

COST OF CAPITAL STUDY

YIELD CAPITALIZATION

2025 ASSESSMENT YEAR

APPENDIX C

Railroads

EQUITY RATE						12.25%	
CAPITAL ASSET PRICING MODEL							PAGE
CAPM Ex Ante						8.91%	6
DIVIDEND GROWTH MODELS (Single Stage)							
Value Line, based on Dividends Growth						10.50%	7
Value Line, based on Earnings Growth						12.00%	8
Value Line, based on Return on Equity						13.00%	9
FCFE GROWTH MODEL (Multi Stage)						11.50%	10
Median						11.50%	RANGE
						8.91% - 13%	
DEBT RATE						5.70%	11
SECURED DEBT (LEASE) RATE						5.25%	11
MARKET CAPITAL STRUCTURE							
Equity	81%	x	12.25%	=		9.92%	3
Secured Debt	1%	x	5.25%	=	0.05%		3
Debt	18%	x	5.70%	=	1.03%		3
Marginal Tax Rate	24%	=	(1-.24)	x	1.08%	<u>0.82%</u>	
WEIGHTED AVERAGE COST OF CAPITAL						10.7%	

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

Capital Structure at Book Value

Company	Ticker	Beta	Fin'l Strength	Operating Margin	P/E Ratio	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
Union Pacific Corp.	UNP	1.00	A++	52.5%	18.6	2.40%	16,223,870,850	35.3%	-	0.0%	29,767,000,000	64.7%	45,990,870,850
Norfolk Southern Corp.	NSC	1.05	A+	45.3%	16.8	2.39%	15,095,610,700	47.6%	-	0.0%	16,651,000,000	52.4%	31,746,610,700
CSX Corp.	CSX	1.00	B++	46.0%	11.7	1.61%	13,306,091,100	42.6%	-	0.0%	17,897,000,000	57.4%	31,203,091,100
Canadian National	CNI	0.90	A	48.5%	16.9	2.64%	15,091,200,000	52.4%	-	0.0%	13,698,768,096	47.6%	28,789,968,096
Canadian Pacific Kansas City	CP	0.95	A	52.5%	19.3	0.88%	34,253,724,800	71.4%	-	0.0%	13,751,541,128	28.6%	48,005,265,928
Mean Weighted Mean Median Std Dev Coeff Var Harmonic Mean Max Min	Mean	0.98		49.0%	16.7	1.98%	18,794,099,490	49.8%	-	0.0%	18,353,061,845	50.2%	185,735,806,674
	Weighted Mean						93,970,497,450	50.6%		0.00%	91,765,309,224	49.4%	
	Median	1.00			16.9	2.39%		47.6%		0.0%		52.4%	
	Std Dev	0.06			2.96	0.7%		13.6%		-		13.6%	
	Coeff Var	0.06			0.18	0.37		27.3%		-		27.1%	
	Harmonic Mean	0.98			16.15	0.02		47.2%				46.3%	
	Max	1.05			19.30	2.64%		71.4%		0.0%		64.7%	
	Min	0.90			11.73	0.88%		35.3%		0.0%		28.6%	
	Say	1.00											

SUPPORT FOR CAPITAL STRUCTURE

MARKET VALUE

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

Capital Structure at Market Value

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Operating Lease	%	Long Term Debt	%	Total Debt & Equity
Union Pacific Corp.	UNP	228.04	604,241,000	137,791,117,640	80.3%	-	0.0%	5,398,141,382	3.1%	28,500,000,000	16.6%	171,689,259,022
Norfolk Southern Corp.	NSC	234.70	226,321,000	53,117,538,700	74.6%	-	0.0%	2,463,281,336	3.5%	15,656,000,000	22.0%	71,236,820,036
CSX Corp.	CSX	32.27	1,928,419,000	62,230,081,130	72.9%	-	0.0%	6,660,210,621	7.8%	16,481,000,000	19.3%	85,371,291,751
Canadian National	CNI	101.51	628,800,000	63,829,488,000	86.3%	-	0.0%	1,226,257,003	1.7%	8,938,618,456	12.1%	73,994,363,459
Canadian Pacific Kansas City	CP	72.37	933,344,000	67,546,105,280	82.5%	-	0.0%	1,172,873,318	1.4%	13,131,458,002	16.0%	81,850,436,600
			Mean	384,514,330,750	79.3%	-	0.0%	16,920,763,661	3.5%	82,707,076,458	17.2%	484,142,170,869
			Weighted Mean		79.4%		0.0%		3.5%		17.1%	
			Median		80.3%		0.0%		3.1%		16.6%	
			Harmonic Mean		79.0%				2.5%		16.5%	
			Std Dev		5.6%		0.0%		2.6%		3.7%	
			Coeff Var		14.3%				1.4%		4.6%	
			Max		86.3%		0.0%		7.8%		22.0%	
			Min		72.9%		0.0%		1.4%		12.1%	
Source:			Target		81%		0%		1%		18%	100%

Stock Price: Yahoo

Market Value Debt: Bond Analysis

SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Book Value	Multiple
Union Pacific Corp.	UNP	228.04	40.35	5.7	15.00	15.2	11.00	20.7	26.85	8.5
Norfolk Southern Corp.	NSC	234.70	54.20	4.3	17.96	13.1	11.50	20.4	66.70	3.5
CSX Corp.	CSX	32.27	7.60	4.2	2.65	12.2	1.85	17.4	6.90	4.68
Canadian National	CNI	101.51	19.95	5.1	7.80	13.0	5.50	18.5	24.00	4.23
Canadian Pacific Kansas City	CP	72.37	11.35	6.4	4.80	15.1	3.25	22.3	36.70	1.97
Mean				5.1		13.7		19.9		4.6
Median				5.1		13.1		20.4		4.2
Harmonic Mean				5.0		13.6		19.7		3.7
Max				6.4		15.2		22.3		8.5
Min				4.2		12.2		17.4		1.97
Std Dev				0.9		1.4		1.9		2.4
Coefficient of Variation				0.2		0.1		0.1		0.5
Percentile .25				4.3		13.0		18.5		3.5
Percentile .75				5.7		15.1		20.7		4.7
Say				5.00		13.50		20.00		3.75

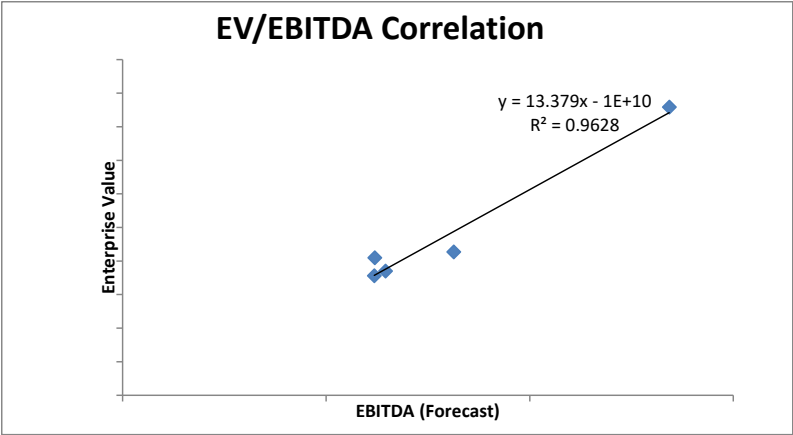
ENTERPRISE VALUE MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

Guideline Companies	Ticker	EV+OL	EBITDA + OL	EV / EBITDA	Annual Cash Flow Rate Change VL	EBITDA	EV / EBITDA	Revenue	EV/Sales	Cash Flow	Debt Service	EV / CF
			historic	historic	forecast	forecast	forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Union Pacific Corp.	UNP	\$ 171,689,259,022	12,548,000,000	13.68	7.00%	13,426,360,000	12.79	25,399,500,000	6.76	9,676,000,000	1,624,500,000	15.19
Norfolk Southern Corp.	NSC	\$ 71,236,820,036	5,620,000,000	12.68	10.00%	6,182,000,000	11.52	12,698,400,000	5.61	4,606,500,000	892,392,000	12.95
CSX Corp.	CSX	\$ 85,371,291,751	7,462,000,000	11.44	9.00%	8,133,580,000	10.50	15,077,500,000	5.66	5,365,000,000	939,417,000	13.54
Canadian National	CNI	\$ 73,994,363,459	6,034,044,800	12.26	7.00%	6,456,427,936	11.46	13,206,000,000	5.60	5,177,000,000	509,501,252	13.01
Canadian Pacific Kansas C	CP	\$ 81,850,436,600	5,605,222,352	14.60	10.50%	6,193,770,699	13.21	11,685,000,000	7.00	4,987,500,000	748,493,106	14.27
Mean							11.90		6.13	5,962,400,000		13.79
Median							11.52		5.66	5,177,000,000		13.54
Max							13.21		7.00	9,676,000,000.00		15.19
Min							10.50		5.60	4,606,500,000.00		12.95
Std Dev							1.10		0.69	2,094,842,458.28		0.94
Coefficient of Var							0.09		0.11	0.35		0.07
Harmonic Mean							11.82		6.07	5,552,534,659		13.74
						Say	11.75		6.00			13.75



11.25 put in income direct excluding IPP
12.50 put in income direct including IPP

Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast		
CSX Corp.	10.50	10.98	Low Average
Canadian National	11.46	11.46	Low Median
		11.25	Say
Norfolk Southern Corp.	11.52	12.51	Average
Union Pacific Corp.	12.79	12.79	Median
Canadian Pacific Kansas City	13.21	12.50	Say

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2025 ASSESSMENT YEAR
RAILROADS

$$\text{Ex Ante} \\ K_e = R_f + B (R_p)$$

Ke = Cost of Equity	8.91%
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Rm =	rate of return	8.91%
Rf =	risk free rate	4.78%
Rp =	risk premium	4.13%
B =	Beta	1.00

Rp = Risk Premium	4.13%
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to above

Shannon Pratt and Roger Grabowski	3.5 - 6%	
Cost of Capital, Applications and Examples, Fifth Edition, 2014		
Dr. Aswath Damodaran	4.33%	chart page 15
http://pages.stern.nyu.edu/~adamodar/	4.13%	adjusted for Rf
2024 Implied Premium		

Rf = Risk Free Rate	4.78%
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to above

Value Line Investment Survey, Selected Yields January 10, 2025
as of 12-30-2024

US Treasury Securities year end data	
5 year	4.37%
10 year	4.55%
30 year	4.77%
30 year Zero	

Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>)
As of 12-30-24

Treasury Constant Maturities		
5 year	4.38%	
10 year	4.58%	
20 year	4.86%	
30 year	4.78%	
20 year TIPS	1.62%	2.52%
30 year TIPS	1.67%	2.30%
		TIPS inflation indication

Inflation	2.30%
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The Livingston Survey December 20, 2024, page 4.

Inflation median (measured by the Consumer Price Index) over next 10 years	2.28%
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Gross Domestic Product (GDP)	4.10%
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real GDP + inflation est

Federal Reserve Projected Long Run Real GDP Growth

Median Projection Value From Dec 18, 2024 Report, Table 1	1.80%
https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20241218.pdf	

Congressional Budget Office Real GDP Economic Projections

The Budget and Economic Outlook 2025-2035		Table C-3, pg 29
Average Percentage Change Year To Year	2025-2029	2.20%
https://www.cbo.gov/system/files/2025-01/60870-Outlook-2025.pdf	2030-2035	1.90%

Federal Reserve Bank of Philadelphia

The Livingston Survey December 20, 2024, page 4.		
Average Annual Real GDP Growth Rate for Next 10 Years		2.11%
https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey		

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2025 ASSESSMENT YEAR
RAILROADS

Based on Dividend Growth

$$K_e = (D_1 + BB_1 / P_0) + G_D$$

Ke = Cost of Equity
D1 = Expected Dividends
BB1 = Expected Share Repurchase
P0 = Current Stock Price
GD = Sustainable Growth -- Dividend

Company	Ticker	Stock Price (Po)	Expected FCFE1	Expected Dividend (D1)	Expected Buyback	Dividend Yield (D1/Po)	Buyback Yield (BB ₁)	Total Yield	Growth	K _e
Union Pacific Corp.	UNP	228.04	6.99	5.48	1.51	2.40%	0.66%	3.07%	6.00%	9.07%
Norfolk Southern Corp.	NSC	234.70	4.91	5.60	(0.69)	2.39%	-0.30%	2.09%	5.00%	7.09%
CSX Corp.	CSX	32.27	1.40	0.52	0.88	1.61%	2.73%	4.35%	12.50%	16.85%
Canadian National	CNI	101.51	3.78	2.68	1.10	2.64%	1.08%	3.72%	8.50%	12.22%
Canadian Pacific Kansas City	CP	72.37	2.14	0.64	1.50	0.88%	2.07%	2.96%	9.00%	11.96%
				Mean				3.24%		11.44%
				Median				3.07%		11.96%
				Harmonic Mean				3.05%		10.50%
				Std Dev				0.85%		3.70%
				Coeff Var				26.25%		32.32%
				Max				4.35%		16.85%
				Min				2.09%		7.09%
									Say	10.50%

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2025 ASSESSMENT YEAR
RAILROADS

Based on Earnings Growth

$$K_e = (D_1 + BB_1 / P_0) + G_D$$

Ke = Cost of Equity
D1 = Expected Dividends
P0 = Current Stock Price
G = Sustainable Growth -- Earnings
assumption Sustainable growth can not exceed inflation plus real GDP

Company	Ticker	Stock Price (Po)	Expected FCFE1	Expected Dividend (D1)	Expected Buyback	Yield (D1/P0)	Buyback Yield (BB1/P0)	Total Yield	Growth	Ke Sustainable Growth
Union Pacific Corp.	UNP	228.04	6.99	5.48	1.51	2.40%	0.66%	3.07%	8.00%	11.07%
Norfolk Southern Corp.	NSC	234.70	4.91	5.60	(0.69)	2.39%	-0.30%	2.09%	11.50%	13.59%
CSX Corp.	CSX	32.27	1.40	0.52	0.88	1.61%	2.73%	4.35%	9.00%	13.35%
Canadian National	CNI	101.51	3.78	2.68	1.10	2.64%	1.08%	3.72%	7.00%	10.72%
Canadian Pacific Kansas City	CP	72.37	2.14	0.64	1.50	0.88%	2.07%	2.96%	8.00%	10.96%
Mean						1.98%				11.94%
Median						2.39%				11.07%
Harmonic Mean						1.69%				11.81%
Std Dev						0.73%				1.41%
Coeff Var						36.64%				11.78%
Max						2.64%				13.59%
Min						0.88%				10.72%
Say										12.00%

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SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT
DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2025 ASSESSMENT YEAR
RAILROADS

Based on Return on Equity

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

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

Company	Ticker	Stock Price (Po)	Expected Earnings (E1)	Total Yield	\$ Payout	Payout Ratio	b (1-payout ratio)	ROE	Growth (b*ROE)=(G)	K _e
Union Pacific Corp.	UNP	228.04	12.25	3.07%	6.99	0.57	0.43	42.00%	18.02%	21.09%
Norfolk Southern Corp.	NSC	234.70	14.00	2.09%	4.91	0.35	0.65	19.50%	12.67%	14.76%
CSX Corp.	CSX	32.27	2.75	4.35%	1.40	0.51	0.49	28.00%	13.72%	18.07%
Canadian National	CNI	101.51	6.00	3.72%	3.78	0.63	0.37	25.00%	9.25%	12.97%
Canadian Pacific Kansas City	CP	72.37	3.75	2.96%	2.14	0.57	0.43	9.50%	4.08%	7.03%
Mean										14.78%
Median										14.76%
Harmonic Mean										12.83%
Std Dev										5.34%
Coeff Var										36.09%
Max										21.09%
Min										7.03%
Say										13.00%

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

Washington State Department of Revenue
2025 ASSESSMENT YEAR

Based on Earnings Growth and Required Reinvestment

Company	Ticker	Ke	New Ke
Union Pacific Corp.	UNP	9.31%	7.97%
Norfolk Southern Corp.	NSC	12.09%	7.13%
CSX Corp.	CSX	15.86%	10.25%
Canadian National	CNI	10.10%	11.39%
Canadian Pacific Kansas City	CP	8.85%	8.60%
Mean		11.24%	9.07%
Harmonic Mean		10.75%	8.81%
Median		10.10%	8.60%
Say		11.50%	9.00%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM	S&P YTM (avg)	Mergent's Ratings	S&P Ratings	Mergent's	S&P	
Union Pacific Corp.	UNP	A3	A-	5.33%	5.34%	9	9	Aaa1	AAA+	1
Norfolk Southern Corp.	NSC	Baa1	BBB+	5.43%	5.38%	10	10	Aaa2	AAA	2
CSX Corp.	CSX	Baa1	BBB+	5.38%	5.27%	10	10	Aaa3	AAA-	3
Canadian Pacific Kansas City	CP	Baa2	BBB+	5.41%	5.43%	11	10	Aa1	AA+	4
Canadian National	CNI	A2	A	5.25%	5.28%	8	8	Aa2	AA	5
Overall Average Debt Rating		Baa1	A-	5.36%	5.34%	9.6	9.4	Aa3	AA-	6
bond analysis, A-CCC bonds								A1	A+	7
All issues 20+ year maturities								A2	A	8
Guideline Companies, All Ratings								A3	A-	9
bond analysis page 12								Baa1	BBB+	10
								Baa2	BBB	11
								Baa3	BBB-	12
								Ba1	BB+	13
								Ba2	BB	14
								Ba3	BB-	15
								B1	B+	16
								B2	B	17
								B3	B-	18
								Caa1	CCC+	19
								Caa2	CCC	20
Mergent's Bond Record February 2025										
Corporate	Aaa	Aa	A	Baa						
October	4.95%	5.17%	5.33%	5.63%						
November	5.14%	5.33%	5.49%	5.78%						
December	5.20%	5.37%	5.53%	5.80%						
4th Qtr Average	5.10%	5.29%	5.45%	5.74%						
2024 Average	5.04%	5.27%	5.43%	5.75%						
Public Utilities	Aaa	Aa	A	Baa						
October		5.29%	5.41%	5.61%						
November		5.43%	5.55%	5.75%						
December		5.45%	5.58%	5.77%						
4th Qtr Average		5.39%	5.51%	5.71%						
2024 Average		5.42%	5.54%	5.76%						
Industrials	Aaa	Aa	A	Baa						
October	4.95%	5.05%	5.24%	5.65%						
November	5.14%	5.23%	5.43%	5.80%						
December	5.20%	5.28%	5.47%	5.83%						
4th Qtr Average	5.10%	5.19%	5.38%	5.76%						
2024 Average	5.04%	5.12%	5.32%	5.74%						
Debt Yield Rate					5.70%					
Cost of Secured Debt (Operating Lease) Rate					5.25%					

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12/31/2024

Railroad Bond Analysis

2024.5

													Embedded				
Company	type	Call	coupon	maturity	Price	Issued / Book	current yield	YTM	Weighted Ave	S&P Rating	Mkt Val	Mkt : Book	Rate	Debt Service	WAYTM	WAYTM	Finra YTM
Canadian National	CORP	Y	2.750	2026	98.01	\$ 500,000,000	2.81%	4.15%	0.02%	A-	\$ 490,035,000	98.01%		13,750,000	0.000215	0.00243	4.52
Canadian National	CORP	N	6.900	2028	106.95	\$ 475,000,000	6.45%	4.70%	0.02%	A-	\$ 508,012,500	106.95%		32,775,000	0.000231	0.00262	4.73
Canadian National	CORP	N	7.375	2031	114.18	\$ 200,000,000	6.46%	4.79%	0.01%	A-	\$ 228,360,000	114.18%		14,750,000	0.000099	0.00112	5
Canadian National	CORP	Y	3.850	2032	92.27	\$ 800,000,000	4.17%	5.12%	0.04%	A-	\$ 738,160,000	92.27%		30,800,000	0.000424	0.00480	5.08
Canadian National	CORP	Y	5.850	2033	104.06	\$ 300,000,000	5.62%	5.25%	0.02%	A-	\$ 312,180,000	104.06%		17,550,000	0.000163	0.00185	5.25
Canadian National	CORP	N	6.250	2034	108.57	\$ 500,000,000	5.76%	5.09%	0.03%	A-	\$ 542,855,000	108.57%		31,250,000	0.000263	0.00299	5.1
Canadian National	CORP	Y	4.375	2034	94.50	\$ 750,000,000	4.63%	5.12%	0.04%	A-	\$ 708,750,000	94.50%		32,812,500	0.000398	0.00450	5.09
Canadian National	CORP	N	6.712	2036	112.42	\$ 250,000,000	5.97%	5.25%	0.01%	A-	\$ 281,050,000	112.42%		16,780,000	0.000136	0.00154	5.26
Canadian National	CORP	N	6.200	2036	107.14	\$ 450,000,000	5.79%	5.35%	0.02%	A-	\$ 482,130,000	107.14%		27,900,000	0.000249	0.00283	5.35
Canadian National	CORP	N	6.375	2037	109.05	\$ 300,000,000	5.85%	5.36%	0.02%	A-	\$ 327,150,000	109.05%		19,125,000	0.000167	0.00189	5.38
Canadian National	CORP	N	3.500	2042	76.35	\$ 250,000,000	4.58%	5.67%	0.01%	A-	\$ 190,875,000	76.35%		8,750,000	0.000147	0.00166	5.61
Canadian National	CORP	Y	4.500	2043	86.84	\$ 250,000,000	5.18%	5.67%	0.01%	A-	\$ 217,100,000	86.84%		11,250,000	0.000147	0.00166	5.64
Canadian National	CORP	Y	3.200	2046	70.58	\$ 650,000,000	4.53%	5.58%	0.04%	A-	\$ 458,770,000	70.58%		20,800,000	0.000376	0.00426	5.55
Canadian National	CORP	Y	3.650	2048	75.73	\$ 600,000,000	4.82%	5.52%	0.03%	A-	\$ 454,380,000	75.73%		21,900,000	0.000343	0.00388	5.52
Canadian National	CORP	Y	4.450	2049	85.80	\$ 650,000,000	5.19%	5.52%	0.04%	A-	\$ 557,700,000	85.80%		28,925,000	0.000372	0.00421	5.52
Canadian National	CORP	Y	2.450	2050	58.33	\$ 600,000,000	4.20%	5.54%	0.03%	A-	\$ 349,980,000	58.33%		14,700,000	0.000344	0.00390	5.52
Canadian National	CORP	Y	4.400	2052	86.02	\$ 700,000,000	5.12%	5.39%	0.04%	A-	\$ 602,140,000	86.02%		30,800,000	0.000390	0.00442	5.36
Canadian National	CORP	Y	6.125	2053	108.17	\$ 300,000,000	5.66%	5.55%	0.02%	A-	\$ 324,510,000	108.17%		18,375,000	0.000172	0.00195	5.54
18			1800	sum	1694.97	\$ 8,525,000,000	Percent of book	94.16%		0.46%	\$ 7,774,137,500	91.19%	4.61%	\$ 392,992,500		5.251%	
CSX Corp	CORP	Y	3.350	2025	99.03	\$ 600,000,000	3.38%	5.37%	0.03%	BBB+	\$ 594,180,000	99.03%		20,100,000	0.000333	0.00176	4.53
CSX Corp	CORP	Y	2.600	2026	96.65	\$ 700,000,000	2.69%	4.97%	0.04%	BBB+	\$ 676,550,000	96.65%		18,200,000	0.000360	0.00191	4.52
CSX Corp	CORP	Y	3.250	2027	96.87	\$ 850,000,000	3.36%	4.60%	0.04%	BBB+	\$ 823,395,000	96.87%		27,625,000	0.000405	0.00214	4.63
CSX Corp	CORP	N	7.950	2027	107.26	\$ 64,270,000	7.41%	4.80%	0.00%	BBB+	\$ 68,936,002	107.26%		5,109,465	0.000032	0.00017	4.65
CSX Corp	CORP	N	7.250	2027	106.33	\$ 83,310,000	6.82%	4.52%	0.00%	BBB+	\$ 88,583,523	106.33%		6,039,975	0.000039	0.00021	4.35
CSX Corp	CORP	Y	3.800	2028	97.25	\$ 800,000,000	3.91%	4.67%	0.04%	BBB+	\$ 778,000,000	97.25%		30,400,000	0.000387	0.00205	4.74
CSX Corp	CORP	N	6.800	2028	107.40	\$ 200,000,000	6.33%	4.47%	0.01%	BBB+	\$ 214,800,000	107.40%		13,600,000	0.000093	0.00049	4.7
CSX Corp	CORP	Y	4.250	2029	97.85	\$ 350,000,000	4.34%	4.79%	0.02%	BBB+	\$ 342,475,000	97.85%		14,875,000	0.000174	0.00092	4.81
CSX Corp	CORP	Y	2.400	2030	88.70	\$ 400,000,000	2.71%	4.79%	0.02%	BBB+	\$ 354,800,000	88.70%		9,600,000	0.000198	0.00105	4.92
CSX Corp	CORP	Y	4.100	2032	93.54	\$ 950,000,000	4.38%	5.16%	0.05%	BBB+	\$ 888,630,000	93.54%		38,950,000	0.000508	0.00269	5.1
CSX Corp	CORP	Y	5.200	2033	100.21	\$ 600,000,000	5.19%	5.17%	0.03%	BBB+	\$ 601,260,000	100.21%		31,200,000	0.000321	0.00170	5.16
CSX Corp	CORP	N	6.000	2036	105.68	\$ 400,000,000	5.68%	5.33%	0.02%	BBB+	\$ 422,720,000	105.68%		24,000,000	0.000221	0.00117	5.34
CSX Corp	CORP	N	6.150	2037	106.94	\$ 700,000,000	5.75%	5.37%	0.04%	BBB+	\$ 748,580,000	106.94%		43,050,000	0.000389	0.00206	5.37
CSX Corp	CORP	N	7.450	2038	116.37	\$ 550,000,000	6.40%	5.68%	0.03%	BBB+	\$ 640,035,000	116.37%		40,975,000	0.000323	0.00171	5.68
CSX Corp	CORP	N	6.220	2040	107.48	\$ 660,000,000	5.79%	5.49%	0.04%	BBB+	\$ 709,368,000	107.48%		41,052,000	0.000375	0.00198	5.49
CSX Corp	CORP	Y	5.500	2041	100.01	\$ 550,000,000	5.50%	5.50%	0.03%	BBB+	\$ 550,055,000	100.01%		30,250,000	0.000313	0.00166	5.49
CSX Corp	CORP	Y	4.750	2042	91.03	\$ 600,000,000	5.22%	5.57%	0.03%	BBB+	\$ 546,180,000	91.03%		28,500,000	0.000346	0.00183	5.56
CSX Corp	CORP	Y	4.400	2043	87.65	\$ 300,000,000	5.02%	5.48%	0.02%	BBB+	\$ 262,950,000	87.65%		13,200,000	0.000170	0.00090	5.48
CSX Corp	CORP	N	7.880	2043	134.46	\$ 100,000,000	5.86%	4.99%	0.01%	BBB+	\$ 134,460,000	134.46%		7,880,000	0.000052	0.00027	5
CSX Corp	CORP	Y	4.100	2044	82.59	\$ 800,000,000	4.96%	5.59%	0.05%	BBB+	\$ 660,720,000	82.59%		32,800,000	0.000463	0.00245	5.58
CSX Corp	CORP	Y	3.800	2046	77.40	\$ 800,000,001	4.91%	5.64%	0.05%	BBB+	\$ 619,200,001	77.40%		30,400,000	0.000467	0.00247	5.6
CSX Corp	CORP	Y	4.750	2048	88.35	\$ 650,000,000	5.38%	5.66%	0.04%	BBB+	\$ 574,275,000	88.35%		30,875,000	0.000381	0.00201	5.64
CSX Corp	CORP	Y	4.300	2048	82.93	\$ 850,000,000	5.19%	5.63%	0.05%	BBB+	\$ 704,905,000	82.93%		36,550,000	0.000495	0.00262	5.62
CSX Corp	CORP	Y	3.350	2049	69.71	\$ 600,000,000	4.81%	5.67%	0.04%	BBB+	\$ 418,260,000	69.71%		20,100,000	0.000352	0.00186	5.63
CSX Corp	CORP	Y	4.500	2049	87.37	\$ 400,000,000	5.15%	5.45%	0.02%	BBB+	\$ 349,480,000	87.37%		18,000,000	0.000226	0.00119	5.44
CSX Corp	CORP	Y	3.800	2050	75.74	\$ 500,000,000	5.02%	5.61%	0.03%	BBB+	\$ 378,700,000	75.74%		19,000,000	0.000290	0.00154	5.6
CSX Corp	CORP	Y	3.950	2050	77.97	\$ 600,000,000	5.07%	5.59%	0.03%	BBB+	\$ 467,820,000	77.97%		23,700,000	0.000347	0.00184	5.58
CSX Corp	CORP	Y	2.500	2051	59.50	\$ 500,000,000	4.20%	5.41%	0.03%	BBB+	\$ 297,500,000	59.50%		12,500,000	0.000280	0.00148	5.39
CSX Corp	CORP	Y	4.500	2052	85.08	\$ 900,000,000	5.29%	5.57%	0.05%	BBB+	\$ 765,720,000	85.08%		40,500,000	0.000519	0.00275	5.55
CSX Corp	CORP	Y	4.500	2054	84.12	\$ 450,000,000	5.35%	5.61%	0.03%	BBB+	\$ 378,540,000	84.12%		20,250,000	0.000262	0.00138	5.6
CSX Corp	CORP	Y	4.900	2055	89.73	\$ 550,000,000	5.46%	5.61%	0.03%	BBB+	\$ 493,515,000	89.73%		26,950,000	0.000319	0.00169	5.6
CSX Corp	CORP	Y	4.250	2066	75.67	\$ 700,000,000	5.62%	5.81%	0.04%	BBB+	\$ 529,690,000	75.67%		29,750,000	0.000421	0.00223	5.8
CSX Corp	CORP	Y	4.650	2068	81.58	\$ 500,000,000	5.70%	5.82%	0.03%	BBB+	\$ 407,900,000	81.58%		23,250,000	0.000301	0.00159	5.82
33			3300	sum	3058.45	\$ 18,257,580,001	% of book	92.68%		1.02%	\$ 16,492,182,526	90.33%	4.43%	\$ 809,231,440		5.377%	
Norfolk Southern	CORP	Y	3.650	2025	99.32	\$ 300,000,000	3.67%	5.06%	0.02%	BBB+	\$ 297,960,000	99.32%		10,950,000	0.000157	0.00090	4.830
Norfolk Southern	CORP	N	5.590	2025	100.36	\$ 367,000,000	5.57%	4.84%	0.02%	BBB+	\$ 368,321,200	100.36%		20,515,300	0.000184	0.00106	4.600
Norfolk Southern	CORP	Y	2.900	2026	97.68	\$ 600,000,000	2.97%	4.53%	0.03%	BBB+	\$ 586,080,000	97.68%		17,400,000	0.000282	0.00162	4.560
Norfolk Southern	CORP	Y	3.150	2027	96.78	\$ 799,999,999	3.25%	4.54%	0.04%	BBB+	\$ 774,239,999	96.78%		25,200,000	0.000376	0.00216	4.560
Norfolk Southern	CORP	N	7.800	2027	107.19	\$ 800,000,000	7.28%	4.69%	0.04%	BBB+	\$ 857,520,000	107.19%		62,400,000	0.000388	0.00223	4.560
Norfolk Southern	CORP	Y	3.800	2028	97.03	\$ 400,000,000	3.92%	4.74%	0.02%	BBB+	\$ 388,120,000	97.03%		15,200,000	0.000196	0.00113	4.710
Norfolk Southern	CORP	Y	2.550	2029	90.22	\$ 400,000,000	2.83%	5.03%	0.02%	BBB+	\$ 360,880,000	90.22%		10,200,000	0.000208	0.00120	4.840
Norfolk Southern	CORP	N	5.640	2029	103.31	\$ 350,000,000	5.46%	4.80%	0.02%	BBB+	\$ 361,585,000	103.31%		19,740,000	0.000174	0.00100	4.790
Norfolk Southern	CORP	N	7.250	2031	111.28	\$ 700,000,000	6.52%	5.16%	0.04%	BBB+	\$ 778,960,000	111.28%		50,750,000	0.000374	0.00215	5.080
Norfolk Southern	CORP	Y	2.300	2031	85.84	\$ 600,000,000	2.68%	4.90%	0.03%	BBB+	\$ 429,200,000	85.84%		11,500,000	0.000253	0.00146	4.910
Norfolk Southern	CORP	Y	3.000	2032	87.33	\$ 500,000,000	3.44%	5.07%	0.03%	BBB+	\$ 523,980,000	87.33%		18,000,000	0.000315	0.00181	5.120
Norfolk Southern	CORP	N	7.050	2037	110.08	\$ 750,000,000	6.40%	5.89%	0.05%	BBB+	\$ 825,600,000	110.08%		52,875,000	0.000457	0.00263	5

Norfolk Southern	CORP	Y		4.800	2043	90.15	\$	500,000,000	5.32%	5.67%	0.03%	BBB+	\$	450,750,000	90.15%		24,000,000	0.000294	0.00169	5.660
Norfolk Southern	CORP	Y		4.450	2044	88.13	\$	500,000,000	5.05%	5.45%	0.03%	BBB+	\$	440,650,000	88.13%		22,250,000	0.000282	0.00162	5.670
Norfolk Southern	CORP	Y		4.650	2046	87.56	\$	600,000,000	5.31%	5.67%	0.04%	BBB+	\$	525,360,000	87.56%		27,900,000	0.000352	0.00202	5.670
Norfolk Southern	CORP	Y		3.942	2047	77.28	\$	749,169,000	5.10%	5.77%	0.04%	BBB+	\$	578,957,803	77.28%		29,532,242	0.000448	0.00257	5.730
Norfolk Southern	CORP	Y		4.150	2048	79.95	\$	500,000,000	5.19%	5.72%	0.03%	BBB+	\$	399,750,000	79.95%		20,750,000	0.000296	0.00170	5.720
Norfolk Southern	CORP	Y		3.400	2049	69.30	\$	400,000,000	4.91%	5.77%	0.02%	BBB+	\$	277,200,000	69.30%		13,600,000	0.000239	0.00137	5.730
Norfolk Southern	CORP	Y		4.100	2049	79.16	\$	400,000,000	5.18%	5.70%	0.02%	BBB+	\$	316,640,000	79.16%		16,400,000	0.000236	0.00136	5.680
Norfolk Southern	CORP	Y		3.050	2050	65.01	\$	800,000,000	4.69%	5.68%	0.05%	BBB+	\$	520,080,000	65.01%		24,400,000	0.000470	0.00270	5.680
Norfolk Southern	CORP	Y		2.900	2051	61.89	\$	600,000,000	4.69%	5.73%	0.04%	BBB+	\$	371,340,000	61.89%		17,400,000	0.000356	0.00205	5.690
Norfolk Southern	CORP	Y		4.050	2052	77.63	\$	749,994,000	5.22%	5.68%	0.04%	BBB+	\$	582,220,342	77.63%		30,374,757	0.000441	0.00253	5.660
Norfolk Southern	CORP	Y		3.700	2053	72.18	\$	400,000,000	5.13%	5.70%	0.02%	BBB+	\$	288,720,000	72.18%		14,800,000	0.000236	0.00136	5.690
Norfolk Southern	CORP	Y		4.550	2053	84.34	\$	750,000,000	5.39%	5.67%	0.04%	BBB+	\$	632,550,000	84.34%		34,125,000	0.000440	0.00253	5.660
Norfolk Southern	CORP	N		7.900	2097	142.28	\$	350,000,000	5.55%	5.52%	0.02%	BBB+	\$	497,980,000	142.28%		27,650,000	0.000200	0.00115	5.520
Norfolk Southern	CORP	N		6.000	2105	98.99	\$	550,000,000	6.06%	6.06%	0.03%	BBB+	\$	544,445,000	98.99%		33,000,000	0.000345	0.00198	6.060
Norfolk Southern	CORP	Y		5.100	2118	85.51	\$	600,000,000	5.96%	5.97%	0.04%	BBB+	\$	513,060,000	85.51%		30,600,000	0.000371	0.00213	5.960
Norfolk Southern	CORP	Y		4.100	2121	68.99	\$	600,000,000	5.94%	5.95%	0.04%	BBB+	\$	413,940,000	68.99%		24,600,000	0.000370	0.00212	5.950
30			3000		sum	2686.79	\$	16,812,162,999	% of book	89.56%	0.94%		\$	14,934,554,944	88.83%	4.51%	\$	758,640,819	5.427%	
Union Pacific Corp	CORP	Y		3.750	2025	99.50	\$	500,000,000	3.77%	4.79%	0.02%	A-	\$	497,500,000	99.50%		18,750,000	0.000248	0.00064	4.710
Union Pacific Corp	CORP	Y		3.250	2025	99.21	\$	500,000,000	3.28%	4.89%	0.03%	A-	\$	496,050,000	99.21%		16,250,000	0.000253	0.00066	4.540
Union Pacific Corp	CORP	Y		2.750	2026	97.98	\$	650,000,000	2.81%	4.17%	0.03%	A-	\$	636,870,000	97.98%		17,875,000	0.000280	0.00073	4.550
Union Pacific Corp	CORP	Y		4.750	2026	100.25	\$	500,000,000	4.74%	4.57%	0.02%	A-	\$	501,250,000	100.25%		23,750,000	0.000237	0.00061	4.490
Union Pacific Corp	CORP	Y		3.000	2027	96.76	\$	500,000,000	3.10%	4.40%	0.02%	A-	\$	483,800,000	96.76%		15,000,000	0.000228	0.00059	4.500
Union Pacific Corp	CORP	Y		2.150	2027	95.32	\$	500,000,000	2.26%	4.16%	0.02%	A-	\$	476,600,000	95.32%		10,750,000	0.000215	0.00056	4.520
Union Pacific Corp	CORP	Y		3.950	2028	97.27	\$	1,500,000,000	4.06%	4.82%	0.07%	A-	\$	1,459,050,000	97.27%		59,250,000	0.000748	0.00194	4.760
Union Pacific Corp	CORP	N		7.125	2028	107.40	\$	400,000,000	6.63%	4.78%	0.02%	A-	\$	429,600,000	107.40%		28,500,000	0.000198	0.00051	4.560
Union Pacific Corp	CORP	Y		3.700	2029	95.98	\$	1,000,000,000	3.85%	4.71%	0.05%	A-	\$	959,800,000	95.98%		37,000,000	0.000488	0.00127	4.770
Union Pacific Corp	CORP	N		6.625	2029	107.12	\$	600,000,000	6.18%	4.83%	0.03%	A-	\$	642,720,000	107.12%		39,750,000	0.000300	0.00078	4.680
Union Pacific Corp	CORP	Y		2.400	2030	89.06	\$	750,000,000	2.69%	4.70%	0.04%	A-	\$	667,950,000	89.06%		18,000,000	0.000365	0.00095	4.850
Union Pacific Corp	CORP	Y		2.375	2031	86.57	\$	850,000,000	2.74%	4.83%	0.04%	A-	\$	735,845,000	86.57%		20,187,500	0.000425	0.00110	4.840
Union Pacific Corp	CORP	Y		2.800	2032	86.80	\$	1,250,000,000	3.23%	4.95%	0.06%	A-	\$	1,085,000,000	86.80%		35,000,000	0.000641	0.00166	5.020
Union Pacific Corp	CORP	Y		4.500	2033	96.36	\$	900,000,000	4.67%	5.04%	0.05%	A-	\$	867,240,000	96.36%		40,500,000	0.000469	0.00122	5.050
Union Pacific Corp	CORP	N		5.375	2033	105.32	\$	200,000,000	5.10%	4.60%	0.01%	A-	\$	210,640,000	105.32%		10,750,000	0.000095	0.00025	4.600
Union Pacific Corp	CORP	N		6.250	2034	106.06	\$	250,000,000	5.89%	5.42%	0.01%	A-	\$	265,150,000	106.06%		15,625,000	0.000140	0.00036	5.410
Union Pacific Corp	CORP	Y		3.375	2035	86.95	\$	450,000,000	3.88%	5.00%	0.02%	A-	\$	391,275,000	86.95%		15,187,500	0.000233	0.00060	5.040
Union Pacific Corp	CORP	Y		2.891	2036	80.56	\$	699,261,000	3.59%	5.18%	0.04%	A-	\$	563,324,662	80.56%		20,215,636	0.000375	0.00097	5.190
Union Pacific Corp	CORP	Y		3.600	2037	84.26	\$	500,000,000	4.27%	5.36%	0.03%	A-	\$	421,300,000	84.26%		18,000,000	0.000277	0.00072	5.310
Union Pacific Corp	CORP	N		6.150	2037	110.45	\$	250,000,000	5.57%	5.01%	0.01%	A-	\$	276,125,000	110.45%		15,375,000	0.000130	0.00034	5.010
Union Pacific Corp	CORP	Y		4.375	2038	90.46	\$	750,000,000	4.84%	5.39%	0.04%	A-	\$	678,450,000	90.46%		32,812,500	0.000418	0.00109	5.360
Union Pacific Corp	CORP	Y		3.550	2039	81.57	\$	500,000,000	4.35%	5.42%	0.03%	A-	\$	407,850,000	81.57%		17,750,000	0.000280	0.00073	5.380
Union Pacific Corp	CORP	N		5.780	2040	103.90	\$	375,890,000	5.56%	5.40%	0.02%	A-	\$	390,549,710	103.90%		21,726,442	0.000210	0.00055	5.410
Union Pacific Corp	CORP	Y		4.750	2041	91.43	\$	500,000,000	5.20%	5.56%	0.03%	A-	\$	457,150,000	91.43%		23,750,000	0.000288	0.00075	5.540
Union Pacific Corp	CORP	Y		3.200	2041	74.90	\$	1,000,000,000	4.27%	5.56%	0.06%	A-	\$	749,000,000	74.90%		32,000,000	0.000576	0.00149	5.550
Union Pacific Corp	CORP	Y		4.300	2042	83.85	\$	300,000,000	5.13%	5.79%	0.02%	A-	\$	251,550,000	83.85%		12,900,000	0.000180	0.00047	5.780
Union Pacific Corp	CORP	Y		3.375	2042	76.02	\$	500,000,000	4.44%	5.55%	0.03%	A-	\$	380,100,000	76.02%		16,875,000	0.000287	0.00075	5.560
Union Pacific Corp	CORP	Y		4.250	2043	83.15	\$	325,000,000	5.11%	5.75%	0.02%	A-	\$	270,237,500	83.15%		13,812,500	0.000194	0.00050	5.740
Union Pacific Corp	CORP	Y		4.750	2043	89.31	\$	500,000,000	5.32%	5.70%	0.03%	A-	\$	446,550,000	89.31%		23,750,000	0.000295	0.00077	5.670
Union Pacific Corp	CORP	Y		4.821	2044	92.58	\$	700,000,000	5.21%	5.45%	0.04%	A-	\$	648,060,000	92.58%		33,747,000	0.000395	0.00102	5.440
Union Pacific Corp	CORP	Y		4.850	2044	89.83	\$	300,000,000	5.40%	5.73%	0.02%	A-	\$	269,490,000	89.83%		14,550,000	0.000178	0.00046	5.720
Union Pacific Corp	CORP	Y		4.050	2045	81.02	\$	500,000,000	5.00%	5.63%	0.03%	A-	\$	405,100,000	81.02%		20,250,000	0.000292	0.00076	5.600
Union Pacific Corp	CORP	Y		4.150	2045	81.23	\$	350,000,000	5.11%	5.73%	0.02%	A-	\$	284,305,000	81.23%		14,525,000	0.000208	0.00054	5.730
Union Pacific Corp	CORP	Y		4.050	2046	79.86	\$	600,000,000	5.07%	5.70%	0.04%	A-	\$	479,160,000	79.86%		24,300,000	0.000354	0.00092	5.690
Union Pacific Corp	CORP	Y		3.350	2046	71.30	\$	300,000,000	4.70%	5.70%	0.02%	A-	\$	213,900,000	71.30%		10,050,000	0.000177	0.00046	5.670
Union Pacific Corp	CORP	Y		4.000	2047	79.27	\$	500,000,000	5.05%	5.65%	0.03%	A-	\$	396,350,000	79.27%		20,000,000	0.000292	0.00076	5.640
Union Pacific Corp	CORP	Y		4.500	2048	85.48	\$	1,500,000,000	5.26%	5.63%	0.09%	A-	\$	1,282,200,000	85.48%		67,500,000	0.000874	0.00227	5.610
Union Pacific Corp	CORP	Y		4.300	2049	83.00	\$	1,000,000,000	5.18%	5.59%	0.06%	A-	\$	830,000,000	83.00%		43,000,000	0.000579	0.00150	5.590
Union Pacific Corp	CORP	Y		3.250	2050	68.09	\$	1,000,000,000	4.77%	5.64%	0.06%	A-	\$	680,900,000	68.09%		32,500,000	0.000584	0.00151	5.640
Union Pacific Corp	CORP	Y		3.799	2051	74.53	\$	1,044,261,000	5.10%	5.68%	0.06%	A-	\$	778,287,723	74.53%		39,671,475	0.000614	0.00159	5.650
Union Pacific Corp	CORP	Y		2.950	2052	63.62	\$	850,000,000	4.64%	5.56%	0.05%	A-	\$	540,770,000	63.62%		25,075,000	0.000490	0.00127	5.550
Union Pacific Corp	CORP	Y		4.950	2052	92.12	\$	600,000,000	5.37%	5.51%	0.03%	A-	\$	552,720,000	92.12%		29,700,000	0.000342	0.00089	5.500
Union Pacific Corp	CORP	Y		3.500	2053	70.47	\$	1,250,000,000	4.97%	5.60%	0.07%	A-	\$	880,875,000	70.47%		43,750,000	0.000724	0.00188	5.590
Union Pacific Corp	CORP	Y		4.950	2053	91.77	\$	500,000,000	5.39%	5.53%	0.03%	A-	\$	458,850,000	91.77%		24,750,000	0.000286	0.00074	5.520
Union Pacific Corp	CORP	Y		3.875	2055	75.01	\$	450,000,000	5.17%	5.60%	0.03%	A-	\$	337,545,000	75.01%		17,437,500	0.000261	0.00068	5.590
Union Pacific Corp	CORP	Y		4.800	2058	122.65	\$	500,000,000	5.91%	3.6										

Union Pacific Corp	CORP	Y	3.850	2072	69.32	\$	500,000,000	5.55%	5.75%	0.03%	A-	\$	346,600,000	69.32%		19,250,000	0.000297	0.00077	5.740	
56	Book Value	5600		sum	4821.33	\$	37,235,764,000	% of book	86.10%	2.06%		\$	31,202,330,191	83.80%	3.90%	\$	1,453,390,073		5.334%	
Canadian Pacific	CORP	Y	2.900	2025	99.45	\$	700,000,000	2.92%	4.03%	0.03%	BBB+	\$	696,150,000	99.45%		20,300,000	0.000292	0.00179	6.15	
Kansas City Southern			3.125	2026	96.42	\$	250,000,000	3.24%	5.68%	0.01%	BBB+	\$	241,050,000	96.42%	\$	7,812,500	0.000147	0.00090	5.79	
Canadian Pacific	CORP	Y	3.700	2026	98.57	\$	250,000,000	3.75%	4.71%	0.01%	BBB+	\$	246,425,000	98.57%		9,250,000	0.000122	0.00075	5.07	
Canadian Pacific	CORP	Y	3.125	2026	97.85	\$	226,823,000	3.19%	4.64%	0.01%	BBB+	\$	221,946,306	97.85%		7,088,219	0.000109	0.00067	4.71	
Canadian Pacific	CORP	Y	1.750	2026	94.72	\$	1,000,000,000	1.85%	5.51%	0.06%	BBB+	\$	947,200,000	94.72%		17,500,000	0.000571	0.00350	4.66	
Canadian Pacific	CORP	Y	4.000	2028	97.32	\$	500,000,000	4.11%	4.85%	0.03%	BBB+	\$	486,600,000	97.32%		20,000,000	0.000251	0.00154	4.86	
Kansas City Southern	CORP	Y	2.875	2029	90.4	\$	425,000,000	3.18%	5.33%	0.02%	BBB+	\$	384,200,000	90.40%		12,218,750	0.000235	0.00144	5.120	
Canadian Pacific	CORP	Y	2.875	2029	91.60	\$	414,838,000	3.14%	5.01%	0.02%	BBB+	\$	379,991,608	91.60%		11,926,593	0.000215	0.00132	4.83	
Canadian Pacific	CORP	Y	2.050	2030	86.95	\$	500,000,000	2.36%	4.81%	0.02%	BBB+	\$	434,750,000	86.95%		10,250,000	0.000249	0.00152	4.93	
Canadian Pacific	CORP	N	7.125	2031	111.10	\$	350,000,000	6.41%	5.08%	0.02%	BBB+	\$	388,850,000	111.10%		24,937,500	0.000184	0.00113	5.55	
Canadian Pacific	CORP	Y	2.450	2031	85.48	\$	1,400,000,000	2.87%	5.13%	0.07%	BBB+	\$	1,196,720,000	85.48%		34,300,000	0.000744	0.00456	4.95	
Canadian Pacific	CORP	N	5.750	2033	102.40	\$	250,000,000	5.62%	5.39%	0.01%	BBB+	\$	256,000,000	102.40%		14,375,000	0.000140	0.00086	5.38	
Canadian Pacific	CORP	Y	4.800	2035	88.76	\$	300,000,000	5.41%	6.30%	0.02%	BBB+	\$	266,280,000	88.76%		14,400,000	0.000196	0.00120	5.73	
Canadian Pacific	CORP	N	5.950	2037	103.85	\$	450,000,000	5.73%	5.52%	0.03%	BBB+	\$	467,325,000	103.85%		26,775,000	0.000257	0.00157	5.51	
Canadian Pacific	CORP	Y	3.000	2041	72.67	\$	1,000,000,000	4.13%	5.58%	0.06%	BBB+	\$	726,700,000	72.67%		30,000,000	0.000577	0.00354	5.5	
Canadian Pacific	CORP	N	5.750	2042	99.74	\$	250,000,000	5.76%	5.77%	0.01%	BBB+	\$	249,350,000	99.74%		14,375,000	0.000149	0.00092	5.77	
Kansas City Southern	CORP	Y	4.300	2043	84.67	\$	448,651,000	5.08%	5.66%	0.03%	BBB	\$	379,872,802	84.67%		19,291,993	0.000263	0.00161	5.570	
Canadian Pacific	CORP	Y	4.300	2043	85.02	\$	448,453,000	5.06%	5.62%	0.03%	BBB+	\$	381,274,741	85.02%		19,283,479	0.000261	0.00160	5.61	
Kansas City Southern	CORP	Y	4.950	2045	89.50	\$	499,165,000	5.53%	5.84%	0.03%	BBB+	\$	446,752,675	89.50%		24,708,668	0.000302	0.00185	5.83	
Canadian Pacific	CORP	Y	4.800	2045	96.58	\$	550,000,000	4.97%	5.07%	0.03%	BBB+	\$	531,190,000	96.58%		26,400,000	0.000289	0.00177	5.056	
Canadian Pacific	CORP	Y	4.950	2045	90.80	\$	462,991,000	5.45%	5.72%	0.03%	BBB+	\$	420,395,828	90.80%		22,918,055	0.000274	0.00168	5.71	
Kansas City Southern	CORP	Y	4.700	2048	82.96	\$	500,000,000	5.67%	6.08%	0.03%	BBB	\$	414,800,000	82.96%		23,500,000	0.000315	0.00193	6.070	
Canadian Pacific	CORP	Y	4.700	2048	86.76	\$	497,861,000	5.42%	5.74%	0.03%	BBB+	\$	431,944,204	86.76%		23,399,467	0.000296	0.00181	5.73	
Canadian Pacific	CORP	Y	3.500	2050	70.99	\$	542,518,000	4.93%	5.68%	0.03%	BBB+	\$	385,133,528	70.99%		18,988,130	0.000319	0.00196	5.67	
Canadian Pacific	CORP	Y	3.100	2051	64.96	\$	1,800,000,000	4.77%	5.69%	0.11%	BBB+	\$	1,169,280,000	64.96%		55,800,000	0.001061	0.00650	5.64	
Kansas City Southern	CORP	Y	4.200	2069	81.28	\$	425,000,000	5.17%	5.30%	0.02%	BBB+	\$	345,440,000	81.28%		17,850,000	0.000233	0.00143	5.280	
Canadian Pacific	CORP	Y	4.200	2069	73.90	\$	420,463,000	5.68%	5.86%	0.03%	BBB+	\$	310,722,157	73.90%		17,659,446	0.000255	0.00156	5.85	
Canadian Pacific	CORP	Y	6.125	2115	110.80	\$	900,000,000	5.53%	5.52%	0.05%	BBB+	\$	997,200,000	110.80%		55,125,000	0.000515	0.00315	5.524	
28	Book Value	2800		sum	2535.50	\$	15,761,763,000	% of book	90.55%	0.88%		\$	13,803,543,848	87.58%	3.81%	\$	600,432,798		5.405%	

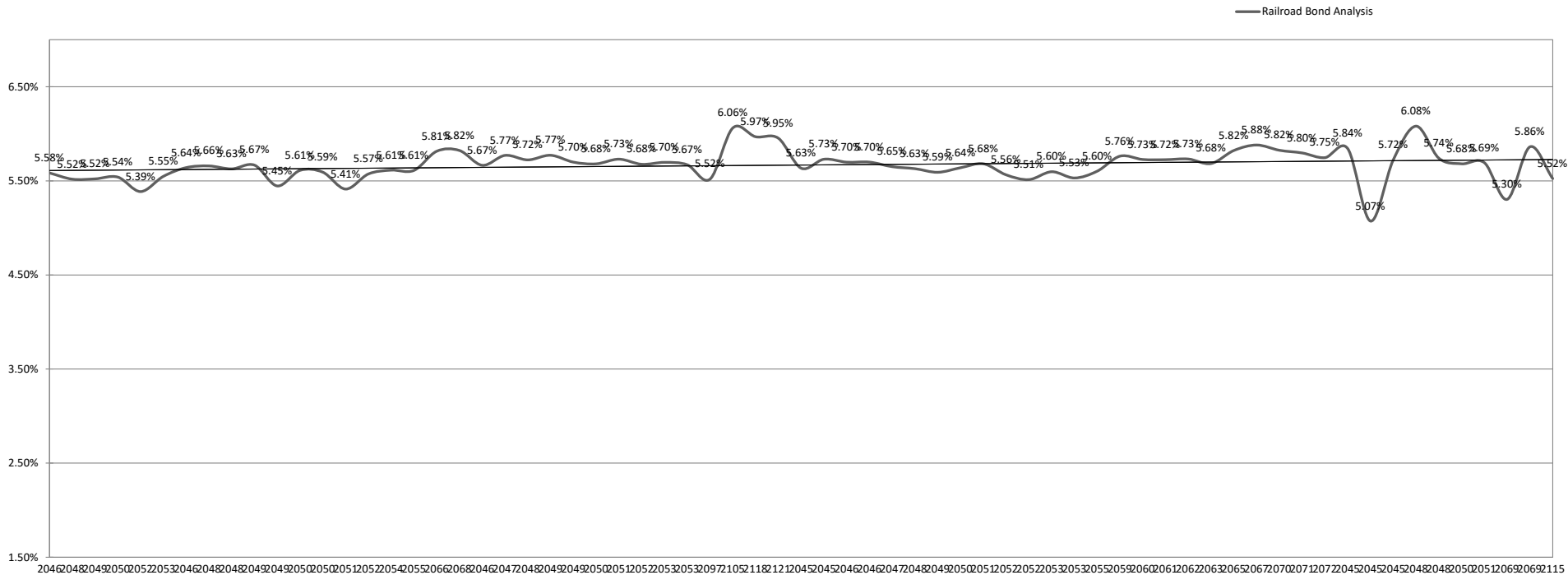
Total	\$	96,592,270,000		Total	\$	84,206,749,009	87.18%	4.16%	\$	4,014,687,630	5.363%	5.359%	5.344
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This includes short term. For 20+ year maturities see below

Source: Finra

Embedded debt rate	4.16%
Weighted average yield to maturity	5.36%
Debt service / Market value	4.77%

20+ Year, All Ratings, Railroad Bond Analysis



12/31/2021

Railroad Bond Analysis

Company	type	Call	coupon	maturity	Price	Issued / Book	current yield	yield to maturity	Weighted Average	Rating	Mkt Val	Mkt : Book	Embedded Rate	Debt Service	WAYTM	WAYTM	Finra YTM
Canadian National	CORP	Y	3.200	2046	70.58	\$ 650,000,000	4.53%	5.58%	0.04%	A-	\$ 458,770,000	70.58%		20,800,000	0.000376	0.00426	5.55
Canadian National	CORP	Y	3.650	2048	75.73	\$ 600,000,000	4.82%	5.52%	0.03%	A-	\$ 454,380,000	75.73%		21,900,000	0.000343	0.00388	5.52
Canadian National	CORP	Y	4.450	2049	85.80	\$ 650,000,000	5.19%	5.52%	0.04%	A-	\$ 557,700,000	85.80%		28,925,000	0.000372	0.00421	5.52
Canadian National	CORP	Y	2.450	2050	58.33	\$ 600,000,000	4.20%	5.54%	0.03%	A-	\$ 349,980,000	58.33%		14,700,000	0.000344	0.00390	5.52
Canadian National	CORP	Y	4.400	2052	86.02	\$ 700,000,000	5.12%	5.39%	0.04%	A-	\$ 602,140,000	86.02%		30,800,000	0.000390	0.00442	5.36
Canadian National	CORP	Y	6.125	2053	108.17	\$ 300,000,000	5.66%	5.55%	0.02%	A-	\$ 324,510,000	108.17%		18,375,000	0.000172	0.00195	5.54
CSX Corp	CORP	Y	3.800	2046	77.40	\$ 800,000,001	4.91%	5.64%	0.05%	BBB+	\$ 619,200,001	77.40%		30,400,000	0.000467	0.00247	5.6
CSX Corp	CORP	Y	4.750	2048	88.35	\$ 650,000,000	5.38%	5.66%	0.04%	BBB+	\$ 574,275,000	88.35%		30,875,000	0.000381	0.00201	5.64
CSX Corp	CORP	Y	4.300	2048	82.93	\$ 850,000,000	5.19%	5.63%	0.05%	BBB+	\$ 704,905,000	82.93%		36,550,000	0.000495	0.00262	5.62
CSX Corp	CORP	Y	3.350	2049	69.71	\$ 600,000,000	4.81%	5.67%	0.04%	BBB+	\$ 418,260,000	69.71%		20,100,000	0.000352	0.00186	5.63
CSX Corp	CORP	Y	4.500	2049	87.37	\$ 400,000,000	5.15%	5.45%	0.02%	BBB+	\$ 349,480,000	87.37%		18,000,000	0.000226	0.00119	5.44
CSX Corp	CORP	Y	3.800	2050	75.74	\$ 500,000,000	5.02%	5.61%	0.03%	BBB+	\$ 378,700,000	75.74%		19,000,000	0.000290	0.00154	5.6
CSX Corp	CORP	Y	3.950	2050	77.97	\$ 600,000,000	5.07%	5.59%	0.03%	BBB+	\$ 467,820,000	77.97%		23,700,000	0.000347	0.00184	5.58
CSX Corp	CORP	Y	2.500	2051	59.50	\$ 500,000,000	4.20%	5.41%	0.03%	BBB+	\$ 297,500,000	59.50%		12,500,000	0.000280	0.00148	5.39
CSX Corp	CORP	Y	4.500	2052	85.08	\$ 900,000,000	5.29%	5.57%	0.05%	BBB+	\$ 765,720,000	85.08%		40,500,000	0.000519	0.00275	5.55
CSX Corp	CORP	Y	4.500	2054	84.12	\$ 450,000,000	5.35%	5.61%	0.03%	BBB+	\$ 378,540,000	84.12%		20,250,000	0.000262	0.00138	5.6
CSX Corp	CORP	Y	4.900	2055	89.73	\$ 550,000,000	5.46%	5.61%	0.03%	BBB+	\$ 493,515,000	89.73%		26,950,000	0.000319	0.00169	5.6
CSX Corp	CORP	Y	4.250	2066	75.67	\$ 700,000,000	5.62%	5.81%	0.04%	BBB+	\$ 529,690,000	75.67%		29,750,000	0.000421	0.00223	5.8
CSX Corp	CORP	Y	4.650	2068	81.58	\$ 500,000,000	5.70%	5.82%	0.03%	BBB+	\$ 407,900,000	81.58%		23,250,000	0.000301	0.00159	5.82
Norfolk Southern	CORP	Y	4.650	2046	87.56	\$ 600,000,000	5.31%	5.67%	0.04%	BBB+	\$ 525,360,000	87.56%		27,900,000	0.000352	0.00202	5.670
Norfolk Southern	CORP	Y	3.942	2047	77.28	\$ 749,169,000	5.10%	5.77%	0.04%	BBB+	\$ 578,957,803	77.28%		29,532,242	0.000448	0.00257	5.730
Norfolk Southern	CORP	Y	4.150	2048	79.95	\$ 500,000,000	5.19%	5.72%	0.03%	BBB+	\$ 399,750,000	79.95%		20,750,000	0.000296	0.00170	5.720
Norfolk Southern	CORP	Y	3.400	2049	69.30	\$ 400,000,000	4.91%	5.77%	0.02%	BBB+	\$ 277,200,000	69.30%		13,600,000	0.000239	0.00137	5.730
Norfolk Southern	CORP	Y	4.100	2049	79.16	\$ 400,000,000	5.18%	5.70%	0.02%	BBB+	\$ 316,640,000	79.16%		16,400,000	0.000236	0.00136	5.680
Norfolk Southern	CORP	Y	3.050	2050	65.01	\$ 800,000,000	4.69%	5.68%	0.05%	BBB+	\$ 520,080,000	65.01%		24,400,000	0.000470	0.00270	5.680
Norfolk Southern	CORP	Y	2.900	2051	61.89	\$ 600,000,000	4.69%	5.73%	0.04%	BBB+	\$ 371,340,000	61.89%		17,400,000	0.000356	0.00205	5.690
Norfolk Southern	CORP	Y	4.050	2052	77.63	\$ 749,994,000	5.22%	5.68%	0.04%	BBB+	\$ 582,220,342	77.63%		30,374,757	0.000441	0.00253	5.660
Norfolk Southern	CORP	Y	3.700	2053	72.18	\$ 400,000,000	5.13%	5.70%	0.02%	BBB+	\$ 288,720,000	72.18%		14,800,000	0.000236	0.00136	5.690
Norfolk Southern	CORP	Y	4.550	2053	84.34	\$ 750,000,000	5.39%	5.67%	0.04%	BBB+	\$ 632,550,000	84.34%		34,125,000	0.000440	0.00253	5.660
Norfolk Southern	CORP	N	7.900	2097	142.28	\$ 350,000,000	5.55%	5.52%	0.02%	BBB+	\$ 497,980,000	142.28%		27,650,000	0.000200	0.00115	5.520
Norfolk Southern	CORP	N	6.000	2105	98.99	\$ 550,000,000	6.06%	6.06%	0.03%	BBB+	\$ 544,445,000	98.99%		33,000,000	0.000345	0.00198	6.060
Norfolk Southern	CORP	Y	5.100	2118	85.51	\$ 600,000,000	5.96%	5.97%	0.04%	BBB+	\$ 513,060,000	85.51%		30,600,000	0.000371	0.00213	5.960
Norfolk Southern	CORP	Y	4.100	2121	68.99	\$ 600,000,000	5.94%	5.95%	0.04%	BBB+	\$ 413,940,000	68.99%		24,600,000	0.000370	0.00212	5.950
Union Pacific Corp	CORP	Y	4.050	2045	81.02	\$ 500,000,000	5.00%	5.63%	0.03%	A-	\$ 405,100,000	81.02%		20,250,000	0.000292	0.00076	5.600
Union Pacific Corp	CORP	Y	4.150	2045	81.23	\$ 350,000,000	5.11%	5.73%	0.02%	A-	\$ 284,305,000	81.23%		14,525,000	0.000208	0.00054	5.730
Union Pacific Corp	CORP	Y	4.050	2046	79.86	\$ 600,000,000	5.07%	5.70%	0.04%	A-	\$ 479,160,000	79.86%		24,300,000	0.000354	0.00092	5.690
Union Pacific Corp	CORP	Y	3.350	2046	71.30	\$ 300,000,000	4.70%	5.70%	0.02%	A-	\$ 213,900,000	71.30%		10,050,000	0.000177	0.00046	5.670
Union Pacific Corp	CORP	Y	4.000	2047	79.27	\$ 500,000,000	5.05%	5.65%	0.03%	A-	\$ 396,350,000	79.27%		20,000,000	0.000292	0.00076	5.640
Union Pacific Corp	CORP	Y	4.500	2048	85.48	\$ 1,500,000,000	5.26%	5.63%	0.09%	A-	\$ 1,282,200,000	85.48%		67,500,000	0.000874	0.00227	5.610
Union Pacific Corp	CORP	Y	4.300	2049	83.00	\$ 1,000,000,000	5.18%	5.59%	0.06%	A-	\$ 830,000,000	83.00%		43,000,000	0.000579	0.00150	5.590
Union Pacific Corp	CORP	Y	3.250	2050	68.09	\$ 1,000,000,000	4.77%	5.64%	0.06%	A-	\$ 680,900,000	68.09%		32,500,000	0.000584	0.00151	5.640
Union Pacific Corp	CORP	Y	3.799	2051	74.53	\$ 1,044,261,000	5.10%	5.68%	0.06%	A-	\$ 778,287,723	74.53%		39,671,475	0.000614	0.00159	5.650
Union Pacific Corp	CORP	Y	2.950	2052	63.62	\$ 850,000,000	4.64%	5.56%	0.05%	A-	\$ 540,770,000	63.62%		25,075,000	0.000490	0.00127	5.550
Union Pacific Corp	CORP	Y	4.950	2052	92.12	\$ 600,000,000	5.37%	5.51%	0.03%	A-	\$ 552,720,000	92.12%		29,700,000	0.000342	0.00089	5.500
Union Pacific Corp	CORP	Y	3.500	2053	70.47	\$ 1,250,000,000	4.97%	5.60%	0.07%	A-	\$ 880,875,000	70.47%		43,750,000	0.000724	0.00188	5.590
Union Pacific Corp	CORP	Y	4.950	2053	91.77	\$ 500,000,000	5.39%	5.53%	0.03%	A-	\$ 458,850,000	91.77%		24,750,000	0.000286	0.00074	5.520
Union Pacific Corp	CORP	Y	3.875	2055	75.01	\$ 450,000,000	5.17%	5.60%	0.03%	A-	\$ 337,545,000	75.01%		17,437,500	0.000261	0.00068	5.590
Union Pacific Corp	CORP	Y	3.950	2059	73.10	\$ 500,000,000	5.40%	5.76%	0.03%	A-	\$ 365,500,000	73.10%		19,750,000	0.000298	0.00077	5.740
Union Pacific Corp	CORP	Y	3.839	2060	71.60	\$ 1,841,766,000	5.36%	5.73%	0.11%	A-	\$ 1,318,704,456	71.60%		70,705,397	0.001092	0.00283	5.720
Union Pacific Corp	CORP	Y	3.550	2061	66.99	\$ 650,000,000	5.30%	5.72%	0.04%	A-	\$ 435,435,000	66.99%		23,075,000	0.000385	0.00100	5.710
Union Pacific Corp	CORP	Y	2.973	2062	57.82	\$ 1,044,449,000	5.14%	5.73%	0.06%	A-	\$ 603,900,412	57.82%		31,051,469	0.000620	0.00161	5.700
Union Pacific Corp	CORP	Y	5.150	2063	91.72	\$ 400,000,000	5.61%	5.68%	0.02%	A-	\$ 366,880,000	91.72%		20,600,000	0.000235	0.00061	5.680
Union Pacific Corp	CORP	Y	4.375	2065	77.65	\$ 600,000,000	5.63%	5.82%	0.04%	A-	\$ 465,900,000	77.65%		26,250,000	0.000362	0.00094	5.810
Union Pacific Corp	CORP	Y	4.100	2067	72.39	\$ 500,000,000	5.66%	5.88%	0.03%	A-	\$ 361,950,000	72.39%		20,500,000	0.000304	0.00079	5.870
Union Pacific Corp	CORP	Y	3.750	2070	67.09	\$ 750,000,000	5.59%	5.82%	0.05%	A-	\$ 503,175,000	67.09%		28,125,000	0.000452	0.00117	5.820
Union Pacific Corp	CORP	Y	3.799	2071	68.05	\$ 1,005,137,000	5.58%	5.80%	0.06%	A-	\$ 683,995,729	68.05%		38,185,155	0.000603	0.00156	5.790
Union Pacific Corp	CORP	Y	3.850	2072	69.32	\$ 500,000,000	5.55%	5.75%	0.03%	A-	\$ 346,600,000	69.32%		19,250,000	0.000297	0.00077	5.740
Kansas City Southern	CORP	Y	4.950	2045	89.50	\$ 499,165,000	5.53%	5.84%	0.03%	BBB+	\$ 446,752,675	89.50%		24,708,668	0.000302	0.00185	5.83
Canadian Pacific	CORP	Y	4.800	2045	96.58	\$ 550,000,000	4.97%	5.07%	0.03%	BBB+	\$ 531,190,000	96.58%		26,400,000	0.000289	0.00177	5.056
Canadian Pacific	CORP	Y	4.950	2045	90.80	\$ 462,991,000	5.45%	5.72%	0.03%	BBB+	\$ 420,395,828	90.80%		22,918,055	0.000274	0.00168	5.71
Kansas City Southern	CORP	Y	4.700	2048	82.96	\$ 500,000,000	5.67%	6.08%	0.03%	BBB	\$ 414,800,000	82.96%		23,500,000	0.000315	0.00193	6.070
Canadian Pacific	CORP	Y	4.700	2048	86.76	\$ 497,861,000	5.42%	5.74%	0.03%	BBB+	\$ 431,944,204	86.76%		23,399,467	0.000296	0.00181	5.73
Canadian Pacific	CORP	Y	3.500	2050	70.99	\$ 542,518,000	4.93%	5.68%	0.03%	BBB+	\$ 385,133,528	70.99%		18,988,130	0.000319	0.00196	5.67
Canadian Pacific	CORP	Y	3.100	2051	64.96	\$ 1,800,000,000	4.77%	5.69%	0.11%	BBB+	\$ 1,169,280,000	64.96%		55,800,000	0.001061	0.00650	5.64
Kansas City Southern	CORP	Y	4.200	2069	81.28	\$ 425,000,000	5.17%	5.30%	0.02%	BBB+	\$ 345,440,000	81.28%		17,850,000	0.000233	0.00143	5.280
Canadian Pacific	CORP	Y	4.200	2069	73.90	\$ 420,4											

Total \$ 44,382,774,001

Source: Finra

<https://finra-markets.morningstar.com/BondCenter/Default.jsp>

Total \$ 34,621,089,858 78.01% 4.08% \$ 1,808,806,760 2.604% 5.654

Embedded debt rate 4.08%
Weighted average yield to maturity 2.60%
Debt service / Market value 5.22%
Finra YTM 5.65%
SAY 5.50%

DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

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

			Current Year									Next Year	
Guideline Companies		Stock Price 12/31/2024	Beta levered	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Book Value	Common Shares (1000s) Outstanding	Long-Term Debt	Operating Margin	Revenues Per Share	Cash Flow Per Share
Name	Ticker	Yahoo	VL	VL	VL	VL	VL	VL	10K	VL	VL	VL	VL
Union Pacific Corp.	UNP	\$228.04	1.00	\$ 40.35	\$ 15.00	\$ 11.00	\$ 5.28	\$ 26.85	604,241	\$ 29,761,000,000	52.5%	\$ 43.05	\$ 16.40
Norfolk Southern Corp.	NSC	\$234.70	1.05	\$ 54.20	\$ 17.96	\$ 11.50	\$ 5.40	\$ 66.70	226,321	\$ 16,644,000,000	45.3%	\$ 57.20	\$ 20.75
CSX Corp.	CSX	\$32.27	1.00	\$ 7.60	\$ 2.65	\$ 1.85	\$ 0.48	\$ 6.90	1,928,419	\$ 18,535,000,000	46.0%	\$ 8.15	\$ 2.90
Canadian National	CNI	\$101.51	0.90	\$ 19.95	\$ 7.80	\$ 5.50	\$ 2.52	\$ 24.00	628,800	\$ 13,763,000,000	48.5%	\$ 21.30	\$ 8.35
Canadian Pacific Kansas City	CP	\$72.37	0.95	\$ 11.35	\$ 4.80	\$ 3.25	\$ 0.58	\$ 36.70	933,344	\$ 13,830,000,000	52.5%	\$ 12.30	\$ 5.25

Value Line Issue: November 18, 2022

The harmonic mean is the preferable method for averaging multiples, such as the price/earning ratio, in which price is in the numerator. If these ratios are averaged using an arithmetic mean (a common error), High data points are given greater weights than low data points.

The harmonic mean, on the other hand, gives equal weight to each data point

Note:

Canadian Exchange Rate: 0.694382

Value Line figures are all values in US dollars.

						Year 5							
Earnings Per Share	Dividends Per Share	Common Shares (1000s)	% Return on Shareholders' Equity	% Retained to Common Equity	All Dividends to Net Profits	Revenues Per Share	Cash Flow Per Share	Earnings Per Share	Dividends Per Share	Common Shares	% Return on Shareholders Equity	% Retained to Common Equity	All Dividends to Net Profits
VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
\$ 12.25	\$ 5.48	590,000	42.0%	23.0%	45.0%	\$ 50.90	\$ 20.40	\$ 15.50	\$ 6.50	550,000	35.5%	20.5%	42.0%
\$ 14.00	\$ 5.60	222,000	19.5%	11.5%	40.0%	\$ 72.50	\$ 27.50	\$ 19.50	\$ 6.25	200,000	23.5%	16.0%	33.0%
\$ 2.75	\$ 0.52	1,850,000	28.0%	20.5%	26.0%	\$ 10.20	\$ 3.85	\$ 2.75	\$ 0.72	1,650,000	33.5%	24.5%	26.0%
\$ 6.00	\$ 2.68	620,000	25.0%	13.5%	45.0%	\$ 27.55	\$ 11.85	\$ 9.00	\$ 3.50	570,000	33.0%	20.0%	39.0%
\$ 3.75	\$ 0.64	950,000	9.5%	8.0%	17.0%	\$ 13.25	\$ 6.10	\$ 4.50	\$ 0.90	933,345	9.5%	7.5%	20.0%

Revenues	Cash Flow	Earnings	Dividends	Income	Balance Sheet					Cash Flow
2022-2026	2022-2026	2022-2026	2022-2026	Operating Income	Current Assets	PP & E Gross	Current Liabilities	Long Term Debt	Intangibles (excluding Goodwill)	Depreciation & Amortization
VL	VL	VL	VL	10K	10K	10K	10K	10K	10K	10K
6.00%	7.00%	8.00%	6.00%	\$ 9,713,000,000	\$ 4,021,000,000	\$ 83,840,000,000	\$ 5,254,000,000	\$ 29,767,000,000	\$ 1,431,000,000	\$ 2,398,000,000
7.00%	10.00%	11.50%	5.00%	\$ 4,071,000,000	\$ 3,188,000,000	\$ 49,788,000,000	\$ 3,545,000,000	\$ 16,651,000,000	\$ 1,149,000,000	\$ 1,353,000,000
8.50%	9.00%	9.00%	12.50%	\$ 5,245,000,000	\$ 2,820,000,000	\$ 52,191,000,000	\$ 3,276,000,000	\$ 17,897,000,000	\$ 231,000,000	\$ 1,658,000,000
7.00%	7.00%	7.00%	8.50%	\$ 4,337,804,354	\$ 1,818,586,458	\$ 46,469,432,204	\$ 2,760,862,832	\$ 13,698,768,096	\$ 88,880,896	\$ 1,590,000,000
10.50%	10.50%	8.00%	9.00%	\$ 3,596,204,378	\$ 2,349,788,688	\$ 46,863,146,798	\$ 3,930,896,502	\$ 13,751,541,128	\$ 2,184,525,772	\$ 1,900,000,000

	Fair Value	Carrying Value	Operating Lease	ROE	Alt Div'ds to Net Prof
Net Share Repurchases	Debt	Debt	Rent	5 yr	5 yr
10-K	10-k	10-k	10-k	VL	VL
\$ 1,514,965,948	\$ 28,500,000,000	\$ 32,600,000,000	\$ 437,000,000	35.5%	42%
\$ -	\$ 15,656,000,000	\$ 17,179,000,000	\$ 196,000,000	23.5%	33%
\$ 2,204,000,000	\$ 16,481,000,000	\$ 18,503,000,000	\$ 559,000,000	33.5%	26%
\$ 1,840,806,682	\$ 8,938,618,456	\$ 13,698,768,096	\$ 106,240,446	33.0%	39%
\$ -	\$ 13,131,458,002	\$ 14,407,732,118	\$ 109,017,974	9.5%	20%

27% 32%
33.0% 33.0%
21% 30%

SUPPORT FOR DIRECT CAPITALIZATION EQUITY COMPONENT

WASHINGTON STATE DEPARTMENT OF REVENUE

2025 ASSESSMENT YEAR

RAILROADS

			2024		2025		2024		2025	
Company	Ticker	Stock Price	Actual Earnings Ratio (EPS/P)		Projected Earnings Ratio (PEPS/P)		Cash Flow Ratio (CF/P)		Projected Cash Flow Ratio (PCF/P)	
Union Pacific Corp.	UNP	228.04	11.00	4.82%	12.25	5.37%	15.00	6.58%	16.40	7.19%
Norfolk Southern Corp.	NSC	234.70	11.50	4.90%	14.00	5.97%	17.96	7.65%	20.75	8.84%
CSX Corp.	CSX	32.27	1.85	5.73%	2.75	8.52%	2.65	8.21%	2.90	8.99%
Canadian National	CNI	101.51	5.50	5.42%	6.00	5.91%	7.80	7.68%	8.35	8.23%
Canadian Pacific Kansas City	CP	72.37	3.25	4.49%	3.75	5.18%	4.80	6.63%	5.25	7.25%
Mean				5.07%		6.19%		7.35%		8.10%
Median				4.90%		5.91%		7.65%		8.23%
Max				5.73%		8.52%		8.21%		8.99%
Min				4.49%		5.18%		6.58%		7.19%
stdev				0.00		0.01		0.01		0.01
cov				0.10		0.22		0.10		0.10
harmean				5.03%		6.00%		7.30%		8.03%
Say				5.00%		6.00%		7.25%		8.00%

Source:

Actual earnings: Value Line / Q4 Year End stock price

Estimated Earnings: Value Line / Q4 Year End stock price

Actual Cash Flow: Value Line / Q4 Year End stock price

Estimated Cash Flow: Value Line / Q4 Year End stock price

Date updated:	04-Jan-25	
Created by:	Aswath Damodaran_adamodar@stern.nyu.edu	
What is this data:	Implied Equity Risk Premiums (by year)	S&P 500
Home Page:	http://www.damodaran.com	
Data website:	https://pages.stern.nyu.edu/~adamodar/New_Home_Page/data.html	

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Dividends + Buyback	Change in Earnings	Change in Dividends	T.Bill Rate	T.Bond Rate	Bond-Bill	Smoothed Growth	Implied Premium (DDM)	Analyst Growth Estimate	Implied ERP (FCFE)	Implied Premium (FCFE with sustainable Payout)
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%		4.55%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
1987	6.49%	3.71%	247.08	16.04	9.17		11.10%	11.99%	5.47%	8.86%	3.39%	5.47%	4.18%	8.58%	3.99%	
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%	
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%	
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%	
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%	3.84%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%	
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%
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%	4.12%	5.96%	5.55%	
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%	2.03%	3.96%	5.20%	5.06%
2020	3.72%	1.51%	3756.07	139.76	56.70	127.78	-13.91%	-3.57%	0.09%	0.93%	0.84%	0.74%	1.65%	5.42%	4.70%	4.94%
2021	4.33%	1.24%	4766.18	206.38	59.20	147.24	47.67%	4.41%	0.06%	1.51%	1.45%	1.71%	1.72%	6.47%	4.24%	4.90%
2022	5.72%	1.78%	3839.50	219.49	68.34	181.99	6.35%	15.44%	4.42%	3.88%	-0.54%	5.59%	2.16%	6.41%	5.94%	5.11%
2023	4.64%	1.47%	4769.83	221.36	70.07	164.79	0.85%	2.53%	5.20%	3.88%	-1.32%	3.68%	1.97%	8.74%	4.60%	4.57%
2024	4.14%	1.25%	5881.63	243.32	73.40	182.80	9.92%	4.75%	5.07%	4.58%	-0.49%	4.61%	1.76%	9.57%	4.33%	4.00%

* Earnings and dividends numbers each year reflect the estimated numbers as of the end of the year. These numbers get updated later in the year but I do not update the numbers in this spreadsheet, since I would not have had access to them at the end of the year.

Period	ERP	ERP + Riskfree Rate
1960-2024	4.25%	9.95%
2005-2024	5.15%	8.04%
2015-2024	5.19%	7.84%
End of 2023	4.60%	8.48%
End of 2024	4.33%	8.91%

2023 Multistage Earnings Growth Model Railroad Industry

Company Ticker 4.10% GDP
16.9 Industry P/E
30.0% Target Dividend Payout Ratio (All dividends to net profit)
21.0% Target ROE

Union Pacific Corp. UNP

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		54.11%	45.89%	11.00		stock price =	(228.04)
1	11.36%	42.92%	57.08%	12.25	6.99		6.99
2	9.01%	39.37%	60.63%	13.35	8.10		8.10
3	8.27%	36.36%	63.64%	14.46	9.20		9.20
4	7.64%	33.78%	66.22%	15.56	10.30		10.30
5	7.09%	30.93%	69.07%	16.67	11.51		11.51
6	6.50%	28.08%	71.92%	17.75	12.76		12.76
7	5.90%	25.23%	74.77%	18.80	14.05		14.05
8	5.30%	22.38%	77.62%	19.79	15.36		15.36
9	4.70%	19.52%	80.48%	20.72	16.68		16.68
10	4.10%	19.52%	80.48%	21.57	17.36	379.89	397.25
11+	4.10%	19.52%	80.48%	22.45	18.07		

Value Line Dividends Growth Rate IRR = 9.31%

Norfolk Southern Corp. NSC

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		103.52%	-3.52%	11.50		stock price =	(234.70)
1	21.74%	64.95%	35.05%	14.00	4.91		4.91
2	13.64%	57.16%	42.84%	15.91	6.82		6.82
3	12.00%	51.03%	48.97%	17.82	8.73		8.73
4	10.72%	46.09%	53.91%	19.73	10.64		10.64
5	9.68%	40.78%	59.22%	21.64	12.81		12.81
6	8.56%	35.46%	64.54%	23.49	15.16		15.16
7	7.45%	30.15%	69.85%	25.24	17.63		17.63
8	6.33%	24.84%	75.16%	26.84	20.17		20.17
9	5.22%	19.52%	80.48%	28.24	22.73		22.73
10	4.10%	19.52%	80.48%	29.40	23.66	517.74	541.40
11+	4.10%	19.52%	80.48%	30.60	24.63		

Value Line Dividends Growth Rate IRR = 12.09%

CSX Corp. CSX

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		231.66%	-131.66%	\$ 1.85		stock price =	(32.27)
1	48.65%	49.00%	51.00%	2.75	1.40		1.40
2	10.29%	44.43%	55.57%	3.03	1.69		1.69
3	9.33%	40.64%	59.36%	3.32	1.97		1.97
4	8.53%	37.44%	62.56%	3.60	2.25		2.25
5	7.86%	33.86%	66.14%	3.88	2.57		2.57
6	7.11%	30.27%	69.73%	4.16	2.90		2.90
7	6.36%	26.69%	73.31%	4.42	3.24		3.24
8	5.60%	23.11%	76.89%	4.67	3.59		3.59
9	4.85%	19.52%	80.48%	4.90	3.94		3.94
10	4.10%	19.52%	80.48%	5.10	4.10	89.78	93.88
11+	4.10%	19.52%	80.48%	5.31	4.27		

Value Line Dividends Growth Rate IRR = 15.86%

Canadian National

CNI

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		43.29%	56.71%	5.50		stock price =	(101.51)
1	9.09%	37.00%	63.00%	6.00	3.78		3.78
2	7.77%	34.33%	65.67%	6.47	4.25		4.25
3	7.21%	32.02%	67.98%	6.93	4.71		4.71
4	6.72%	30.01%	69.99%	7.40	5.18		5.18
5	6.30%	27.91%	72.09%	7.86	5.67		5.67
6	5.86%	25.81%	74.19%	8.33	6.18		6.18
7	5.42%	23.72%	76.28%	8.78	6.70		6.70
8	4.98%	21.62%	78.38%	9.21	7.22		7.22
9	4.54%	19.52%	80.48%	9.63	7.75		7.75
10	4.10%	19.52%	80.48%	10.03	8.07	176.60	184.67
11+	4.10%	19.52%	80.48%	10.44	8.40		8.40

Value Line Dividends Growth Rate

IRR = 10.10%

Canadian Pacific Kansas C CP

Year	Growth Rate	Reinvestment Rate	Payout Ratio	Earnings	FCFE	Terminal Value	Cash Flow
0		73.26%	26.74%	3.25		stock price =	(72.37)
1	15.38%	42.92%	57.08%	3.75	2.14		2.14
2	9.01%	39.37%	60.63%	4.09	2.48		2.48
3	8.27%	36.36%	63.64%	4.43	2.82		2.82
4	7.64%	33.78%	66.22%	4.76	3.15		3.15
5	7.09%	30.93%	69.07%	5.10	3.52		3.52
6	6.50%	28.08%	71.92%	5.43	3.91		3.91
7	5.90%	25.23%	74.77%	5.75	4.30		4.30
8	5.30%	22.38%	77.62%	6.06	4.70		4.70
9	4.70%	19.52%	80.48%	6.34	5.10		5.10
10	4.10%	19.52%	80.48%	6.60	5.31	116.29	121.61
11+	4.10%	19.52%	80.48%	6.87	5.53		

Value Line Dividends Growth Rate

IRR = 8.85%