501,972	62.2%	-	0.0%	129,678,000,000	37.8%	343,173,501,972
			<b>Mean</b>		<b>50.9%</b>		<b>0.6%</b>		<b>48.4%</b>	
			<b>Weighted Mean</b>	<b>801,337,131,676</b>	<b>60.0%</b>	<b>1,609,400,000</b>	<b>0.12%</b>	<b>532,373,301,667</b>	<b>39.9%</b>	<b>1,335,319,833,342</b>
			<b>Median</b>		<b>57.6%</b>		<b>0.00%</b>		<b>42.4%</b>	
			<b>Trimmed Mean</b>		<b>52.4%</b>		<b>0.3%</b>		<b>46.8%</b>	
			<b>Max</b>		<b>84.8%</b>		<b>4.7%</b>		<b>96.5%</b>	
			<b>Min</b>		<b>3.5%</b>		<b>0.0%</b>		<b>15.2%</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

2018 ASSESSMENT YEAR

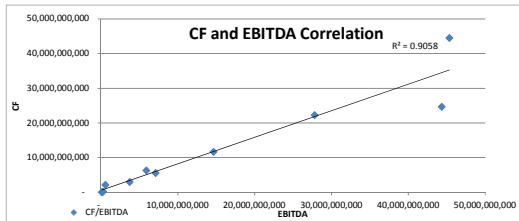
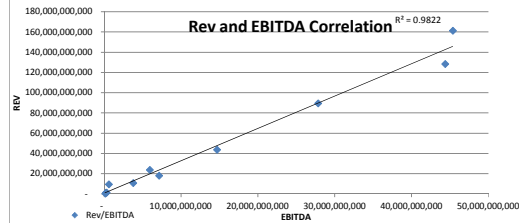
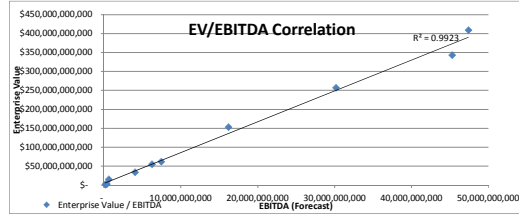
TELECOMMUNICATIONS

Company	Ticker	Stock Close	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Divds Decid	Multiple	Captl Spend	Multiple	Book Value	Multiple
AT&T Inc	t	38.372	26.15	1.5	7.04	5.5	3.05	12.6	1.96	19.6	3.51	10.9	22.94	1.7
ATN International Inc	atni	55.260	29.80	1.9	7.00	7.9	1.62	34.1	1.19	46.4	8.65	6.4	51.45	1.1
BCE Inc	bce	48.010	19.68	2.4	5.85	8.2	2.43	19.8	2.17	22.1	3.58	13.4	17.30	2.8
Charter	chtr	335.960	174.34	1.9	46.89	7.2	2.19	153.4	nil		36.40	9.2	163.87	2.1
CenturyLink Inc	ctl	16.680	16.60	1.0	4.65	3.6	1.58	10.6	2.16	7.7	2.90	5.8	22.00	0.76
Cincinnati Bell	cbb	20.850	30.55	0.68	4.50	4.6	(0.08)	nmf	nil		5.00	4.2	(6.00)	nmf
Comcast Corp	cmcsa	39.892	18.20	2.2	4.33	9.2	2.06	19.4	0.61	65.4	2.06	19.4	14.77	2.70
Consolidated Communica	cnsl	11.813	14.97	0.8	3.45	3.4	(0.79)	nmf	1.55	7.6	2.56	4.6	8.03	1.5
Frontier	fr	6.760	113.75	0.06	24.04	0.3	(3.65)	nmf	3.37	2.0	17.91	0.4	33.17	0.20
Telus Corp	tu	37.870	17.75	2.1	4.87	7.8	1.95	19.4	1.55	24.5	4.11	9.2	10.97	3.5
Verizon Communications	vz	52.334	30.89	1.7	5.80	9.0	3.75	14.0	2.33	22.5	4.23	12.4	10.95	4.8
				<b>Mean</b>		<b>1.5</b>		<b>6.1</b>		<b>35.4</b>		<b>24.2</b>		<b>8.7</b>
				<b>Median</b>		<b>1.7</b>		<b>7.2</b>		<b>19.4</b>		<b>22.1</b>		<b>9.2</b>
				<b>Trimmed Mean</b>		<b>1.5</b>		<b>6.4</b>		<b>19.9</b>		<b>21.5</b>		<b>8.5</b>
				<b>Max</b>		<b>2.4</b>		<b>9.2</b>		<b>153.4</b>		<b>65.4</b>		<b>19.4</b>
				<b>Min</b>		<b>0.06</b>		<b>0.3</b>		<b>10.6</b>		<b>2.0</b>		<b>0.4</b>
				<b>Std Dev</b>		<b>0.7</b>		<b>2.8</b>		<b>48.2</b>		<b>20.2</b>		<b>5.2</b>
				<b>Coefficient of Variation</b>		<b>0.5</b>		<b>0.5</b>		<b>1.4</b>		<b>0.8</b>		<b>0.6</b>
				<b>Harmonic Mean</b>		<b>0.5</b>		<b>2.1</b>		<b>18.4</b>		<b>9.2</b>		<b>2.8</b>
				<b>Percentile .25</b>		<b>0.9</b>		<b>4.1</b>		<b>13.6</b>		<b>7.7</b>		<b>5.2</b>
				<b>Percentile .75</b>		<b>2.0</b>		<b>8.1</b>		<b>23.3</b>		<b>24.5</b>		<b>11.7</b>
				<b>Say</b>		<b>1.50</b>		<b>6.50</b>		<b>20.00</b>		<b>22.00</b>		<b>8.50</b>
														<b>2.00</b>

**ENTERPRISE VALUE MULTIPLES**  
 WASHINGTON STATE DEPARTMENT OF REVENUE  
 2018 ASSESSMENT YEAR  
 TELECOMMUNICATIONS

Guideline Companies	Ticker	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*		Forecast	Forecast		Forecast	Forecast				
AT&T Inc	t	\$ 409,437,380,630	45,336,000,000	45,825,000,000	9.03	8.93	4.50%	47,376,120,000	8.64	161,334,600,000	2.53	44,529,500,000	8,340,384,000	7.74		
ATN International Inc	atni	\$ 1,044,912,498	142,402,000	143,325,000	7.34	7.29	3.00%	146,674,060	7.12	465,310,000	2.25	113,760,000	7,641,600	8.61		
BCE Inc	bce	\$ 61,640,182,801	7,133,333,333	7,052,380,952	8.64	8.74	4.50%	7,454,333,333	8.27	18,208,500,000	3.39	5,627,250,000	811,352,381	9.57		
Charter	chtr	\$ 153,011,493,771	14,694,000,000	14,694,000,000	10.41	10.41	10.00%	16,163,400,000	9.47	43,596,000,000	3.51	11,676,000,000	3,498,394,000	10.08		
CenturyLink Inc	ctl	\$ 55,126,738,920	5,945,000,000	5,957,000,000	9.27	9.25	5.00%	6,242,250,000	8.83	23,865,000,000	2.31	6,342,500,000	1,790,064,000	6.78		
Cincinnati Bell	cbcb	\$ 2,766,895,346	231,100,000	244,200,000	11.97	8.04	4.50%	241,499,500	11.46	1,260,000,000	2.20	218,400,000	84,384,000	9.14		
Comcast Corp	cmcsa	\$ 256,978,704,525	27,812,000,000	28,675,000,000	9.24	8.96	8.50%	30,176,020,000	8.52	89,550,000,000	2.87	22,275,000,000	3,441,656,000	9.99		
Consolidated Communications	cnsl	\$ 3,113,505,330	330,527,000	362,031,000	9.42	8.60	10.00%	363,579,700	8.56	1,476,800,000	2.11	315,950,000	109,316,880	7.32		
Frontier	frtr	\$ 15,180,376,080	616,000,000	531,000,000	24.64	28.59	2.00%	628,320,000	24.16	9,552,000,000	1.59	2,220,000,000	703,200,000	5.19		
Telus Corp	tu	\$ 33,846,141,468	3,788,886,889	3,793,650,794	8.93	8.92	6.00%	4,016,222,222	8.43	11,003,968,254	3.08	3,067,063,492	543,047,619	9.38		
Verizon Communications	vz	\$ 343,173,501,972	44,368,000,000	42,281,000,000	7.73	8.12	2.00%	45,255,360,000	7.98	128,385,000,000	2.67	24,705,000,000	6,224,544,000	11.10		
<b>Mean</b>					<b>10.60</b>	<b>10.53</b>	<b>5.45%</b>		<b>10.09</b>		<b>2.59</b>		<b>8.63</b>			
<b>Median</b>					<b>9.24</b>	<b>8.92</b>	<b>4.50%</b>		<b>8.56</b>		<b>2.53</b>		<b>9.14</b>			
<b>Trimmed Mean</b>					<b>9.41</b>	<b>8.89</b>	<b>5.33%</b>		<b>8.86</b>		<b>2.60</b>		<b>8.73</b>			
<b>Max</b>					<b>24.64</b>	<b>28.59</b>	<b>10.00%</b>		<b>24.16</b>		<b>3.51</b>		<b>11.10</b>			
<b>Min</b>					<b>7.34</b>	<b>7.29</b>	<b>2.00%</b>		<b>7.12</b>		<b>1.59</b>		<b>5.19</b>			
<b>Std Dev</b>					<b>4.82</b>	<b>6.04</b>	<b>0.03</b>		<b>4.79</b>		<b>0.58</b>		<b>1.72</b>			
<b>Coefficient of Variation</b>					<b>0.45</b>	<b>0.57</b>	<b>0.53</b>		<b>0.47</b>		<b>0.22</b>		<b>0.20</b>			
<b>Harmonic Mean</b>					<b>9.60</b>	<b>9.24</b>	<b>4.10%</b>		<b>9.10</b>		<b>2.47</b>		<b>8.26</b>			
<b>Say</b>					<b>9.50</b>	<b>9.00</b>	<b>5.00%</b>		<b>9.00</b>		<b>2.50</b>		<b>8.75</b>			

EBITDA from Morningstar  
 Morningstar-data page



**Forecast EV/EBITDA By Rank**

Guideline Companies	EV/EBITDA forecast
ATN International Inc	7.12
Verizon Communications	7.58
BCE Inc	8.27
Telus Corp	8.43
Comcast Corp	8.52
Consolidated Communications Hol	8.56
AT&T Inc	8.64
CenturyLink Inc	8.83
Charter	9.47
Cincinnati Bell	11.46
Frontier	24.16
<b>Low Average</b>	<b>8.08</b>
<b>Low Median</b>	<b>8.35</b>
<b>Say</b>	<b>8.00</b>
<b>High Average</b>	<b>12.51</b>
<b>High Median</b>	<b>9.47</b>
<b>Say</b>	<b>11.00</b>

Guideline Companies	EV/Sales
Frontier	1.59
Consolidated Communications Hol	2.11
Cincinnati Bell	2.20
ATN International Inc	2.25
CenturyLink Inc	2.31
AT&T Inc	2.53
Verizon Communications	2.67
Comcast Corp	2.87
Telus Corp	3.08
BCE Inc	3.39
Charter	3.51
<b>Low Average</b>	<b>2.16</b>
<b>Low Median</b>	<b>2.22</b>
<b>Say</b>	<b>2.2</b>
<b>High Average</b>	<b>3.10</b>
<b>High Median</b>	<b>3.08</b>
<b>Say</b>	<b>3.1</b>

Guideline Companies	EV/CF
Frontier	5.19
CenturyLink Inc	6.78
Consolidated Communications Hol	7.32
AT&T Inc	7.74
ATN International Inc	8.61
Cincinnati Bell	9.14
Telus Corp	9.38
BCE Inc	9.57
Comcast Corp	9.99
Charter	10.08
Verizon Communications	11.10
<b>Low Average</b>	<b>7.46</b>
<b>Low Median</b>	<b>7.53</b>
<b>Say</b>	<b>7.5</b>
<b>High Average</b>	<b>10.02</b>
<b>High Median</b>	<b>9.99</b>
<b>Say</b>	<b>10</b>

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2018 ASSESSMENT YEAR

TELECOMMUNICATIONS

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

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**Ke = Cost of Equity** **7.0%**

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	Rm =	rate of return	7.50%	
	Rf =	risk free rate	2.75%	
	Rp =	risk premium	4.75%	
	B =	Beta	0.90	page 2

to page 1

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**Rp = Risk Premium** **4.75%**

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<b>Shannon Pratt and Roger Grabowski</b>	3.5 - 6%		
Cost of Capital, Applications and Examples, Third Edition, 2008, Page 113			
<b>Dr. Aswath Damodaran</b>	5.08%	chart page 15	
http://pages.stern.nyu.edu/~adamodar/	4.73%	adjusted for Rf	
2017 Implied Premium			
<b>John Graham and Campbell Harvey</b>	7.16%	10 year expected return	
Duke CFO magazine Global Business Outlook	6.61%-7.71%	95% Interval 10 year expected	
4th Qtr 2017	6.78%	adjusted for Rf	
	2.37%	Rf rate used in survey	

to above

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**Rf = Risk Free Rate** **2.75%**

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<b>Value Line Investment Survey, Selected Yields January 5, 2018, page 2573</b>			
as of 12-27-17			
US Treasury Securities year end data			
	5 year	2.19%	
	10 year	2.41%	
	30 year	2.75%	
	30 year Zero	2.87%	

to above

<b>Federal Reserve Statistical Release (<a href="http://www.federalreserve.gov/Releases/H15/Current/">http://www.federalreserve.gov/Releases/H15/Current/</a>)</b>			
January 8, 2018 as of 12-29-17			
Treasury Constant Maturities			
	5 year	2.20%	
	10 year	2.40%	
	20 year	2.58%	
	30 year	2.74%	
	20 year TIPS	0.61%	1.97%
	30 year TIPS	0.73%	2.01%
TIPS inflation indication			

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**Inflation** **2.00%**

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<b>Value Line Investment Survey, Economic Series January 5, 2018, page 1500</b>			
Consumer Price Index Annual Rate of Change 2020-2022			
			2.50%
<b>The Livingston Survey December 15, 2017, page 4, 10</b>			
Inflation median (measured by the Consumer Price Index) over next 10 years			
			2.34%

to appraisal template

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

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<b>Federal Reserve Projected Long Run Real GDP Growth</b>			
Median Projection Value From Dec 13, 2017 Report			
			1.80%
<a href="https://www.federalreserve.gov/monetarypolicy/files/fomcprojt20171213.pdf">https://www.federalreserve.gov/monetarypolicy/files/fomcprojt20171213.pdf</a>			
<b>Congressional Budget Office Real GDP Economic Projections</b>			
The Budget and Economic Outlook 2018-2028			
		Table D-1, pg 140	
Average Percentage Change Year To Year	2018-2022		2.18%
http://www.cbo.gov/publication/53651	2023-2028		1.73%
<b>Federal Reserve Bank of Philadelphia</b>			
The Livingston Survey, December 15, 2017, page 4, 10			
Average Annual Real GDP Growth Rate for Next 10 Years			
			2.18%
<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>			

real GDP + inflation est

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE  
2018 ASSESSMENT YEAR  
TELECOMMUNICATIONS

## Based on Dividend 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)	Dividend Growth (G)	Ke	Sustainable Dividend Growth	Ke (Sus)
AT&T Inc	t	38.372	2.00	5.21%	4.00%	9.21%	3.80%	9.01%
ATN International Inc	atni	55.260	0.68	1.23%	-5.50%	nmf		
BCE Inc	bce	48.010	2.42	5.04%	4.00%	9.04%	3.80%	8.84%
Charter	chtr	335.960	nil		nil			
CenturyLink Inc	ctl	16.680	2.16	12.95%	0.00%	12.95%	2.00%	14.95%
Cincinnati Bell	cbb	20.850	nil		nil			
Comcast Corp	cmcsa	39.892	0.76	1.91%	9.00%	10.91%	3.80%	5.71%
Consolidated Communications H	cnsl	11.813	1.55	13.12%	0.00%	13.12%	2.00%	15.12%
Frontier	frt	6.760	nil		nmf			
Telus Corp	tu	37.870	1.63	4.32%	7.00%	11.32%	3.80%	8.12%
Verizon Communications	vz	52.334	2.37	4.53%	2.00%	6.53%		6.53%
						<b>10.44%</b>	<b>Mean</b>	<b>9.75%</b>
						<b>10.91%</b>	<b>Median</b>	<b>8.84%</b>
						<b>10.68%</b>	<b>Trimmed Mean</b>	<b>9.49%</b>
						<b>13.12%</b>	<b>Max</b>	<b>15.12%</b>
						<b>6.53%</b>	<b>Min</b>	<b>5.71%</b>
Source: Value Line Projections 15-17 to 21-23						<b>10.50%</b>		<b>9.00%</b>
						<b>Say</b>	<b>9.00%</b>	

# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE  
2018 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 = 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	38.372	2.00	5.21%	5.50%	10.71%	3.80%	9.01%
ATN International Inc	atni	55.260	0.68	1.23%	8.00%	9.23%	3.80%	5.03%
BCE Inc	bce	48.010	2.42	5.04%	4.50%	9.54%	3.80%	8.84%
Charter	chtr	335.960	nil					
CenturyLink Inc	ctl	16.680	2.16	12.95%	5.50%	18.45%	3.80%	16.75%
Cincinnati Bell	cbb	20.850	nil					
Comcast Corp	cmcsa	39.892	0.76	1.91%	8.00%	9.91%	3.80%	5.71%
Consolidated Communications	cnsi	11.813	1.55	13.12%			2.00%	15.12%
Frontier	fti	6.760	nil					
Telus Corp	tu	37.870	1.63	4.32%	8.50%	12.82%	3.80%	8.12%
Verizon Communications	vz	52.334	2.37	4.53%	3.00%	7.53%		7.53%
						<b>11.17%</b>	<b>Mean</b>	<b>9.51%</b>
						<b>9.91%</b>	<b>Median</b>	<b>8.48%</b>
						<b>10.44%</b>	<b>Trimmed Mean</b>	<b>9.05%</b>
						<b>18.45%</b>	<b>Max</b>	<b>16.75%</b>
						<b>7.53%</b>	<b>Min</b>	<b>5.03%</b>

Source: Value Line Projections 15-17 to 21-23

**10.00%**  
**Say** **9.00%** **9.00%**



# SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE  
2018 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 = 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	38.372	2.00	5.21%	9.39%	14.60%	3.80%	9.01%
ATN International Inc	atni	55.260	0.68	1.23%	3.00%	4.23%		4.23%
BCE Inc	bce	48.010	2.42	5.04%	3.41%	8.45%		8.45%
Charter	chtr	335.96	nil		9.30%			
CenturyLink Inc	ctl	16.680	2.16	12.95%	-11.75%	1.20%	2.00%	14.95%
Cincinnati Bell	cbb	20.850	nil		3.00%			
Comcast Corp	cmcsa	39.892	0.76	1.91%	8.92%	10.83%	3.80%	5.71%
Consolidated Communications	cnsi	11.813	1.55	13.12%	2.00%	15.12%		15.12%
Frontier	ftr	6.760	nil		7.30%		3.80%	3.80%
Telus Corp	tu	37.870	1.63	4.32%	5.07%	9.39%	3.80%	8.12%
Verizon Communications	vz	52.334	2.37	4.53%	5.90%	10.43%	3.80%	8.33%
						<b>9.28%</b>	<b>Mean</b>	<b>8.64%</b>
						<b>9.91%</b>	<b>Median</b>	<b>8.33%</b>
						<b>9.65%</b>	<b>Trimmed Mean</b>	<b>8.40%</b>
						<b>15.12%</b>	<b>Max</b>	<b>15.12%</b>
						<b>1.20%</b>	<b>Min</b>	<b>3.80%</b>

Source: Yahoo Finance 5 year growth est

**9.50%**  
**Say** **8.50%** **8.50%**

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

WASHINGTON STATE DEPARTMENT OF REVENUE  
2018 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	38.372	2.00	5.21%	36.0%	13.50%	3.45	8.99%	1.67	8.07%	3.24%	2.9%	4.86%	8.45%		8.45%
ATN International Inc	atni	55.260	0.68	1.23%	27.0%	2.50%	1.35	2.44%	1.07	2.33%	0.66%	0.6%	0.68%	1.89%	2.00%	3.23%
BCE Inc	bce	48.010	2.42	5.04%	11.0%	15.50%	2.60	5.42%	2.78	5.59%	0.60%	0.6%	1.71%	5.64%	2.00%	7.04%
Charter	chtr	335.960	nil			2.50%	4.50	1.34%	2.05	1.22%						
CenturyLink Inc	ctl	16.680	2.16	12.95%		5.50%	1.25	7.49%	0.76	7.25%						
Cincinnati Bell	cbi	20.850	nil			nmf	0.16	0.77%	(3.48)							
Comcast Corp	cmcsa	39.892	0.76	1.91%	71.0%	16.00%	2.55	6.39%	2.70	5.92%	4.54%	4.2%	11.36%	6.44%	3.80%	5.71%
Consolidated Communication	cnsi	11.813	1.55	13.12%		nmf	(0.50)		1.47							
Frontier	fttr	6.760	nil			nmf	(1.85)		0.20							
Telus Corp	tu	37.870	1.63	4.32%	27.0%	18.50%	2.10	5.55%	3.45	5.36%	1.50%	1.4%	5.00%	5.82%	2.00%	6.32%
Verizon Communications	vz	52.334	2.37	4.53%	32.0%	41%	4.50	8.60%	4.78	8.58%	2.75%	2.7%	13.12%	7.28%		7.28%
														5.92%	Mean	6.34%
														6.13%	Median	6.68%
														6.29%	Trimmed Mean	6.59%
														8.45%	Max	8.45%
														1.89%	Min	3.23%
														6.00%	Say	6.50%

# SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2018 ASSESSMENT YEAR

TELECOMMUNICATIONS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM
AT&T Inc	t	Baa1	BBB+	4.57%
ATN International Inc	atni			
BCE Inc	bce		BBB+	
Charter	chtr	Ba1	BB+	
CenturyLink Inc	ctl		BB	7.25%
Cincinnati Bell	cbb	B3	B	
Comcast Corp	cmcsa	A3	A-	3.57%
Consolidated Communications Ho	cnsl		B+	
Frontier	fttr		B	
Telus Corp	tu	Baa1	BBB+	4.40%
Verizon Communications	vz	Baa1	BBB+	4.28%
<b>Overall Average Debt Rating</b>		<b>Baa3</b>	<b>BB+</b>	<b>4.82%</b>

bond analysis, A-BBB bonds

All issues 20+ year maturities

<b>Guideline Companies, All Ratings</b>	<b>4.78%</b>	<b>4.80%</b>
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bond analysis page 12

## Mergent's Bond Record January 2018, page 249

Corporate	Aaa	Aa	A	Baa
October	3.60%	3.75%	3.91%	4.32%
November	3.57%	3.67%	3.84%	4.27%
December	3.51%	3.61%	3.79%	4.22%
<b>4th Qtr Average</b>	<b>3.56%</b>	<b>3.68%</b>	<b>3.85%</b>	<b>4.27%</b>
<b>2017 Average</b>	<b>3.74%</b>	<b>3.83%</b>	<b>4.00%</b>	<b>4.44%</b>
Public Utilities	Aaa	Aa	A	Baa
October		3.74%	3.91%	4.26%
November		3.65%	3.83%	4.16%
December		3.62%	3.79%	4.14%
<b>4th Qtr Average</b>		<b>3.67%</b>	<b>3.84%</b>	<b>4.19%</b>
<b>2017 Average</b>		<b>3.82%</b>	<b>4.00%</b>	<b>4.38%</b>
Industrials	Aaa	Aa	A	Baa
October	3.60%	3.74%	3.90%	4.37%
November	3.57%	3.68%	3.85%	4.37%
December	3.51%	3.60%	3.79%	4.31%
<b>4th Qtr Average</b>	<b>3.56%</b>	<b>3.67%</b>	<b>3.85%</b>	<b>4.35%</b>
<b>2017 Average</b>	<b>3.74%</b>	<b>3.84%</b>	<b>4.00%</b>	<b>4.50%</b>

<b>Debt Yield Rate</b>	<b>4.80%</b>
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<b>Secured Debt (Lease) Rate</b>	based on Aa rate <b>3.75%</b>
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to page 1

# Telecom Bond Analysis

Company	type	Call	coupon	maturity	Price 12/17	Issued / Book	current yield	yield to maturity	Weighted A/Rating	Mkt Val	Mkt : Book	Embedded	Debt Service	WAYTM	WAYTM	S&P YTM
AT&T Corp	sr notes		8.250	2031	144.8	2,750,000,000	5.698%	3.71%	0.03%	BBB+	\$	3,982,000,000	144.80%	0.000339178	0.000807984	4.37
AT&T Corp	Notes	2100	6.500	2029	116.09	3,000,000,000	5.599%	4.54%	0.02%	BBB+	\$	3,162,700,000	116.09%	0.000453133	0.001073462	4.61
AT&T Corp	sr notes	100	8.250	2031	140.39	2,750,000,000	5.876%	4.06%	0.04%	BBB+	\$	3,850,726,000	140.39%	0.000371929	0.000869002	4.34
AT&T Wireless	sr notes	2100	8.750	2031	141.72	2,500,000,000	6.174%	4.35%	0.04%	BBB+	\$	3,543,000,000	141.72%	0.000826203	0.000862405	4.45
AT&T Inc	Fx Rate S Notes		5.650	2047	108.24	1,500,000,000	5.220%	5.10%	0.02%	BBB+	\$	1,623,600,000	108.24%	0.000254318	0.000605832	5.10
AT&T Inc	Global FR Notes		2.300	2023	102.77	750,000,000	2.290%	2.12%	0.01%	NR	\$	755,775,000	100.77%	0.000052873	0.001202954	2.15
AT&T Inc	Fixed Rate SN		4.125	2026	101.92	2,650,000,000	4.047%	3.83%	0.03%	BBB+	\$	2,700,880,000	101.92%	0.000337319	0.000803556	3.84
AT&T Inc	Global Fixed Notes		3.600	2023	102.39	2,600,000,000	3.516%	3.02%	0.02%	BBB+	\$	2,662,140,000	102.39%	0.000261598	0.000261175	3.07
AT&T Inc	Fixed Rate		2.850	2023	102.23	1,750,000,000	2.942%	2.77%	0.02%	NR	\$	1,754,025,000	102.23%	0.000162738	0.000387673	2.8
AT&T Inc	Global Fixed Notes		3.400	2024	100.25	3,000,000,000	3.392%	3.35%	0.03%	NR	\$	3,007,500,000	100.25%	0.000334537	0.000796451	3.37
AT&T Inc	Global Fixed Notes		3.800	2024	102.34	750,000,000	3.713%	3.33%	0.01%	BBB+	\$	767,550,000	102.34%	0.000030304	0.000191701	3.37
AT&T Inc	Global Fixed Notes		4.900	2027	100.13	4,500,000,000	3.899%	3.89%	0.02%	NR	\$	5,005,300,000	100.06%	0.000145779	0.001538363	3.88
AT&T Inc	FR Global Notes		4.250	2027	102.03	2,000,000,000	4.166%	3.97%	0.03%	BBB+	\$	2,040,400,000	102.02%	0.000253879	0.000829608	3.98
AT&T Inc	FR Global Notes		5.250	2037	104.74	3,000,000,000	5.012%	4.86%	0.05%	BBB+	\$	3,142,200,000	104.74%	0.000484706	0.001154658	4.86
AT&T Inc	Fixed Rate		3.900	2024	102.42	1,000,000,000	3.809%	3.41%	0.01%	BBB+	\$	1,024,200,000	102.42%	0.000113460	0.000270282	3.44
AT&T Inc	FR SN		4.450	2024	105.48	1,206,000,000	4.219%	4.01%	0.01%	BBB+	\$	1,274,196,000	105.48%	0.000194355	0.001320058	3.42
AT&T Inc	Fixed Rate		3.400	2025	98.21	5,000,000,000	3.462%	3.72%	0.06%	BBB+	\$	4,910,500,000	98.21%	0.000618043	0.001472291	3.68
AT&T Inc	FR SN		3.950	2025	101.34	1,161,000,000	3.899%	3.71%	0.01%	BBB+	\$	1,176,557,400	101.34%	0.000143476	0.000341787	3.73
AT&T Inc	Fixed Rate		4.500	2025	98.61	2,500,000,000	4.562%	4.62%	0.04%	BBB+	\$	2,485,250,000	98.61%	0.000384486	0.000915915	4.61
AT&T Inc	Fixed Rate		6.800	2036	122.06	1,500,000,000	5.571%	4.89%	0.02%	BBB+	\$	1,830,900,000	122.06%	0.000244282	0.000591925	4.73
AT&T Inc	Global Note2100		6.500	2037	118.02	2,000,000,000	5.509%	4.99%	0.03%	BBB+	\$	2,360,400,000	118.02%	0.000318901	0.000790410	5.05
AT&T Inc	Global Note100		6.300	2038	117.54	2,750,000,000	5.360%	4.89%	0.04%	BBB+	\$	3,232,350,000	117.54%	0.000446682	0.001064744	4.9
AT&T Inc	Global Note100		6.400	2038	118.26	1,250,000,000	5.412%	4.92%	0.02%	BBB+	\$	1,478,250,000	118.26%	0.000204716	0.000487671	4.94
AT&T Inc	Global Notes		6.550	2039	119.24	2,250,000,000	5.493%	5.03%	0.04%	BBB+	\$	2,682,900,000	119.24%	0.000378189	0.000896152	5.05
AT&T Inc	FR Global Notes		6.000	2040	112.59	1,234,000,000	5.329%	5.03%	0.02%	BBB+	\$	1,399,390,000	112.59%	0.000256487	0.000491841	5.05
AT&T Inc	FR SN		6.375	2041	118.24	984,000,000	5.392%	5.10%	0.02%	BBB+	\$	1,163,481,600	118.24%	0.000163888	0.000390410	5.03
AT&T Inc	Fixed Rate		5.550	2041	107.52	2,000,000,000	5.162%	4.99%	0.03%	BBB+	\$	2,150,400,000	107.52%	0.000318325	0.000790468	5.00
AT&T Inc	Fixed Rate		5.150	2042	102.75	1,209,000,000	5.012%	4.85%	0.02%	BBB+	\$	1,242,247,500	102.75%	0.000199289	0.000419290	4.95
AT&T Inc	Fixed Rate PI		4.300	2042	93.24	1,955,000,000	4.612%	4.79%	0.03%	BBB+	\$	1,822,842,000	93.24%	0.000311271	0.000741504	4.76
AT&T Inc	FR		4.300	2042	93.24	1,834,000,000	4.612%	4.79%	0.03%	BBB+	\$	1,710,021,600	93.24%	0.000292006	0.000698511	4.76
AT&T Inc	Fixed Rate		4.800	2044	97.75	2,500,000,000	4.910%	4.96%	0.04%	BBB+	\$	2,443,750,000	97.75%	0.000412360	0.000862317	4.95
AT&T Inc	note		4.350	2045	91.49	3,044,000,000	4.755%	4.93%	0.05%	BBB+	\$	2,784,955,600	91.49%	0.000499554	0.001190268	4.93
AT&T Inc	Fixed Rate PI		4.350	2045	91.49	3,044,000,000	4.755%	4.93%	0.05%	BBB+	\$	2,784,955,600	91.49%	0.000499554	0.001190268	4.93
AT&T Inc	Fixed Rate		4.750	2046	96.27	3,500,000,000	4.934%	5.00%	0.06%	BBB+	\$	3,389,450,000	96.27%	0.000582569	0.001387786	5.00
AT&T Inc	FR Global Notes		4.500	2047	105.52	2,000,000,000	5.165%	5.09%	0.02%	BBB+	\$	2,110,400,000	105.52%	0.000339033	0.000805184	5.07
AT&T Inc	FR Global Notes		4.500	2048	92.37	4,500,000,000	4.872%	5.00%	0.07%	BBB+	\$	4,156,650,000	92.37%	0.000748642	0.001783402	5.00
AT&T Inc	FR Global Notes		4.550	2049	92.92	2,500,000,000	4.897%	5.01%	0.04%	BBB+	\$	2,323,000,000	92.92%	0.000416543	0.000992822	5.00
AT&T Inc	FR Global Notes		4.500	2048	92.92	4,498,000,000	4.872%	5.00%	0.07%	NR	\$	4,154,802,600	92.92%	0.000748309	0.001783699	5.00
AT&T Inc	FR Global Notes		4.550	2049	92.92	2,494,000,000	4.897%	5.01%	0.04%	NR	\$	2,317,424,800	92.92%	0.000415544	0.000999901	5.00
AT&T Inc	FR Global Notes		5.150	2050	99.29	5,000,000,000	5.188%	5.20%	0.09%	NR	\$	4,963,500,000	99.27%	0.000864685	0.002059837	5.20
AT&T Inc	FR Global Notes		5.700	2057	108.75	1,000,000,000	5.250%	5.18%	0.04%	BBB+	\$	1,095,700,000	108.75%	0.000112413	0.000410718	5.17
AT&T Inc	FR Global Notes		5.300	2058	98.16	2,500,000,000	5.345%	5.35%	0.04%	NR	\$	2,479,000,000	99.16%	0.000445147	0.001050422	5.34
Alltel	sr notes	2100	7.875	2032	132.61	1,500,000,000	5.938%	4.58%	0.02%	BBB+	\$	1,989,150,000	132.61%	0.000228706	0.000548199	4.78
Alltel	deb	2100	6.800	2029	123.54	300,000,000	5.504%	4.01%	0.00%	BBB+	\$	370,620,000	123.54%	0.000040919	0.000095332	4.71
Bell South Capital Funding	deb	NC	6.940	2026	112.01	300,000,000	5.309%	4.14%	0.00%	BBB+	\$	336,020,000	112.01%	0.000411987	0.000968543	4.29
Bell South Capital Funding	deb	100	7.875	2030	129.41	1,000,000,000	6.099%	4.54%	0.02%	BBB+	\$	1,294,100,000	129.41%	0.000150940	0.000355660	4.64
Bell South Capital Funding	deb	2100	7.120	2037	117.95	500,000,000	6.04%	6.03%	0.01%	BBB+	\$	589,750,000	117.95%	0.000102688	0.000238857	6.03
Bell South Corp	note	2100	6.875	2031	121.09	750,000,000	5.696%	4.62%	0.01%	BBB+	\$	908,175,000	121.09%	0.000115209	0.000274448	4.78
Bell South Corp	deb	2100	6.550	2034	116.7	700,000,000	5.61%	4.98%	0.01%	BBB+	\$	816,900,000	116.70%	0.000115955	0.000276226	5
Bell South Corp	note	2100	6.000	2034	109.43	700,000,000	5.48%	5.10%	0.01%	BBB+	\$	766,010,000	109.43%	0.000118996	0.000282323	5.15
SBC Communications	Global Note2100		6.150	2034	114.3	3,250,000,000	5.339%	4.82%	0.05%	BBB+	\$	3,714,750,000	114.30%	0.000521134	0.001241436	4.89
SBC Communications	Global Note2100		6.450	2034	118.3	2,000,000,000	5.45%	4.75%	0.03%	BBB+	\$	2,366,000,000	118.30%	0.000316401	0.000757328	4.78
Ameritech (sub SBC)	deb	NC	6.875	2027	117.74	650,000,000	5.84%	4.34%	0.01%	BBB+	\$	765,310,000	117.74%	0.000093762	0.000232359	4.61
Ameritech (sub SBC)	deb	NC	5.950	2038	108.92	1,750,000,000	5.46%	5.21%	0.02%	BBB+	\$	1,906,100,000	108.92%	0.000333998	0.000727749	5.22
Ameritech (sub SBC)	deb	NC	6.550	2028	117.43	1,750,000,000	5.69%	4.28%	0.02%	BBB+	\$	2,095,025,000	117.43%	0.000249137	0.000930490	4.37
Wisconsin Bell (sub SBC)	deb	NC	6.350	2026	110.72	125,000,000	5.74%	4.63%	0.00%	BBB+	\$	138,400,000	110.72%	0.000019240	0.00045832	4.86
Indiana Bell Tel	deb	NC	7.300	2026	120.3	150,000,000	6.07%	4.10%	0.00%	BBB+	\$	180,450,000	120.30%	0.000020468	0.000048758	4.51
Pacific Bell	deb	102.12	7.375	2043	102.89	300,000,000	7.17%	7.12%	0.01%	BBB+	\$	308,670,000	102.89%	0.00011694	0.000169358	7.15
Pacific Bell	deb	100	7.250	2027	102.88	250,000,000	7.05%	6.79%	0.01%	A	\$	257,200,000	102.88%	0.000056504	0.000134604	4.51
Pacific Bell	deb	100.71	6.625	2034	101.12	550,000,000	6.55%	6.51%	0.01%	NR	\$					

Qwest Cap Funding	notes	2100	7,750	2031	88.00 \$	1,000,000,000	8.81%	9.42%	0.03%	B+	\$	880,000,000	88.00%	77,500,000	0.00031356	0.008225455	9.40	
US West Cap Frdng	Deb	2100	6,875	2028	86.00 \$	1,500,000,000	7.99%	9.14%	0.05%	B+	\$	1,290,000,000	86.00%	103,125,000	0.00045630	0.01197026	8.93	
US West Comm	Deb	100	7,500	2023	100.33 \$	484,000,000	7.48%	7.41%	0.01%	NR	\$	485,597,200	100.33%	36,300,000	0.00011935	0.003130812	7.45	
US West Comm	Deb	101.55	7,250	2035	95.12 \$	750,000,000	7.62%	7.79%	0.02%	BBB-	\$	713,400,000	95.12%	54,375,000	0.00019428	0.005096418	7.76	
US West Comm	Deb	100.585	6,875	2033	95.37 \$	1,000,000,000	7.62%	7.79%	0.02%	BBB-	\$	953,700,000	95.37%	68,750,000	0.00019428	0.005096418	7.76	
US West Comm	Deb	102.1	7,125	2043	91.89 \$	400,000,000	7.79%	7.89%	0.01%	BBB-	\$	367,560,000	91.89%	28,500,000	0.00010491	0.002751952	7.86	
US West Comm	Deb	100	7,200	2028	100.30 \$	250,000,000	7.19%	7.11%	0.01%	NR	\$	250,750,000	100.30%	18,000,000	0.00005945	0.001558515	7.15	
US West Comm	Deb	NC	7,250	2025	106.99 \$	500,000,000	6.78%	5.92%	0.01%	BBB-	\$	534,560,000	106.99%	36,250,000	0.00009854	0.002584962	6.12	
Mountain States Tel (US W	deb	nc	7,375	2030	105.12 \$	55,000,000	7.02%	6.72%	0.00%	BBB-	\$	57,816,000	105.12%	4,056,250	0.00001230	0.000328277	6.73	
Northwestern Bell Tel	Deb	NC	7,750	2030	108.19 \$	43,000,000	7.30%	6.85%	0.00%	BBB-	\$	45,661,700	106.19%	3,325,500	0.000020871	0.000260871	6.88	
CenturyTel Inc	sr notes		5,625	2025	91.50 \$	500,000,000	6.15%	7.31%	0.01%	B+	\$	457,500,000	91.50%	28,125,000	0.00012169	0.005192159	7.22	
CenturyTel Inc	fixed rate		7,500	2024	100.00 \$	1,000,000,000	7.50%	7.50%	0.02%	B+	\$	1,000,000,000	100.00%	75,000,000	0.00024954	0.00646216	7.49	
CenturyTel Inc	fixed rate		6,750	2023	98.00 \$	750,000,000	6.89%	7.29%	0.02%	B+	\$	735,000,000	98.00%	50,625,000	0.00018185	0.004770331	7.17	
CenturyTel Inc	fixed rate		7,600	2038	87.00 \$	800,000,000	8.74%	9.01%	0.02%	B+	\$	696,000,000	87.00%	60,800,000	0.00023969	0.005230361	8.98	
CenturyTel Inc	fixed rate		5,625	2025	88.87 \$	500,000,000	6.33%	7.88%	0.01%	NR	\$	444,350,000	88.87%	28,125,000	0.00013106	0.003481160	7.36	
CenturyTel Inc	sr notes		7,650	2042	87.50 \$	650,000,000	8.74%	8.94%	0.02%	B+	\$	568,750,000	87.50%	49,750,000	0.00019335	0.005071979	8.93	
CenturyTel Entr	sr notes	2100	7,200	2025	95.10 \$	100,000,000	7.57%	8.20%	0.00%	B+	\$	95,100,000	95.10%	7,200,000	0.00002729	0.000715929	8.05	
CenturyTel Entr	Deb g	2100	6,875	2028	90.78 \$	425,000,000	7.57%	8.32%	0.01%	B+	\$	385,615,000	90.78%	29,218,750	0.00011761	0.003985132	8.27	
		19		1900		1809.18 \$	11,457,000,000	Percent of book	95.22%	0.31%	\$	10,675,349,900	93.18%	7,100 \$	813,382,500		8.058%	
Cincinnati Bell Tel	Old Deb	2100	6,300	2028	99.50 \$	150,000,000	6.33%	6.30%	0.00%	BB-	\$	148,250,000	99.50%	9,450,000	0.000031443	0.003	6.37	
	1	100			99.50 \$	150,000,000	Percent of book	99.50%	0.00%	\$	148,250,000	99.50%	6,300 \$	9,450,000		6.30%		
Frontier Communications C & sr note			11,000	2025	73.00 \$	3,600,000,000	15.07%	18.47%	0.22%	B	\$	2,628,000,000	73.00%	396,000,000	0.002122114	0.009564771	17.52	
Frontier Communications C & sr note			7,125	2023	66.00 \$	850,000,000	10.80%	19.03%	0.05%	B	\$	561,000,000	66.00%	60,562,500	0.000582820	0.023348088	18	
Frontier Communications C & sr note			7,625	2024	65.75 \$	750,000,000	11.60%	17.92%	0.04%	B	\$	493,125,000	65.75%	57,187,500	0.000447222	0.013984439	17.23	
Frontier Communications C & sr note			6,875	2025	65.00 \$	775,000,000	10.58%	15.90%	0.04%	B	\$	503,750,000	65.00%	53,281,250	0.000409925	0.011778664	15.39	
Citizens Communications	sr note	2100	9,000	2031	66.00 \$	954,000,000	13.64%	15.24%	0.05%	B	\$	629,640,000	66.00%	85,860,000	0.000483812	0.02988511	14.23	
		5			sum	335.75 \$	6,929,000,000	Percent of book	67.15%	0.41%	\$	4,815,515,000	69.50%	9,420 \$	652,891,250		17.47%	
Comcast Cable Comm	sr note	2100	8,500	2027	139.73 \$	250,000,000	6.08%	3.11%	0.00%	A-	\$	348,325,000	139.73%	21,250,000	0.000025863	0.000242626	3.32	
Comcast Corp	gd notes		2,850	2023	100.62 \$	750,000,000	2.83%	2.70%	0.01%	A-	\$	754,650,000	100.62%	21,375,000	0.000067422	0.000832253	2.71	
MediaOne Group	deb	NC	7,900	2027	121.55 \$	500,000,000	6.50%	4.78%	0.01%	NR	\$	607,750,000	121.55%	39,500,000	0.00079163	0.000742348	4.88	
Comcast Corp	gd fixed rate		2,350	2027	93.91 \$	1,400,000,000	2.50%	3.18%	0.01%	A-	\$	1,314,740,000	93.91%	32,900,000	0.000148077	0.001388591	3.15	
Comcast Corp	gd fixed rate		3,200	2036	84.57 \$	1,000,000,000	3.38%	3.62%	0.01%	A-	\$	945,700,000	94.57%	32,000,000	0.000120594	0.001130888	3.60	
Comcast Corp	gd fixed rate		3,000	2024	100.41 \$	1,250,000,000	2.99%	2.92%	0.01%	NR	\$	1,255,125,000	100.41%	37,500,000	0.000121371	0.001138156	2.93	
Comcast Corp	gd fixed rate		3,600	2024	103.94 \$	1,200,000,000	3.40%	2.82%	0.01%	NR	\$	1,247,280,000	103.94%	43,200,000	0.000112462	0.001056412	2.88	
Comcast Corp	gd fixed rate		3,375	2025	102.21 \$	1,000,000,000	3.30%	3.00%	0.01%	NR	\$	1,022,100,000	102.21%	33,750,000	0.000099677	0.000934718	3.02	
Comcast Corp	gd fixed rate		3,375	2025	102.08 \$	1,500,000,000	3.31%	3.02%	0.02%	NR	\$	1,531,200,000	102.08%	50,625,000	0.000150815	0.001412387	3.07	
Comcast Corp	gd fixed rate		3,150	2028	99.89 \$	1,650,000,000	3.15%	3.18%	0.02%	NR	\$	1,648,185,000	99.89%	51,975,000	0.000173680	0.001628680	3.17	
Comcast Corp	notes	2100	7,050	2033	138.34 \$	1,500,000,000	5.10%	3.61%	0.02%	A-	\$	2,078,100,000	138.34%	105,750,000	0.000180663	0.001688537	3.68	
Comcast Corp	gd notes		4,250	2033	107.82 \$	1,700,000,000	3.94%	3.55%	0.02%	A-	\$	1,832,940,000	107.82%	72,250,000	0.000200838	0.001883357	3.56	
Comcast Corp	gd fx rt notes		4,200	2034	106.09 \$	1,000,000,000	3.96%	3.68%	0.01%	NR	\$	1,080,900,000	106.09%	42,000,000	0.000122861	0.001147439	3.71	
Comcast Corp	notes	2100	5,650	2035	123.80 \$	750,000,000	4.58%	3.70%	0.01%	A-	\$	928,500,000	123.80%	42,375,000	0.000052287	0.000865328	3.73	
Comcast Corp	notes		6,500	2035	134.09 \$	2,250,000,000	4.85%	3.70%	0.03%	A-	\$	3,017,025,000	134.09%	146,250,000	0.000277157	0.002599034	3.83	
Comcast Corp	gd fixed rate		4,400	2035	108.21 \$	800,000,000	4.07%	3.73%	0.01%	NR	\$	865,680,000	108.21%	35,200,000	0.000098013	0.000929801	3.76	
Comcast Corp	notes	2100	6,950	2037	141.60 \$	2,000,000,000	4.91%	3.78%	0.03%	A-	\$	2,832,000,000	141.60%	133,000,000	0.000251731	0.002696902	3.90	
Comcast Corp	notes	2100	6,450	2037	134.82 \$	2,850,000,000	4.78%	3.80%	0.04%	A-	\$	3,842,370,000	134.82%	183,825,000	0.000359972	0.00376531	3.83	
Comcast Corp	notes		6,400	2038	133.99 \$	1,000,000,000	4.78%	3.88%	0.01%	A-	\$	1,339,900,000	133.99%	64,000,000	0.000129181	0.001211396	3.93	
Comcast Corp	notes		6,400	2040	134.90 \$	1,000,000,000	4.75%	3.88%	0.01%	A-	\$	1,348,000,000	134.90%	64,000,000	0.000131914	0.001237022	4.00	
Comcast Corp	fixed rate		4,650	2042	111.12 \$	1,250,000,000	4.18%	3.82%	0.02%	A-	\$	1,389,000,000	111.12%	58,125,000	0.000185829	0.001527865	3.95	
Comcast Corp	gd notes		4,500	2043	109.62 \$	500,000,000	4.11%	3.88%	0.01%	A-	\$	548,100,000	109.62%	22,500,000	0.000064620	0.000605971	3.89	
Comcast Corp	gd fixed rate		4,800	2045	111.13 \$	1,700,000,000	4.14%	3.92%	0.02%	A-	\$	1,889,210,000	111.13%	78,200,000	0.000221584	0.002077896	3.89	
Comcast Corp	gd fixed rate		3,400	2046	83.44 \$	1,400,000,000	3.64%	3.79%	0.02%	A-	\$	1,308,150,000	83.44%	47,600,000	0.000176456	0.001454708	3.78	
Comcast Corp	gd fixed rate		4,000	2047	102.19 \$	850,000,000	3.91%	3.87%	0.01%	NR	\$	868,615,000	102.19%	34,000,000	0.000109500	0.001026837	3.88	
Comcast Corp	gd fx rt notes		4,750	2044	113.95 \$	1,000,000,000	4.17%	3.88%	0.01%	NR	\$	1,139,500,000	113.95%	47,500,000	0.000129057	0.001202255	3.88	
		26			sum	2963.92 \$	32,050,000,000	Percent of book	114.00%	0.38%	\$	36,961,055,000	115.32%	4,830 \$	1,546,659,000		3.57%	
Telus	Fixed Rt Nt		4,400	2046	99.93 \$	500,000,000	4.40%	4.40%	0.01%	BBB+	\$	499,650,000	99.93%	22,000,000	0.000032373	0.04404440	4.40%	
	1 Book Value	100			sum	99.93 \$	500,000,000	Percent of book	99.93%	0.01%	\$	499,650,000	99.93%	4,400 \$	22,000,000		4.40%	

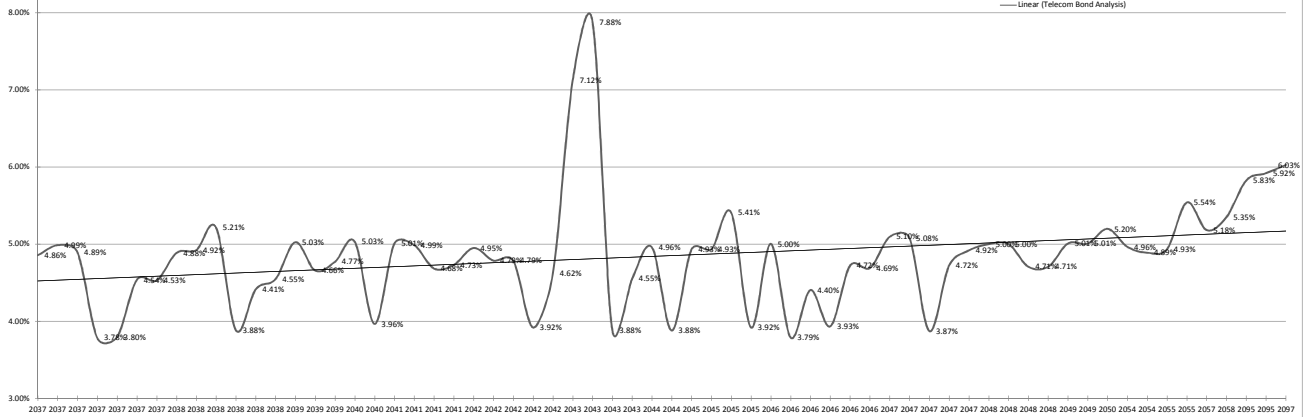
Verizon Communications	fx rate nt	6,400	2033	124.72	\$	6,000,000,000	5.13%	4.10%	0.08%	BBB+	\$	7,483,200,000	124.72%	384,000,000	0.000819328	0.001997189	4.24		
Verizon Communications	fixed rate notes	3,376	2025	100	\$	4,016,000,000	3.39%	3.38%	0.02%	NR	\$	4,016,000,000	100.00%	135,560,160	0.000451110	0.001098623	3.37		
Verizon Communications	fx rt Notes	5,150	2023	110.95	\$	11,000,000,000	4.64%	2.54%	0.09%	BBB+	\$	12,204,500,000	110.86%	565,500,000	0.000510777	0.002265659	3.12		
Verizon Communications	fx rt Notes	4,150	2024	105.09	\$	1,250,000,000	3.95%	3.13%	0.01%	BBB+	\$	1,313,625,000	105.09%	51,875,000	0.000130107	0.000317149	3.2		
Verizon Communications	fx rt Notes	4,500	2033	104.06	\$	3,000,000,000	4.32%	4.12%	0.04%	BBB+	\$	3,121,800,000	104.06%	125,000,000	0.000411494	0.001030356	4.15		
Verizon Communications	fx rt Notes	5,050	2034	106.15	\$	1,250,000,000	4.74%	4.46%	0.02%	BBB+	\$	1,331,250,000	106.50%	63,125,000	0.000185502	0.000452179	4.46		
Verizon Communications	fx rt Notes	4,272	2036	98.49	\$	2,867,000,000	4.34%	4.40%	0.04%	NR	\$	2,823,708,300	98.49%	122,478,240	0.000419488	0.001025411	4.39		
Verizon Communications	Notes	2100	2037	121.14	\$	750,000,000	5.16%	4.54%	0.01%	BBB+	\$	908,850,000	121.14%	46,875,000	0.000113221	0.000275986	4.56		
Verizon Communications	Notes	6,400	2038	125.83	\$	1,750,000,000	5.09%	4.41%	0.02%	BBB+	\$	2,188,525,000	125.83%	112,000,000	0.000259469	0.000625338	4.44		
Verizon Communications	Notes	6,900	2038	130	\$	1,250,000,000	5.31%	4.55%	0.02%	BBB+	\$	1,625,000,000	130.00%	86,250,000	0.000189127	0.000461016	4.59		
Verizon Communications	Notes	7,350	2039	135.08	\$	1,000,000,000	5.44%	4.69%	0.02%	BBB+	\$	1,350,800,000	135.08%	73,500,000	0.000154955	0.000377177	4.68		
Verizon Communications	Notes	8,950	2039	153.91	\$	1,250,000,000	5.82%	4.77%	0.02%	BBB+	\$	1,923,875,000	153.91%	111,875,000	0.000186406	0.000483633	4.81		
Verizon Communications	fixed rate notes	4,750	2041	100.91	\$	750,000,000	4.71%	4.69%	0.01%	BBB+	\$	756,625,000	100.91%	35,625,000	0.000116879	0.000284904	4.68		
Verizon Communications	fixed rate notes	6,000	2041	117.36	\$	1,000,000,000	5.11%	4.73%	0.02%	BBB+	\$	1,173,600,000	117.36%	60,000,000	0.000157375	0.000383617	4.73		
Verizon Communications	Notes	3,850	2042	89.14	\$	1,250,000,000	4.32%	4.62%	0.02%	BBB+	\$	1,114,250,000	89.14%	48,125,000	0.000150201	0.000469069	4.79		
Verizon Communications	fx rt Notes	6,550	2043	129.15	\$	15,000,000,000	5.07%	4.55%	0.23%	BBB+	\$	19,372,500,000	129.15%	960,500,000	0.000221166	0.000531445	4.61		
Verizon Communications	nt	4,272	2036	105.01	\$	2,869,000,000	4.07%	3.87%	0.04%	BBB+	\$	3,012,736,900	105.01%	122,565,680	0.000386667	0.000901099	3.90		
Verizon Communications	fx rt Notes	5,250	2037	108.82	\$	3,000,000,000	4.82%	4.53%	0.05%	BBB+	\$	3,267,600,000	108.82%	157,500,000	0.000451954	0.001101680	4.54		
Verizon Communications	fx rt Notes	4,125	2027	103.97	\$	3,250,000,000	3.97%	3.59%	0.04%	BBB+	\$	3,379,025,000	103.97%	134,025,000	0.000386602	0.000942377	3.81		
Verizon Communications	fx rt Notes	2,625	2026	93.73	\$	2,250,000,000	2.80%	3.59%	0.03%	NR	\$	2,108,925,000	93.73%	59,062,500	0.000269025	0.000655774	3.44		
Verizon Communications	nt	4,862	2046	115.43	\$	4,500,000,000	4.21%	3.93%	0.06%	NR	\$	5,194,350,000	115.43%	218,750,000	0.000588989	0.001435716	3.98		
Verizon Communications	fx rt Notes	5,012	2054	100.79	\$	5,500,000,000	4.97%	4.96%	0.09%	NR	\$	5,543,450,000	100.79%	275,660,000	0.000988449	0.002214430	4.97		
Verizon Communications	fx rt Notes	4,862	2046	102.15	\$	4,500,000,000	4.76%	4.72%	0.07%	NR	\$	4,598,750,000	102.15%	218,750,000	0.000706827	0.001722587	4.73		
Verizon Communications	fx rt Notes	5,012	2054	102.05	\$	5,500,000,000	4.91%	4.89%	0.09%	NR	\$	5,612,750,000	102.05%	275,660,000	0.000894722	0.002189970	4.89		
Verizon Communications	fx rt Notes	4,400	2034	100.98	\$	2,500,000,000	4.36%	4.31%	0.04%	BBB+	\$	2,524,500,000	100.98%	110,000,000	0.000358678	0.000874312	4.32		
Verizon Communications	fx rt Notes	3,500	2024	101.51	\$	2,500,000,000	3.49%	3.20%	0.03%	BBB+	\$	2,537,750,000	101.51%	87,500,000	0.000265870	0.000449082	3.24		
Verizon Communications	fx rt Notes	4,125	2046	91.39	\$	1,500,000,000	4.51%	4.69%	0.02%	NR	\$	1,370,850,000	91.39%	61,875,000	0.000233999	0.000507094	4.67		
Verizon Communications	fx rt Notes	5,500	2047	112.03	\$	1,500,000,000	4.91%	4.72%	0.02%	BBB+	\$	1,680,450,000	112.03%	82,500,000	0.000263736	0.000574629	4.73		
Verizon Communications	fx rt Notes	4,950	2047	100.48	\$	1,475,000,000	4.93%	4.92%	0.02%	BBB+	\$	1,482,080,000	100.48%	73,012,500	0.000241377	0.000588379	4.93		
Verizon Communications	nt	4,522	2048	97.08	\$	5,000,000,000	4.69%	4.71%	0.08%	BBB+	\$	4,854,000,000	97.08%	226,100,000	0.000783067	0.001908848	4.71		
Verizon Communications	sr nt	4,522	2048	97.08	\$	5,000,000,000	4.69%	4.71%	0.08%	NR	\$	4,854,000,000	97.08%	226,100,000	0.000783067	0.001908848	4.71		
Verizon Communications	fx rt Notes	4,672	2055	95.59	\$	5,500,000,000	4.89%	4.93%	0.09%	NR	\$	5,257,450,000	95.59%	256,960,000	0.000983091	0.002201370	4.93		
Verizon Communications	nt	4,672	2055	95.59	\$	5,500,000,000	5.49%	5.54%	0.10%	BBB+	\$	4,758,050,000	86.51%	256,960,000	0.000113965	0.000247154	4.73		
Verizon Global Funding	deb	7,750	2030	136.23	\$	1,995,000,000	5.69%	3.80%	0.03%	BBB+	\$	2,717,788,500	136.23%	154,612,500	0.000252383	0.000618208	4.11		
Verizon Global Funding	Notes	2100	2032	134.91	\$	400,000,000	5.74%	4.29%	0.01%	BBB+	\$	539,640,000	134.91%	31,000,000	0.000057093	0.000139170	4.37		
Verizon Global Funding	Notes	5,850	2035	115.27	\$	1,500,000,000	5.03%	4.44%	0.03%	BBB+	\$	1,744,050,000	115.27%	87,750,000	0.000221515	0.000330964	4.51		
Verizon Penn (bell atlantic)	deb	6,000	2028	114.67	\$	125,000,000	5.23%	4.10%	0.00%	BBB+	\$	143,337,500	114.67%	7,500,000	0.000017069	0.000041608	4.29		
Verizon NE	deb	7,875	2029	131.96	\$	350,000,000	5.97%	4.07%	0.00%	BBB+	\$	461,860,000	131.96%	27,562,500	0.000047436	0.000115629	4.39		
Verizon NJ	deb	7,850	2029	131.27	\$	150,000,000	5.89%	4.12%	0.00%	BBB+	\$	196,905,000	131.27%	11,775,000	0.000032688	0.000050137	4.44		
Verizon NY (NY Telephone)	deb	7,000	2033	100.00	\$	200,000,000	7.00%	7.00%	0.00%	BBB+	\$	200,000,000	100.00%	14,000,000	0.000046582	0.000113547	7.00		
Verizon NY (NY Telephone)	deb	100	2023	100.00	\$	250,000,000	6.70%	6.70%	0.01%	BBB+	\$	250,000,000	100.00%	16,750,000	0.000059732	0.000135851	6.70		
Verizon NY (NY Telephone)	deb	6,500	2028	117.66	\$	100,000,000	5.52%	4.21%	0.00%	BBB+	\$	117,660,000	117.66%	6,500,000	0.000013996	0.000030418	4.29		
Chesapeake (Verizon Maryl)	deb	100	2023	100.00	\$	250,000,000	7.15%	7.15%	0.01%	BBB+	\$	250,000,000	100.00%	17,875,000	0.000059475	0.000144975	7.15		
Chesapeake (Verizon Maryl)	deb	8,300	2031	135.23	\$	100,000,000	6.14%	4.54%	0.00%	BBB+	\$	135,230,000	135.23%	8,300,000	0.000015119	0.000038853	4.78		
Chesapeake (Verizon Virgin)	deb	8,000	2029	133.03	\$	50,000,000	6.01%	4.07%	0.00%	BBB+	\$	66,515,000	133.03%	4,000,000	0.000006773	0.000016511	4.39		
Chesapeake (Verizon Virgin)	deb	7,875	2029	135.71	\$	100,000,000	5.80%	3.71%	0.00%	BBB+	\$	135,710,000	135.71%	7,875,000	0.000012335	0.000030369	4.46		
GTE Corp	deb	6,940	2028	123.72	\$	2,100,000,000	5.61%	3.90%	0.03%	BBB+	\$	2,598,120,000	123.72%	145,740,000	0.000027274	0.000064887	4.01		
GTE Southwest	1st mtg	8,500	2031	96.96	\$	100,000,000	6.77%	6.91%	0.00%	BB-	\$	96,960,000	96.96%	8,500,000	0.000029556	0.000072289	8.88		
Bell Tel PA	deb	8,350	2030	134.51	\$	175,000,000	6.20%	4.44%	0.00%	BBB+	\$	235,367,500	134.51%	14,612,500	0.000025863	0.000058943	4.73		
Bell Tel PA	deb	8,750	2031	139.29	\$	125,000,000	6.28%	4.56%	0.00%	BBB+	\$	174,112,500	139.29%	10,937,500	0.000018956	0.000040206	4.83		
	50 Book Val	5000	sum	5648.35	\$	123,297,000,000	Percent of book	112.97%	1.76%		\$	134,816,181,200	109.34%	5.22%	\$	6,433,694,580	4.82%		
					\$	300,546,000,000					\$	322,525,893,800	107.31%	5.38%	\$	16,163,398,000	4.78%	6.91%	5.161

Source: Standard & Poor's Bond Guide, January 2018, 2017 Yr End Prices

Embedded debt rate  
Weighted average yield to maturity  
Debt service / Market value

This includes short term. For 20+ year maturities see below  
5.384%  
4.783%  
5.0177%

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



02/14/2018 Telecom Bond Analysis

Company	Type	Call	Coupon	Maturity	Price 12/17	Issued / Book	Current Yield	Yield to Maturity	Weighted Avg Rating	Mkt Val	Mkt %	Embedded Rat	Debt Service	WATM	WATM	SAP YTM	
AT&T Inc	FR Global Notes		5.25	2037	104.74	\$	3,000,000,000	5.01%	4.98%	0.00%	164.74%	157,500,000	0.00074050	0.00074050	0.00074050	4.80	
AT&T Inc	Global Notes	2100	5.50	2037	118.04	\$	2,000,000,000	5.58%	4.99%	0.06%	180.00%	130,000,000	0.00048000	0.00048000	0.00048000	5.05	
AT&T Inc	FR Global Notes		4.00	2037	100.00	\$	4,500,000,000	4.80%	4.89%	0.14%	100.00%	4,500,000,000	0.00057000	0.00057000	0.00057000	4.9	
Comcast Corp	notes	2100	6.50	2037	141.80	\$	2,000,000,000	4.91%	3.78%	0.05%	A	2,822,000,000	141.80%	0.00049100	0.00049100	0.00049100	3.80
Comcast Corp	notes	2100	6.40	2037	134.82	\$	2,800,000,000	4.78%	3.80%	0.07%	A	3,842,370,000	134.82%	0.00070343	0.00070343	0.00070343	3.93
Verizon Communications	Notes	2100	6.25	2037	121.44	\$	2,750,000,000	5.16%	4.54%	0.10%	NR	3,068,150,000	121.44%	0.00021200	0.00021200	0.00048616	4.56
Verizon Communications	Notes	2100	5.25	2037	109.54	\$	3,000,000,000	4.82%	4.63%	0.09%	BBB+	3,207,500,000	109.54%	0.00083004	0.00083004	0.001874216	4.54
AT&T Inc	FR Global Notes	2100	6.20	2038	117.54	\$	2,750,000,000	5.30%	4.88%	0.09%	BBB+	3,232,350,000	117.54%	0.00087310	0.00087310	0.00200800	4.9
AT&T Inc	Global Notes	2100	6.40	2038	118.24	\$	1,250,000,000	5.41%	4.92%	0.04%	BBB+	1,478,250,000	118.24%	0.000399901	0.000399901	0.000913742	4.94
AT&T Inc	Global Notes	2100	5.60	2038	108.62	\$	1,750,000,000	5.46%	5.1%	0.03%	BBB+	1,908,125,000	108.62%	0.00052603	0.00052603	0.00180304	5.22
Comcast Corp	notes	2100	6.40	2038	133.99	\$	1,000,000,000	4.78%	3.88%	0.03%	A	1,339,900,000	133.99%	0.00032405	0.00032405	0.00028331	3.93
Verizon Communications	Notes	2100	6.40	2038	125.83	\$	1,750,000,000	5.39%	4.41%	0.03%	BBB+	2,108,025,000	125.83%	0.00052049	0.00052049	0.00195458	4.44
Verizon Communications	Notes	2100	6.00	2038	130	\$	1,250,000,000	5.31%	4.65%	0.04%	BBB+	1,625,000,000	130.00%	0.00036932	0.00036932	0.00079426	4.59
AT&T Inc	Global Notes		6.50	2039	119.24	\$	2,250,000,000	5.40%	5.0%	0.03%	BBB+	2,692,900,000	119.24%	0.00075500	0.00075500	0.00181191	5.05
Verizon Communications	Notes	2100	7.50	2039	135.88	\$	1,000,000,000	5.44%	4.6%	0.03%	BBB+	1,350,800,000	135.08%	0.00030273	0.00030273	0.00064265	4.88
Verizon Communications	Notes	2100	6.90	2039	123.91	\$	1,200,000,000	5.42%	4.7%	0.04%	BBB+	1,593,875,000	123.91%	0.00037662	0.00037662	0.0005774	4.81
AT&T Inc	FR Global Notes		6.00	2040	112.93	\$	1,250,000,000	5.32%	5.03%	0.04%	BBB+	1,389,300,000	112.93%	0.000260411	0.000260411	0.00057268	5.05
Comcast Corp	notes	2100	6.40	2040	134.80	\$	1,000,000,000	4.75%	3.9%	0.03%	A	1,348,000,000	134.80%	0.00027745	0.00027745	0.00029546	4.00
AT&T Inc	FR Global Notes		6.75	2041	118.24	\$	584,000,000	5.38%	5.0%	0.03%	BBB+	615,481,800	118.24%	0.000260217	0.000260217	0.00073639	5.03
AT&T Inc	FR Global Notes		5.50	2041	107.28	\$	2,000,000,000	5.16%	4.99%	0.02%	BBB+	2,150,400,000	107.28%	0.00048547	0.00048547	0.00146815	5.00
Verizon Communications	Fixed rate notes		4.75	2041	100.31	\$	2,750,000,000	4.71%	4.68%	0.02%	BBB+	2,758,825,000	100.31%	0.00020388	0.00020388	0.00044888	4.88
Verizon Communications	Fixed rate notes		6.00	2041	117.38	\$	1,000,000,000	5.11%	4.73%	0.03%	BBB+	1,179,800,000	117.38%	0.00037493	0.00037493	0.00062323	4.73
AT&T Inc	FR Global Notes		5.10	2042	102.42	\$	1,200,000,000	4.95%	4.95%	0.04%	BBB+	1,242,247,500	102.70%	0.000389014	0.000389014	0.00084444	4.95
AT&T Inc	FR Global Notes		4.30	2042	93.24	\$	1,950,000,000	4.61%	4.79%	0.06%	BBB+	1,822,842,000	93.24%	0.00068187	0.00068187	0.00138485	4.78
AT&T Inc	FR Global Notes		4.30	2042	93.24	\$	1,254,000,000	4.61%	4.79%	0.06%	BBB+	1,171,021,600	93.24%	0.00057544	0.00057544	0.001311913	4.78
Comcast Corp	fixed rate		4.85	2042	111.32	\$	1,250,000,000	4.18%	3.92%	0.03%	A	1,389,000,000	111.32%	0.00031844	0.00031844	0.000613879	3.95
Verizon Communications	Notes	102 12	3.90	2042	99.14	\$	1,250,000,000	4.20%	4.6%	0.04%	BBB+	1,174,250,000	99.14%	0.00037186	0.00037186	0.00070076	4.59
Pacific Bell	deb	102 12	7.75	2043	102.89	\$	300,000,000	7.17%	7.12%	0.01%	BBB+	308,670,000	102.89%	0.00013808	0.00013808	0.00031407	7.15
US West Comm	deb	102 12	7.125	2043	91.88	\$	400,000,000	7.73%	7.81%	0.02%	BBB+	387,260,000	91.88%	0.00020467	0.00020467	0.00082798	7.88
Comcast Corp	gfd notes		4.50	2043	109.82	\$	500,000,000	4.11%	3.8%	0.01%	A	544,100,000	109.82%	0.00012680	0.00012680	0.00142313	3.89
Verizon Communications	gfd fr notes		6.50	2043	129.15	\$	15,000,000,000	5.67%	4.65%	0.44%	BBB+	19,372,500,000	129.15%	0.00430003	0.00430003	0.00942484	4.61
AT&T Inc	FR Global Notes		4.80	2044	97.75	\$	2,500,000,000	4.91%	4.6%	0.08%	BBB+	2,445,750,000	97.75%	0.00060703	0.00060703	0.00182628	4.95
Comcast Corp	gfd fr notes		4.75	2044	113.85	\$	1,000,000,000	4.17%	3.88%	0.03%	NR	1,139,500,000	113.95%	0.00032161	0.00032161	0.00282562	3.98
AT&T Inc	FR Global Notes		4.50	2045	91.49	\$	3,044,000,000	4.75%	4.9%	0.10%	BBB+	2,798,955,600	91.49%	0.00076968	0.00076968	0.00244377	4.88
AT&T Inc	FR Global Notes		4.50	2045	91.49	\$	3,044,000,000	4.75%	4.9%	0.10%	BBB+	2,798,955,600	91.49%	0.00076968	0.00076968	0.00244377	4.88
Bell South Telecommunications	deb	NC	6.20	2045	102.42	\$	1,000,000,000	5.51%	5.41%	0.01%	BBB+	915,450,000	102.15%	0.00015422	0.00015422	0.00042522	5.42
Comcast Corp	gfd fixed rate		4.50	2045	111.13	\$	1,700,000,000	4.14%	3.92%	0.04%	A	1,889,210,000	111.13%	0.00043248	0.00043248	0.004914878	3.98
AT&T Inc	FR Global Notes		4.75	2046	96.27	\$	3,500,000,000	4.93%	5.0%	0.11%	BBB+	3,399,450,000	96.27%	0.00119251	0.00119251	0.00257947	5.00
Comcast Corp	gfd fixed rate		3.40	2046	95.44	\$	1,400,000,000	3.84%	3.79%	0.03%	A	1,308,160,000	95.44%	0.00034473	0.00034473	0.003913903	3.78
AT&T Inc	FR Global Notes		4.40	2046	99.83	\$	500,000,000	4.40%	4.40%	0.01%	BBB+	499,830,000	99.83%	0.00014758	0.00014758	0.0044444	4.40
Verizon Communications	Notes		4.82	2046	115.43	\$	4,500,000,000	4.21%	3.9%	0.12%	NR	5,194,350,000	115.43%	0.00115814	0.00115814	0.0024400	4.78
Verizon Communications	Notes		4.82	2046	102.15	\$	4,500,000,000	4.78%	4.72%	0.14%	NR	4,986,750,000	102.15%	0.00138106	0.00138106	0.00201154	4.73
Verizon Communications	Notes		4.125	2046	91.28	\$	1,500,000,000	4.51%	4.69%	0.05%	NR	1,373,850,000	91.28%	0.00047206	0.00047206	0.00075074	4.67
AT&T Inc	FR Global Notes		5.60	2047	108.24	\$	1,500,000,000	5.20%	5.1%	0.05%	BBB+	1,620,600,000	108.24%	0.00049607	0.00049607	0.001142591	5.10
AT&T Inc	FR Global Notes		5.40	2047	105.52	\$	2,000,000,000	5.18%	5.0%	0.07%	BBB+	2,115,400,000	105.52%	0.00061617	0.00061617	0.001516027	5.07
Comcast Corp	gfd fixed rate		4.00	2047	102.19	\$	850,000,000	3.91%	3.87%	0.02%	NR	886,815,000	102.19%	0.00019000	0.00019000	0.002443791	3.88
Verizon Communications	Notes		5.50	2047	112.03	\$	1,500,000,000	4.91%	4.7%	0.04%	BBB+	1,646,450,000	112.03%	0.00064601	0.00064601	0.00077879	4.73
Verizon Communications	Notes		4.90	2047	100.48	\$	1,475,000,000	4.93%	4.62%	0.05%	BBB+	1,482,080,000	100.48%	0.00047462	0.00047462	0.001002971	4.93
AT&T Inc	FR Global Notes		4.50	2048	92.37	\$	4,500,000,000	4.87%	5.0%	0.15%	BBB+	4,108,600,000	92.37%	0.001482108	0.001482108	0.003381978	5.00
Verizon Communications	Notes		4.50	2048	92.37	\$	4,488,000,000	4.87%	5.0%	0.15%	BBB+	4,154,802,600	92.37%	0.001482108	0.001482108	0.003381978	5.00
Verizon Communications	Notes		4.52	2048	97.88	\$	5,000,000,000	4.8%	4.71%	0.15%	NR	4,864,000,000	97.88%	0.00150059	0.00150059	0.003247398	4.71
AT&T Inc	FR Global Notes		4.50	2048	92.37	\$	2,500,000,000	4.87%	5.01%	0.08%	BBB+	2,252,000,000	92.37%	0.00081876	0.00081876	0.001871481	5.00
Verizon Communications	Notes		4.52	2048	97.88	\$	5,000,000,000	4.8%	4.71%	0.15%	NR	4,864,000,000	97.88%	0.00150059	0.00150059	0.003247398	4.71
AT&T Inc	FR Global Notes		4.50	2049	92.37	\$	2,500,000,000	4.87%	5.0%	0.08%	BBB+	2,317,424,800	92.37%	0.00081876	0.00081876	0.001871481	5.00
AT&T Inc	FR Global Notes		5.10	2050	99.27	\$	5,000,000,000	5.18%	5.20%	0.17%	NR	4,960,500,000	99.27%	0.00188662	0.00188662	0.003884827	5.20
Verizon Communications	Notes		5.012	2054	100.79	\$	5,500,000,000	4.91%	4.8%	0.18%	NR	5,545,450,000	100.79%	0.00175502	0.00		

# DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE

2018 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	38.372	26.15	7.04	3.05	1.96	3.51	22.94	6,142,000,000	106.69%	4.572%
ATN International Inc	atni	55.260	29.80	7.00	1.62	1.19	8.65	51.45	16,028,095	102.19%	
BCE Inc	bce	48.010	19.68	5.85	2.43	2.17	3.58	17.30	901,000,000	110.23%	
Charter	chtr	335.960	174.34	46.89	2.19	nil	36.40	163.87	238,506,060	103.78%	
CenturyLink Inc	ctl	16.680	16.60	4.65	1.58	2.16	2.90	22.00	1,069,169,000	93.18%	8.058%
Cincinnati Bell	cbb	20.850	30.55	4.50	(0.08)	nil	5.00	(6.00)	42,182,031	99.50%	6.300%
Comcast Corp	cmcsa	39.892	18.20	4.33	2.06	0.61	2.06	14.77	4,644,508,017	115.32%	3.571%
Consolidated Communications	cnsl	11.813	14.97	3.45	(0.79)	1.55	2.56	8.03	70,776,044	97.28%	
Frontier	frt	6.760	113.75	24.04	(3.65)	3.37	17.91	33.17	78,458,000	69.50%	17.747%
Telus Corp	tu	37.870	17.75	4.87	1.95	1.55	4.11	10.97	595,000,000	99.93%	4.404%
Verizon Communications	vz	52.334	30.89	5.80	3.75	2.33	4.23	10.95	4,079,486,153	109.34%	4.282%

Value Line March 16, 2018

Yahoo

Value Line

Value Line

Value Line

Value Line

Value Line

Value Line

Value Line

Bond analysis

Bond analysis





Forecast Dividends % Change						Forecast Earnings % Change						Forecast Cash Flow % Change		
2018	2019	2020	2021	2022	2023	2018	2019	2020	2021	2022	2023	2018	2019	2020
VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
4	4	4	4.5	4	4	7	7	7	6.5	5.5	5.5	4.5	4.5	4.5
6	7.5	6.5	6.5	5.5	-5.5	10.5	7.5	10.5	12	10.5	8	3	-1	0.5
6.5	6.5	6.5	1	4	4	9	5	7	3	4	4.5	4.5	3.5	2
										26	19.5	10	9.5	8
-5	-4	-3.5	-1.5	-8.5	-9.5	9	6.5	19.5	14	6.5	5.5	5	4.5	6
0	0	0	0	0	0	29	24.5	#N/A	-1	-10.5	-11	4.5	4	5.5
11	15	13	10	8	12	11	12	10	8	11	12.5	8.5	8.5	8
0	0	0	0	0	0	13.5	11.5	15.5	28.5	34	34	10	9	10
-8.5	-7	-4	0.5	-14.5	-14.5	9.5	13.5	21	13.5	45	35.5	2	2.5	6.5
10.5	10	10	9	8	7	9	9.5	10	9	9	8.5	6	6	6.5
2	2	2.5	2	2	2	9.5	10.5	8	3	2	4	2	-4	-3.5

			Forecast Revenue % Change						Income	
2021	2022	2023	2018	2019	2020	2021	2022	2023	Operating Income	EBITDA
VL	VL	VL	VL	VL	VL	VL	VL	VL	M*	M*
4.5	4.5	2.5	4.5	3.5	3.5	3.5	2	1.5	20,949,000,000	45,826,000,000
10	8	8	0.5	-8	-8.5	10.5	7.5	7	55,468,000	143,325,000
1	3.5	4.5	2.5	3	2	-1.5	1.5	1	4,077,777,778	7,052,380,952
15	10	4.5	4.5	5	4	12	12.5	8	4,106,000,000	14,694,000,000
3.5	0.5	-0.5	3.5	3.5	3	2	-1	-5	2,009,000,000	5,957,000,000
5	-2.5	-0.5	-3	-2.5	-2	2	2	2.5	38,100,000	344,200,000
8	8.5	9.5	8.5	7.5	6	8.5	10	7.5	17,987,000,000	28,675,000,000
11	14.5	16.5	9.5	8	8.5	7	11	10	38,654,000	362,031,000
10	9.5	8	-0.5	0.5	3	11.5	8.5	7	(1,568,000,000)	531,000,000
7	7	7.5	5.5	6.5	6.5	6.5	5.5	5.5	2,067,460,317	3,793,650,794
-3	-4	-2.5	3	-2.5	-1.5	2	0.5	1.5	27,414,000,000	42,281,000,000

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
<b>79,146,000,000</b>	313,499,000,000	114,276,000,000	<b>81,389,000,000</b>	125,972,000,000	38,374,000,000	24,387,000,000	173,758,000,000
<b>342,928,000</b>	1,169,806,000	107,686,000	<b>161,705,000</b>	144,873,000	10,919,000	86,934,000	159,200,000
<b>3,681,746,032</b>	54,944,444,444	10,559,523,810	<b>8,561,111,111</b>	15,334,126,984		3,055,555,556	16,903,174,603
<b>2,555,000,000</b>	51,965,000,000	79,270,000,000	<b>11,090,000,000</b>	68,186,000,000	2,045,000,000	10,588,000,000	72,883,000,000
<b>4,194,000,000</b>	51,204,000,000	12,773,000,000	<b>4,857,000,000</b>	37,283,000,000	443,000,000	3,936,000,000	37,293,000,000
<b>710,400,000</b>	3,700,000,000	132,300,000	<b>357,300,000</b>	1,729,300,000	6,000,000	193,000,000	1,758,000,000
<b>16,060,000,000</b>	88,386,000,000	78,143,000,000	<b>21,561,000,000</b>	59,422,000,000	5,134,000,000	9,825,000,000	71,700,000,000
<b>213,659,000</b>	3,635,699,000	306,783,000	<b>255,940,000</b>	2,311,514,000	29,696,000	291,873,000	2,277,435,000
<b>1,323,000,000</b>	26,496,000,000	2,063,000,000	<b>2,508,000,000</b>	16,970,000,000	656,000,000	2,184,000,000	14,650,000,000
<b>2,288,888,889</b>	26,665,873,016	8,458,730,159	<b>4,119,047,619</b>	9,726,984,127	1,193,650,794	1,721,428,571	11,313,492,063
<b>29,913,000,000</b>	246,498,000,000	98,664,000,000	<b>33,037,000,000</b>	113,642,000,000	3,453,000,000	16,954,000,000	129,678,000,000

## AVERAGE FOURTH QUARTER STOCK PRICE

WASHINGTON STATE DEPARTMENT OF REVENUE

2018 ASSESSMENT YEAR

TELECOMMUNICATIONS

ATT	T								<b>12/29/2017</b>
Date	Open	High	Low	Close	Adj Close	Volume			<b>Adj Close</b>
12/29/2017	39.22	39.32	38.88	38.88	38.37177	26479900			<b>38.37</b>
CenturyLink	CTL								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	17.06	17.16	16.68	16.68	16.68	10043300			<b>16.68</b>
Cincinnati Bell	CBB								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	21.3	21.4	20.8	20.85	20.85	185800			<b>20.85</b>
Frontier	FTR								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	6.92	7.16	6.71	6.76	6.76	4765800			<b>6.76</b>
Comcast	CMCSA								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	40.1	40.42	40.05	40.05	39.892	12231000			<b>39.89</b>
Verizon	VZ								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	53.37	53.46	52.93	52.93	52.33392	9994700			<b>52.33</b>
Telus	TU								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	37.9	38.01	37.66	37.87	37.87	262500			<b>37.87</b>
BCE	BCE								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	47.86	48.05	47.58	48.01	48.01	490700			<b>48.01</b>
Consolidated ( CNSL									
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	12.32	12.41	12.16	12.19	11.8129	1040500			<b>11.81</b>
ATN Internatic	ATNI								
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	56.01	56.01	54.67	55.26	55.26	67200			<b>55.26</b>
CHTR									
Date	Open	High	Low	Close	Adj Close	Volume			
12/29/2017	335.14	342.02	333.82	335.96	335.96	846700			<b>335.96</b>

Source:

finance.yahoo.com

Historical Stock Quotes

01/16/2018

# IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2018.

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buy	Inge in Earn	Inge in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	Boothed Grov	Premium	Growth Est	Est Premium (	mpne	d	ERP/Riskfe
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%		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%		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%		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%		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%		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%		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%		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%		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%		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%		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%		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%		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%		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%		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%		4.13%			0.53
1976	9.07%	3.93%	107.46	9.75	4.22		26.39%	13.10%	6.81%	7.33%	1.73%	8.19%	4.55%		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%		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%		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%		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%		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%		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%		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%		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%		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%	5.65%	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%		2.60
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
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%	5.08%	4.75%		2.11

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

**SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT  
FREE CASH FLOW TO EQUITY MODEL**

WASHINGTON STATE DEPARTMENT OF REVENUE

2018 ASSESSMENT YEAR

TELECOMMUNICATIONS

**Based on Earnings Growth**

\*FOR DISCUSSION ONLY\*

$$K_e = (FCFE / P) + G$$

Ke = Cost of Equity  
FCFE = Free Cash Flow to Equity  
P = Current Price  
G = Sustainable Growth

Company	Ticker	Stock Price	Expected Earnings	P/E	Payout Ratio	ROE	Ke
AT&T Inc	t	38.37	3.45	11.12	64.00%	13.40%	13.35%
ATN International Ir	atni	55.26	1.35	40.93	73.00%	3.20%	5.47%
BCE Inc	bce	48.01	2.60	18.47	89.00%	14.00%	7.52%
Charter	chtr	335.96	4.50	74.66	nil	1.50%	1.56%
CenturyLink Inc	ctl	16.68	1.25	13.34	nmf	4.20%	12.43%
Cincinnati Bell	cbb	20.85	0.16	130.31	nmf	nmf	4.87%
Comcast Corp	cmcsa	39.89	2.55	15.64	29.00%	14.40%	10.10%
Consolidated Comm	cnsi	11.81	(0.50)	(23.63)	nmf	nmf	6.83%
Frontier	fttr	6.76	(1.85)	(3.65)	nmf	nmf	12.52%
Telus Corp	tu	37.87	2.10	18.01	73.00%	18.00%	8.35%
Verizon Communica	vz	52.33	4.50	11.63	68.00%	nmf	12.57%
<b>Mean</b>				<b>27.89</b>	<b>66.00%</b>	<b>9.81%</b>	<b>8.69%</b>
<b>Median</b>				<b>15.64</b>	<b>70.50%</b>	<b>13.40%</b>	<b>8.35%</b>
<b>Trimmed Mean</b>							<b>8.96%</b>
<b>Max</b>				<b>130.31</b>	<b>89.00%</b>	<b>18.00%</b>	<b>13.35%</b>
<b>Min</b>				<b>-23.63</b>	<b>29.00%</b>	<b>1.50%</b>	<b>1.56%</b>
<b>Std Dev</b>				<b>41.94</b>	<b>0.20</b>	<b>0.07</b>	<b>0.04</b>
<b>Coefficient of Variation</b>				<b>1.50</b>	<b>0.30</b>	<b>0.67</b>	<b>0.44</b>
<b>Harmonic Mean</b>					<b>58.00%</b>	<b>4.70%</b>	<b>5.98%</b>
<b>Say</b>							<b>8.75%</b>

Source data by request