

SERVICE DATE – AUGUST 7, 2015

SURFACE TRANSPORTATION BOARD

DECISION

Docket No. EP 558 (Sub-No. 18)

RAILROAD COST OF CAPITAL—2014

Digest:¹ The agency finds that the cost of capital for the railroad industry in 2014 was 10.65%. This figure represents the Board's estimate of the average rate of return needed to persuade investors to provide capital to the freight rail industry. The cost-of-capital figure, which is calculated each year, is an essential component of many of the agency's core regulatory responsibilities.

Decided: August 6, 2015

One of the Board's regulatory responsibilities is to determine annually the railroad industry's cost of capital.² This determination is one component used in evaluating the adequacy of a railroad's revenue each year pursuant to 49 U.S.C. § 10704(a)(2) and (3). Standards for R.R. Revenue Adequacy, 364 I.C.C. 803 (1981), modified, 3 I.C.C. 2d 261 (1986), aff'd sub nom. Consol. Rail Corp. v. United States, 855 F.2d 78 (3d Cir. 1988). The cost-of-capital finding may also be used in other regulatory proceedings, including (but not limited to) those involving the prescription of maximum reasonable rate levels, the proposed abandonment of rail lines, and the setting of compensation for use of another carrier's lines.

This proceeding was instituted in Railroad Cost of Capital—2014, EP 558 (Sub-No. 18) (STB served Feb. 19, 2015) to update the railroad industry's cost of capital for 2014. In that decision, the Board solicited comments from interested parties on the following issues: (1) the railroads' 2014 current cost of debt capital, (2) the railroads' 2014 current cost of preferred equity capital (if any), (3) the railroads' 2014 cost of common equity capital, and (4) the 2014 capital structure mix of the railroad industry on a market value basis.

We have received comments from the Association of American Railroads (AAR) that provide the information that is used in making the annual cost-of-capital determination, as established in Use of a Multi-Stage Discounted Cash Flow Model in Determining the Railroad

¹ The digest constitutes no part of the decision of the Board but has been prepared for the convenience of the reader. It may not be cited to or relied upon as precedent. Policy Statement on Plain Language Digests in Decisions, EP 696 (STB served Sept. 2, 2010).

² The railroad cost of capital determined here is an aggregate measure. It is not intended to measure the desirability of any individual capital investment project.

Industry's Cost of Capital, EP 664 (Sub-No. 1) (STB served Jan. 28, 2009). Western Coal Traffic League (WCTL) and the Arkansas Electric Cooperative Corporation (AECC) replied to AAR's submission.

WCTL notes that it has no technical disagreements with AAR's calculations for the 2014 cost-of-capital determination.³ WCTL, however, raises several concerns with respect to the methodology used to determine the cost of capital. WCTL asserts that: (1) the inclusion of Kansas City Southern (KCS) in the composite sample remains problematic; (2) growth rates for CSX Corporation (CSX), Norfolk Southern Corporation (NS), and Union Pacific Corporation (UP) reflect their substantial stock buyback programs, thus tainting use of those growth rates in the Multi-Stage Discounted Cash Flow (MSDCF); (3) AAR's Institutional Brokers' Estimate System (I/B/E/S) growth rates for each carrier include a forecast from an "undisclosed" source, thereby undermining transparency; and (4) AAR's use of the Capital Asset Pricing Model (CAPM) to calculate the cost of equity lacks credibility.⁴ WCTL also suggests that the Board delay the 2014 cost-of-capital decision until a determination has been made in the pending rulemaking proceeding for Petition of the Western Coal Traffic League to Institute a Rulemaking Proceeding to Abolish the Use of the Multi-Stage Discounted Cash Flow Model in Determining the Railroad Industries Cost of Equity Capital, EP 664 (Sub-No. 2), where many of these same concerns are raised.⁵

In its reply statement, AECC argues that: (1) there is a substantial increase in "supra-competitive earnings" (i.e., earnings above the level needed to provide a market return on invested capital) for Class I rail carriers and suggests that the Board take immediate action to change the cost-of-capital methodology;⁶ (2) the CAPM cost of equity estimates are excessively high based upon inflated beta values; and (3) the information relied upon by AAR to derive the cost of capital for 2014 stems from a "limited and biased sample" group.⁷ Among other things, AECC also requests that the Board suspend application of the current cost-of-capital methodology for 2014, and instead make interim use of cost-of-capital data for the market as a whole.⁸

³ WCTL Reply 1.

⁴ Id. at 2-4.

⁵ Id. at 4.

⁶ AECC argues that from 2013 to 2014, Class I railroads' "supra-competitive" rail earnings increased by more than 36%. AECC Reply 4. According to AECC, that escalation demonstrates a need for the Board to correct its cost-of-capital methodology. The Board has already initiated a proceeding to determine whether changes to its cost-of-capital methodology are needed.

⁷ AECC Reply 3.

⁸ Id. at 9-10.

DISCUSSION AND CONCLUSIONS

Inclusion of KCS and Exclusion of BNSF. WCTL states that the continued presence of KCS, a relatively small carrier, and the exclusion of BNSF Railway Company (BNSF), the largest rail carrier, from the industry sample remains problematic (WCTL raised the same issue in the 2013 cost-of-capital proceeding).⁹ According to WCTL, the composite group is not representative of the industry as a whole, especially because KCS derives much of its revenue from its Mexican subsidiary.¹⁰ WCTL further states that KCS's inclusion in the industry sample is particularly troublesome for the MSDCF because that model uses the simple average of the carriers' growth rates to determine the growth rate for the second stage.¹¹ Because KCS' growth rate is the highest of the four carriers in the composite group, yet its revenue, cash flow, and market capitalization are substantially lower, WCTL concludes that KCS should not receive equal weight in the second stage growth rate.¹²

Similarly, AECC states that the information relied upon by AAR to derive the cost of capital for 2014 stems from a "limited and biased" sample group.¹³ AECC states that under the current methodology, cost-of-capital results for more than half of the Class I railroads are either missing or implausible.¹⁴ According to AECC, data for BNSF and for the U.S. operations of Canadian Pacific Railway, Ltd. and Canadian National Railway are excluded altogether.¹⁵ Also, with respect to BNSF, AECC argues that exclusion of that carrier leads to an understatement of the true industry cost of capital because actual costs would be lower due to BNSF's access to low-cost capital from its corporate parent.¹⁶ Finally, AECC states that despite recognition of KCS as the most financially precarious of the Class I carriers, MSDCF results indicate that KCS has the lowest cost-of-equity capital among the sampled carriers.¹⁷

On rebuttal, AAR argues that the Board should reject WCTL's and AECC's argument that BNSF be included, and KCS be excluded, from the composite group used to determine the railroad industry's cost of capital for 2014. AAR states that it included KCS and excluded BNSF because KCS meets the stated criteria of Railroad Cost of Capital—1984, 1 I.C.C. 2d 989 (1985),

⁹ WCTL Reply 2; see also R.R. Cost of Capital—2013, EP 558 (Sub-No. 17), slip op. at 3 (STB served July 31, 2014).

¹⁰ WCTL Reply 2.

¹¹ Id.

¹² Id.

¹³ AECC Reply 3.

¹⁴ Id. at 8.

¹⁵ Id.

¹⁶ Id.

¹⁷ Id. at 8-9.

and BNSF does not. AAR notes that neither WCTL nor AECC dispute that fact and neither offers an alternative approach.¹⁸

The Board accepts the inclusion of KCS, and the exclusion of BNSF, from the composite group. As AAR points out, KCS meets the stated criteria for 2014,¹⁹ while BNSF does not. Further, proposed changes to the Board's established cost-of-capital methodology, which also includes a determination of the railroad composite group, have already been raised as part of a petition for rulemaking in EP 664 (Sub-No. 2). The parties are aware that is the appropriate proceeding in which to raise these issues, rather than within this annual EP 558 proceeding. See R.R. Cost of Capital—2012, EP 558 (Sub-No. 16), slip op. at 10; Methodology to Be Employed in Determining the R.R. Industry's Cost of Capital (Cost of Capital Methodology), EP 664, slip op. at 18 (STB served Jan. 17, 2008).

Suspension of 2014 Determination. In its reply, WCTL requests that the Board's determination of the railroad industry's cost of capital for 2014 be deferred or conditioned upon the outcome of EP 664 (Sub-No. 2).²⁰ According to WCTL, not doing so would allow the substantial errors in the calculation methodology to remain in the cost of capital for 2014.²¹ AECC makes a similar argument and requests that the Board accelerate its determinations in EP 664 (Sub-No. 2) and Railroad Revenue Adequacy, EP 722, to enable appropriate reforms to be implemented in the 2014 cost-of-capital determination.²² Alternatively, AECC asks that the Board suspend application of the current cost-of-capital methodology for 2014, and instead make interim use of cost-of-capital data for the market as a whole.²³ AECC asserts that such market-level data is insulated from carrier- and industry-specific problems that have been identified in the incumbent methodology.²⁴

On rebuttal, AAR argues that the Board should not deviate from its established methodology in this proceeding, or defer or condition the 2014 cost-of-capital determination pending the outcome of EP 664 (Sub-No. 2).²⁵ Among other things, AAR notes the Board's longstanding precedent that cost-of-capital findings should be made promptly, even in instances where the Board is considering changing its methodology.²⁶ AAR argues that, given the

¹⁸ AAR Rebuttal 10.

¹⁹ Because KCS meets the stated criteria for 2014, it will receive equal weight for the second stage in the MSDCF model.

²⁰ WCTL Reply 4.

²¹ Id.

²² AECC Reply 9.

²³ Id.

²⁴ Id. at 10.

²⁵ AAR Rebuttal 4.

²⁶ Id. at 4-5 (citing R.R. Cost of Capital—2007, EP 558 (Sub-No. 11), slip op. at 2 (STB served Apr. 23, 2008)).

extensive record developed in EP 664 (Sub-No. 2), and the public hearing in July 2015, the Board should not short-circuit that process and make changes to the methodology in this proceeding.²⁷ Thus, AAR asserts that the Board should continue to apply its established methodology here, unless and until it decides to make changes to the methodology in EP 664 (Sub-No. 2).²⁸

The Board will not defer the 2014 cost-of-capital determination or condition it on the outcome of EP 664 (Sub-No. 2). As AAR correctly notes, Board precedent has been not to delay its annual cost-of-capital determinations, even when changes to the methodology are underway. When the Board instituted a proceeding on the 2007 cost-of-capital determination, it decided not to defer the determination there even though the Board was then considering its MSDCF approach. See R.R. Cost of Capital—2007, EP 558 (Sub-No. 11), slip op. at 2. The Board recognized that the cost-of-capital determination plays a critical role in the regulation of railroads, and a deferral or conditional decision would have a significant adverse impact on numerous proceedings. See id. Therefore, the Board held that, “it is important that [the cost of capital] be determined promptly even if the Board is considering changing the existing approach.” Id. WCTL and AECC have provided no compelling justification for departing from that approach here.

2014 Cost-of-Capital Determination

Consistent with previous cost-of-capital proceedings, AAR calculated the cost of capital for a “composite railroad” based on criteria developed in Railroad Cost of Capital—1984.²⁹ According to AAR, the following four railroad holding companies meet these criteria: CSX, KCS, NS, and UP.

As discussed below, we have examined the procedures used by AAR to calculate the following components for the railroad industry’s 2014 cost of capital: (1) cost-of-debt capital, (2) cost of common equity capital, (3) cost of preferred equity capital, (4) capital structure, and (5) composite after-tax cost of capital. We estimate that the 2014 railroad cost of capital was 10.65%.

DEBT CAPITAL

AAR developed its 2014 current cost of debt using bond price data from Bloomberg Professional (Bloomberg), a subscription service used in Railroad Cost of Capital—2013. AAR’s cost-of-debt figure is based on the market-value yields of the major forms of long-term

²⁷ AAR Rebuttal 6.

²⁸ Id.

²⁹ The composite railroad includes those Class I carriers that (1) are listed on either the New York or American Stock Exchange, (2) paid dividends throughout the year, (3) had rail assets greater than 50% of their total assets, and (4) had a debt rating of at least BBB (Standard & Poor’s) and BAA (Moody’s).

debt instruments for the railroad holding companies used in the composite. These debt instruments include: (1) bonds, notes, and debentures (bonds); (2) equipment trust certificates (ETCs); and (3) conditional sales agreements (CSAs). The yields of these debt instruments are weighted based on their market values.

Cost of Bonds, Notes, and Debentures (Bonds)

AAR used data from Bloomberg for the current cost of bonds, based on monthly prices and yields during 2014, for all issues (a total of 87) that were publicly traded during the year.³⁰ To develop the current (in 2014) market value of bonds, AAR used these traded bonds and additional bonds that were outstanding but not publicly traded during 2014. Continuing the procedure in effect since 1988, AAR based the market value on monthly prices for all traded bonds and the face or par value (\$1,000) for all bonds not traded during the year. AAR computed the total market value of all outstanding bonds to be \$31.2 billion (\$30.6 billion traded, and \$0.6 billion non-traded).³¹ Based on the yields for the traded bonds, AAR calculated the weighted average 2014 yield for all bonds to be 3.509%.³² We have examined AAR's bond price and yield data and have determined that AAR's computations are correct. Our calculations and data for all bonds are shown in **Tables 1** and **2** of the Appendix.

Cost of Equipment Trust Certificates (ETCs)

ETCs are not actively traded on secondary markets. Therefore, their costs must be estimated by comparing them to the yields of other debt securities that are actively traded. Following the practice in previous cost-of-capital proceedings, AAR used government securities with maturities similar to these ETCs as surrogates for developing yields. After calculating the 2014 yields for these government securities, AAR added basis points³³ to these yields to compensate for the additional risks associated with the ETCs.

There was one new ETC issued during 2014 and three ETCs outstanding during that year.³⁴ The new ETC was issued by UP and had an interest rate spread of 76 basis points above government bonds.³⁵ Because this new ETC is a current measure of the current costs of ETCs, the 76 basis point spread is used here as the interest rate spread above government bonds.³⁶

³⁰ AAR Opening, V.S. Gray 8.

³¹ AAR Opening, V.S. Gray 9.

³² AAR Opening, V.S. Gray 10-11.

³³ A basis point equals 1/100th of a percentage point.

³⁴ AAR Opening, V.S. Gray 13-15.

³⁵ Id. at 13.

³⁶ AAR has approximated the market values of ETCs using the same procedures used in previous cost-of-capital determinations.

Using the yield spreads, AAR calculated the weighted average cost of ETCs to be 3.244%³⁷ and their market value to be \$434.8 million for 2014.³⁸

We have examined and accept the cost and market value of the ETCs using AAR's data. **Table 3** in the Appendix shows a summary of the ETC computations.

Cost of Conditional Sales Agreements (CSAs)

CSAs normally represent a small fraction (less than 1%) of total railroad debt. However, for 2014, **Table 4** in the Appendix shows that no CSAs were modeled.³⁹

Capitalized Leases and Miscellaneous Debt

As in previous cost-of-capital determinations, AAR excluded the cost of capitalized leases and miscellaneous debt in its computation of the overall current cost of debt because these costs are not directly observable in the open market. Also, in keeping with past practice, AAR included the book value of capitalized leases and miscellaneous debt in the overall market value of debt, which is used to determine the railroads' capital structure mix. AAR calculated that the market value for the capitalized leases and miscellaneous debt was \$1.684 billion for 2014.⁴⁰ We have examined and will accept the market value for capitalized leases and miscellaneous debt using AAR's data. **Table 5** in the Appendix shows the calculations for capitalized leases and miscellaneous debt to be \$1.684 billion.

Total Market Value of Debt

AAR calculated that the total market value for all debt during 2014 was \$ 33.271 billion.⁴¹ We have examined AAR's data and have determined that AAR's calculation is correct. **Table 6** in the Appendix shows a breakdown of the market value of debt.

Flotation Costs of Debt

AAR calculated flotation costs for bonds, notes, and debentures by calculating a yield based on the price to investors and a yield that also included flotation costs. The difference

³⁷ AAR Opening, V.S. Gray 15. This percentage is higher than the 2013 figure of 2.782%.

³⁸ AAR Opening, V.S. Gray 15-16.

³⁹ AAR Opening, V.S. Gray 16. Modeled CSAs are CSAs that can be used in AAR's model to determine market value. According to AAR, non-modeled CSAs are included in the miscellaneous debt category.

⁴⁰ AAR Opening, V.S. Gray 17. This figure consists of \$1.54 billion of capitalized leases and \$145.3 million of miscellaneous debt. AAR Opening, App. D.

⁴¹ AAR Opening, V.S. Gray 17-18.

between the two yields is the flotation costs expressed in percentage points. For 2014, seven new issues were reported in three filings.⁴² A simple average of the seven flotation cost figures is 0.075%.⁴³ AAR calculated the 2014 flotation costs for bonds using publicly available data from electronic filings with the U.S. Securities and Exchange Commission (SEC). For the calculation of ETC flotation costs, AAR used a historical SEC study composed of railroad ETC data for the years 1951, 1952, and 1955. SEC, Cost of Flotation of Corporate Securities 1951-1955 (1957). AAR asserts that, in that study, the SEC determined ETC flotation costs to average 0.89% of gross proceeds. *Id.* Using 0.89% for ETCs, and assuming that coupons are paid twice per year and that the duration for new ETCs is 15 years, yields flotation costs of 0.076%.

To compute the overall effect of the flotation cost on debt, the market value weight of the outstanding debt is multiplied by the respective flotation cost. The weight for each type of debt is based on market values for debt, excluding all other debt.⁴⁴ All other debt is excluded from the weight calculation because a current cost of debt for other debt has not been determined.⁴⁵ AAR calculated that flotation costs for debt equal 0.075%.⁴⁶

We have reviewed AAR's calculations concerning flotation costs and have determined that AAR's computation is correct. We find that the cost factors developed for the various components of debt are reasonable.⁴⁷ **Table 7** in the Appendix shows these calculations.

Overall Current Cost of Debt

AAR concluded that the railroads' cost of debt for 2014 was 3.58%.⁴⁸ We have verified that the percentage put forth by AAR is correct. **Table 8** in the Appendix shows the overall current cost of debt.

⁴² AAR Opening, V.S. Gray 20.

⁴³ AAR Opening, V.S. Gray 20.

⁴⁴ All other debt represents capitalized leases, miscellaneous debt, non-modeled ETCs, and non-modeled CSAs. There were no non-modeled ETCs, nor were there any non-modeled CSAs, in 2014. AAR Opening, V.S. Gray 17.

⁴⁵ Current costs can be determined for three of the four debt categories—bonds, ETCs, and CSAs. Usually, the weighted average cost of debt is based upon these three (of the four) debt categories, but in this instance only bonds and ETCs are present. AAR Opening, V.S. Gray 21.

⁴⁶ AAR Opening, V.S. Gray 20.

⁴⁷ AAR calculated the 2014 flotation costs for bonds using publicly available data from electronic filings with the SEC.

⁴⁸ AAR Opening, V.S. Gray 23. This percentage is lower than the 2013 cost of debt (3.68%). As explained above, our measurement of the railroads' cost of debt entails the calculation of a weighted average of the current yields of the various debt instruments issued by the four railroads in our sample.

COMMON EQUITY CAPITAL

We estimate the cost of common equity capital by calculating the simple average of estimates produced by a CAPM and the Morningstar/Ibbotson MSDCF.

CAPM

Under CAPM, the cost of equity is equal to $RF + \beta \times RP$, where RF is the risk-free rate, RP is the market-risk premium, and β (or beta) is the measure of systematic, non-diversifiable risk. In order to calculate RF , we asked the railroads to provide the average yield to maturity in 2014 for a 20-year U.S. Treasury Bond. Similarly, the railroads were asked to provide an estimate for RP based on returns experienced by the S&P 500 since 1926. Finally, we instructed the railroads to calculate beta using a portfolio of weekly, merger-adjusted railroad stock returns for the prior five years in the following equation:

$$R - SRRF = \alpha + \beta(RM - SRRF) + \varepsilon, \text{ where}$$

- α = constant term;
- R = merger-adjusted stock returns for the portfolio of railroads that meet the screening criteria set forth in Railroad Cost of Capital—1984;
- $SRRF$ = the short-run risk-free rate, which we will proxy using the 3-month U.S. Treasury bond rate;
- RM = return on the S&P 500; and
- ε = random error term.

RF – The Risk-Free Rate

To establish the risk-free rate, AAR relies on the Federal Reserve website to retrieve the average yield to maturity for a 20-year U.S. Treasury Bond. Using the average yield to maturity in 2014 for a 20-year U.S. Treasury Bond, consistent with Railroad Cost of Capital—2006, EP 558 (Sub-No. 10), slip op. at 6 (STB served Apr. 15, 2008), AAR calculated the 2014 risk-free rate to be 3.07%.⁴⁹ We have examined AAR's data and the data from the Federal Reserve's website, and have determined that AAR's computation is correct.

⁴⁹ AAR Opening, V.S. Gray 27.

RP – The Market-Risk Premium

Using the approach settled upon in Cost of Capital Methodology, AAR submitted data reflecting a market-risk premium of 7.00%.⁵⁰ We have examined the underlying data here and agree that the market-risk premium is 7.00%.

Calculating Beta

Cost of Capital Methodology requires parties to calculate CAPM's beta using a portfolio of weekly, merger-adjusted stock returns for the prior five years in the following equation: $R - SRRF = \alpha + \beta(RM - SRRF) + \varepsilon$. Applying the modified approach for assigning the new shares outstanding,⁵¹ as described in Railroad Cost of Capital—2010, slip op. at 6, AAR's calculations estimate that the value of beta is 1.2503.⁵²

In its reply, AECC details alleged problems associated with increasing beta values under the Board's CAPM methodology. According to AECC, this inflation derives from an increase in rail market power.⁵³

On Rebuttal, AAR argues that there is no correlation between the exercise of market power and an increase in beta. Rather, AAR states that it is much more plausible that railroad betas have simply recovered from the impact of the financial crisis, or that betas have increased due to other factors that affect the non-diversifiable risk of the railroad industry, such as massive capital expansions and/or changes in traffic mix.⁵⁴

We will not address AECC's arguments that allege problems (but propose no solutions) associated with increased beta values under the Board's CAPM methodology. As AECC notes, it has already raised these issues in EP 664 (Sub-No. 2), and any decisions related to the Board's methodology will be made in that proceeding. Thus, we agree with AAR's calculated estimate that the value of beta is 1.2503.

⁵⁰ The Ibbotson SBBI Valuation Yearbook published by Morningstar, which was previously used as the source of the market risk premium, has been discontinued. AAR has replaced the old source with the 2015 Ibbotson SBBI Market Report with Data as of December 2014, which provides the same data reflecting the market-risk premium. AAR Opening, V.S. Gray 29.

⁵¹ For the purposes of determining the number of shares outstanding, new shares outstanding are assigned to the first Friday on, or after, the effective date.

⁵² AAR Opening, V.S. Gray 33. AAR uses the SAS General Linear Model procedure to compute regression data. The Board uses a standard Excel regression method.

⁵³ AECC Reply 7-8.

⁵⁴ AAR Rebuttal 10.

Cost of Common Equity Capital using CAPM

Using the modified approach for assigning the new shares outstanding, we calculate the cost of equity as $RF + \beta \times RP$, or $3.07\% + (1.2503 \times 7.00\%)$, which equals 11.82%. **Tables 9 and 10** in the Appendix show the calculations of the cost of common equity using CAPM.⁵⁵

To calculate the 2014 market value of common equity for each railroad, AAR calculated each railroad's weekly market value using data on shares outstanding from railroad 10-Q and 10-K reports, multiplied by stock prices at the close of each week in 2014. AAR calculated the combined 52-week average market value of the railroads as \$166.41 billion.⁵⁶

WCTL objects to the inputs used by AAR in the CAPM model to calculate the cost of equity. According to WCTL, using a risk-free rate of 3.07%, a market risk premium of 7.00%, and a beta of 1.2503 would create expected market-wide return for equities in excess of 10%. WCTL states that a figure that high lacks credibility.⁵⁷ WCTL suggests using data supplied by another financial institution, Duff & Phelps, which would recommend a risk-free rate of 4% and a market-risk premium of 5%.⁵⁸ WCTL, however, states that it would retain the same beta of 1.2503 for the CAPM. According to WCTL, using its recommended figures to calculate the CAPM cost of equity would yield a more credible number of 9.32%.⁵⁹

On rebuttal, AAR states that its evidence in EP 664 (Sub-No. 2) demonstrates that there "is no single way" to calculate market risk and that market risk premiums can vary widely.⁶⁰ AAR further argues that the Board's consistent approach, which is based on all available historical returns dating back to 1926, is reasonable and supported by economists.⁶¹

WCTL's criticisms of AAR's inputs used in the CAPM model are not sufficiently developed here. WCTL has already suggested in EP 664 (Sub-No. 2) that the Board consider using what WCTL asserts is a more realistic market risk premium. As such, prospective changes based on arguments made here will be considered in EP 664. Thus, the Board will accept AAR's calculations of a CAPM cost of equity of 11.82%.

⁵⁵ See also AAR Opening, V.S. Gray 35.

⁵⁶ AAR Opening, V.S. Gray 24-25.

⁵⁷ WCTL Reply 3.

⁵⁸ Id. at 3-4.

⁵⁹ Id.

⁶⁰ AAR Rebuttal 9.

⁶¹ Id.

Multi-Stage Discounted Cash Flow

The cost of equity in a Discounted Cash Flow (DCF) model is the discount rate that equates a firm's market value to the present value of the stream of cash flows that could affect investors. These cash flows are not presumed to be paid out to investors; instead, it is assumed that investors will ultimately benefit from these cash flows through higher regular dividends, special dividends, stock buybacks, or stock price appreciation. Incorporation of these cash flows and the expected growth of earnings are the essential elements of the Morningstar/Ibbotson MSDCF model.

Cash Flow

The Morningstar/Ibbotson MSDCF model defines cash flows (CF), for the first two stages, as income before extraordinary items (IBEI), minus capital expenditures (CAPEX), plus depreciation (DEP) and deferred taxes (DT), or

$$CF = IBEI - CAPEX + DEP + DT.$$

The third-stage cash flow is based on two assumptions: depreciation equals capital expenditures, and deferred taxes are zero. That is, cash flow in the third stage of the model is based only on IBEI.

To obtain an average cash-flow-to-sales ratio, AAR divided the total cash flow in the 2010-2014 periods by the total sales over the same period. To obtain the 2014 average cash flow, the cash-flow-to-sales ratio is multiplied by the sales revenue from 2014. The 2014 average cash flow figure is then used as the starting point of the Morningstar/Ibbotson MSDCF model. The initial value of IBEI is determined through the same averaging process for the cash flows in stages one and two. According to AAR, the data inputs in the cash flow formula were retrieved from the railroads' 2010-2014 10-K filings with the SEC.

Growth Rates

Growth of earnings is also calculated in three stages. These three growth-rate stages are what make the Morningstar/Ibbotson model a "multi-stage" model. In the first stage (years one through five), the firm's annual earnings growth rate is assumed to be the median value of the qualifying railroad's three- to five-year growth estimates, as determined by railroad industry analysts and published by I/B/E/S. In the second stage (years six through 10), the growth rate is the average of all growth rates in stage one. In the third stage (years 11 and onwards), the growth rate is the long-run nominal growth rate of the U.S. economy. This long-run nominal growth rate is estimated by using the historical growth in real Gross Domestic Product and the long-run expected inflation rate.

AAR calculated the first- and second-stage growth rates according to the I/B/E/S data, which was retrieved from Thomson One Investment Management.⁶² The third-stage growth rate of 4.98% was calculated by using the sum of the figures for long-run expected growth in real output (3.26%) and long-run expected inflation (1.72%).⁶³

In its reply, WCTL asserts, among other things, that using earnings per share growth rates to project growth in firm-wide cash flows creates a mismatch, given the fact that CSX, NS, and UP have all engaged in substantial stock buyback programs.⁶⁴ According to WCTL, buybacks by CSX, NS, and UP have averaged 2.7%, 3.8%, and 2.7%, respectively, per year over the past three years.⁶⁵ WCTL argues that using its proposed growth rates would yield an average MSDCF COE of 11.11%, as contrasted with the 12.30% calculated by AAR.⁶⁶ Further, WCTL argues that, even if the MSDCF model were otherwise sound, the buyback issue alone inflates the resulting MSDCF COE by more than 10%.⁶⁷

⁶² WCTL asserts that AAR's I/B/E/S growth rates for each carrier include a forecast from an "undisclosed" source. According to WCTL, while the "undisclosed" estimate has little impact on the 2014 calculations, it undermines transparency and confidence in the result. WCTL Reply 2. On rebuttal, AAR argues that it is the I/B/E/S source, and not the AAR source, which is undisclosed. AAR further states that I/B/E/S growth rates have been utilized by the Board in calculating the cost of capital for nearly 30 years and cites Railroad Cost of Capital—1996, EP 558 (STB served July 16, 1997) slip op. at 9 & n.22, to support this proposition. AAR Rebuttal 7. The Board will accept AAR's use of the I/B/E/S "undisclosed" source forecast. AAR retrieved the forecast data from Thomson Reuters' I/B/E/S research database and AAR's workpapers clearly demonstrate that it is the I/B/E/S source that has opted for non-disclosure, not the AAR source. Further, Thomson Reuters is an authoritative source in the financial industry and the Board has relied upon its data for decades. See Railroad Cost of Capital—1996, EP 558, slip op. at 9 & n.22. Therefore, the Board has no reason to believe that the "undisclosed forecast" is unreliable. Regardless, as WCTL acknowledges, the use of this forecast has little impact on the 2014 cost-of-capital calculations.

⁶³ In prior cost-of-capital determinations that relied upon the MSDCF, until 2013, the long-run growth rate used was that provided by Morningstar/Ibbotson in its Ibbotson SBBI Valuation Yearbook. According to AAR, this publication has been discontinued. However, the Ibbotson SBBI Classic Yearbook was expanded to contain many of the statistics found in the Valuation Yearbook. Using data from the Classic Yearbook, the Federal Reserve, and the Bureau of Economic Analysis, AAR replicated the Ibbotson calculations for real growth rates and long term inflation in 2013, and does so here as well. AAR Opening, V.S. Gray 41.

⁶⁴ WCTL Reply 2.

⁶⁵ Id.

⁶⁶ Id. at 3.

⁶⁷ Id.

On rebuttal, AAR disagrees with WCTL's assertion that stock repurchases bias the cost-of-equity calculations upwards.⁶⁸ Rather, AAR argues that the distributions from stock repurchase arrangements shift cash flow forward, thereby understating the cash flows that are distributed to the shareholders in the earlier years, while overstating the cash flows in later years.⁶⁹ According to AAR, such a practice should raise the cost of equity, not lower it.⁷⁰

As previously stated, we will not address any proposed changes to our cost-of-capital methodology in this annual EP 558 proceeding. We further note that WCTL has already raised concerns regarding rail carriers' stock buyback programs in a separate petition for rulemaking, EP 664 (Sub-No. 2), and we will address the issue there.

After reviewing the evidence provided by AAR, we find that the growth rates are correct and consistent with the Board's approved methodology, and we will employ them in the determination of the cost of equity for 2014.

Market Values for MSDCF

The final inputs to the Morningstar/Ibbotson MSDCF model are the stock market values for the equity of each railroad. According to AAR, it used stock prices from Yahoo Finance for January 2, 2015, and shares outstanding from the 2014 Q3 10-Q reports filed with the SEC.

We have reviewed AAR's evidence and find that the market values used in the 2014 estimate of the cost of equity using the Morningstar/Ibbotson MSDCF are correct.

Cost of Common Equity Capital Using MSDCF

AAR estimates a MSDCF cost of equity of 12.30%.⁷¹ Accordingly, we calculate the MSDCF as 12.30%, and we will average this estimate with the cost of equity derived from the CAPM approach. **Table 11** shows the MSDCF inputs and the cost of equity calculation.

Cost of Common Equity

Based on the evidence provided, we conclude that the railroad cost of equity in 2014 was 12.06%.⁷² This figure is based on an estimate of the cost of equity using a CAPM of 11.82% and a MSDCF estimate of 12.30%. **Table 12** shows both costs of common equity for each model, and the average of the two models.

⁶⁸ AAR Rebuttal 7.

⁶⁹ Id.

⁷⁰ Id.

⁷¹ AAR Opening, V.S. Gray 44.

⁷² AAR Opening, V.S. Gray 45.

PREFERRED EQUITY

Preferred equity has some of the characteristics of both debt and equity. Essentially, preferred stock issues are like common stocks in that they have no maturity dates and represent ownership in the company (usually with no voting rights attached). They are similar to debt in that they usually have fixed dividend payments (akin to interest payments).

To determine the cost of preferred equity here, AAR examined the preferred stock issues of KCS, using the dividend yield method (dividends divided by market price). AAR computed the market value of the preferred stock by multiplying the average quarterly price for each issue by the number of shares outstanding. This is the same procedure used in previous cost-of-capital determinations. See, e.g., R.R. Cost of Capital—2013, slip op. at 11. AAR computed the market value of preferred equity during 2014 to be \$6.555 million. AAR computed the cost of preferred equity to be 3.69%.⁷³

We have determined that the AAR's computations are correct. **Table 13** shows the calculations of the cost of preferred equity.

CAPITAL STRUCTURE MIX

The Board will apply the same inputs used in the market value for the CAPM model to the capital structure.

We have determined that the average market values of debt, common equity, and preferred equity are \$33.271 billion, \$166.409 billion, and \$6.6 million respectively. The percentage share of debt decreased, from 17.69% in 2013 to 16.66% in 2014. The percentage share of common equity increased, from 82.31% in 2013 to 83.34% in 2014. The percentage of preferred equity for 2014 was de minimis.⁷⁴ **Table 14** in the Appendix shows the calculations of the average market value of common equity and relative weights for each railroad. **Table 15** in the Appendix shows the 2014 capital structure mix.

COMPOSITE COST OF CAPITAL

Based on the evidence furnished in the record, we conclude that the 2014 composite after-tax cost of capital for the railroad industry, as set forth in **Table 16** in the Appendix, was 10.65%. The procedure used to develop the composite cost of capital is consistent with the Statement of Principle established by the Railroad Accounting Principles Board: "Cost of capital shall be a weighted average computed using proportions of debt and equity as determined by their market values and current market rates." R.R. Accounting Principles Bd., Final Report, Vol. 1 (1987). The 2014 cost of capital was 0.67 percentage points lower than the 2013 cost of capital (11.32%).

⁷³ AAR Opening, V.S. Gray 48.

⁷⁴ The weight for preferred equity is 0.003%, which rounds to 0.00%.

CONCLUSIONS

We find that for 2014:

1. The cost of railroad long-term debt was 3.58%.
2. The cost of common equity was 12.06%.
3. The cost of preferred equity was 3.69%.
4. The capital structure mix of the railroads was 16.66% long-term debt, 83.34% common equity, and 0.00% preferred equity.
5. The composite railroad industry cost of capital was 10.65%.

Environmental and Energy Considerations

We conclude that this action will not significantly affect either the quality of the human environment or the conservation of energy resources.

It is ordered:

1. This decision is effective on September 6, 2015.
2. This proceeding is discontinued.

By the Board, Chairman Elliott, Vice Chairman Begeman, and Commissioner Miller.

APPENDIX

Table 1
2014 Traded & Non-traded Bonds

Railroad	Traded vs. Non-traded	Number	Market Value (\$000)	% Market Value to All Bonds
CSX	Traded ¹	26	\$9,877,407	97.47%
	Non-traded	5	256,461	2.53%
	Total	31	10,133,868	100.00%
KCS	Traded ²	5	1,315,871	85.39%
	Non-traded	7	225,133	14.61%
	Total	12	1,541,004	100.00%
NSC	Traded	25	10,528,167	99.20%
	Non-traded	2	84,903	0.80%
	Total	27	10,613,070	100.00%
UPC	Traded ³	31	8,833,449	99.65%
	Non-traded	4	30,776	0.35%
	Total	35	8,864,225	100.00%
Composite	Traded	87	\$30,554,894	98.08%
	Non-traded	18	597,273	1.92%
	Total	105	31,152,167	100.00%

¹ Includes 2 bond issued during 2014, prorated based on date of issue.
² Includes 2 bonds issued during 2014, prorated based on date of issue.
³ Includes 5 bonds issued during 2014, prorated based on date of issue.

Table 2
2014 Bonds, Notes, & Debentures

Railroad	Number of Traded Issues	Market Value Traded Issues (\$000)	Current Cost	Weighted Cost
CSX	26	\$9,877,407	3.659%	1.183%
KCS	5	1,315,871	3.128%	0.135%
NSC	25	10,528,167	3.514%	1.211%
UPC	31	8,833,449	3.392%	0.981%
Composite	87	\$30,554,894		3.509%

Table 3
2014 Equipment Trust Certificates

Railroad	No. of Issues	Market Value (\$000)	Yield %	Weighted \$ Yield (\$000)
CSX	0	\$0	0.00%	\$0
KCS	0	0	0.00%	0
NSC	0	0	0.00%	0
UPC	3	434,830	3.244%	14,106
Composite	3	\$434,830	3.244%	\$14,106

Table 4
2014 Conditional Sales Agreements

Railroad	Number of Issues	Market Value (\$000)	Current Cost	Weighted Cost
Composite	0	\$0		0.00%

Table 5
2014 Capitalized Leases & Miscellaneous Debt

Railroad	Capitalized Leases (\$000)	Miscellaneous Debt¹ (\$000)	Total Other Debt (\$000)
CSX	\$7,209	\$13,000	\$20,209
KCS	21,797	0	21,797
NSC	2,025	(373,847)	(371,822)
UPC	1,507,845	506,121	2,013,966
Composite	\$1,538,876	\$145,274	\$1,684,150

¹ Miscellaneous debt includes unamortized debt discount.

Table 6
2014 Market Value of Debt

Type of Debt	Market Value of Debt (\$000)	Percentage of Total Market Value (Excluding Other Debt)
Bonds, Notes, & Debentures	\$31,152,167	98.62%
ETCs	434,830	1.38%
CSAs	0	0.00%
Subtotal	\$31,586,997	100.00%
Capitalized Leases/Miscellaneous Debt	1,684,150	NA
Total Market Value of Debt	\$33,271,147	NA

Table 7
2014 Flotation Cost for Debt

Type of Debt	Market Weight (Excludes Other Debt)	Flotation Cost	Weighted Average Flotation Cost
Bonds, Notes, & Debentures	98.62%	0.075%	0.0740%
ETCs	1.38%	0.076%	0.0010%
CSAs	0.00%	0.000%	0.0000%
Total	100.00%		0.075%

Table 8
2014 Current Cost of Debt

Type of Debt	Percentage of Total Market Value (Excludes Other Debt)	Debt Cost	Weighted Debt Cost (Excluding Other Debt)
Bonds, Notes, & Debentures	98.62%	3.509%	3.4607%
ETCs	1.38%	3.244%	0.0447%
CSAs	0.00%	0.00%	0.0000%
Subtotal	100.00%		3.505%
Flotation Cost			0.075%
Weighted Cost of Debt			3.580%

Table 9
2014 Summary Output

Regression Statistics					
Multiple R	0.82565				
R-Square	0.681698				
Adjusted-R Square	0.680469				
Standard Error	0.017789				
Observations	261				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.175536	0.175536	554.691981	2.48340E-66
Residual	259	0.081962	0.000316		
Total	260	0.257498			
	Coefficients	Standard Error	T Stat	P-Value	
Intercept	0.001787	0.001109	1.611080	0.108380	
X-Variable	1.25027	0.053086	23.551900	2.48340E-66	

Table 10
2014 CAPM Cost of Common Equity

Risk-Free Rate (RF)	3.07%	
RF+(Beta x Market Risk Premium)	3.07% + (1.2503 x 7.00%)	11.82%
Cost of Equity		11.82%

Table 11
2014 MS-DCF Railroad Cost of Equity
(\$ in millions)

Railroad	CSX		KCS		NSC		UNP	
Initial CF	\$1,149		\$46		\$1,143		\$3,492	
Input for Terminal CF	\$1,951		\$401		\$1,931		\$4,543	
Stage 1 Growth Rate	10.10%		15.45%		11.90%		13.25%	
Stage 2 Growth Rate	12.68%		12.68%		12.68%		12.68%	
Stage 3 Growth Rate	4.98%		4.98%		4.98%		4.98%	
Year	Value on 12/31 of Each Year	Present Value	Value on 12/31 of Each Year	Present Value	Value on 12/31 of Each Year	Present Value	Value on 12/31 of Each Year	Present Value
1	\$1,265	1,125	\$53	\$48	\$1,279	\$1,130	\$ 3,955	\$3,522
2	1,393	1,102	61	51	1,431	1,118	4,479	3,551
3	1,533	1,079	71	53	1,602	1,105	5,072	3,582
4	1,688	1,057	82	56	1,792	1,093	5,744	3,612
5	1,859	1,035	94	59	2,005	1,081	6,505	3,643
6	2,095	1,037	106	61	2,260	1,076	7,330	3,655
7	2,360	1,040	120	62	2,546	1,071	8,260	3,667
8	2,659	1,042	135	64	2,869	1,067	9,307	3,680
9	2,997	1,045	152	65	3,233	1,062	10,487	3,692
10	3,377	1,047	171	67	3,643	1,058	11,817	3,705
Terminal	\$80,871	\$25,075	\$32,410	\$12,703	\$78,933	\$22,916	\$220,541	69,147
ΣPV	\$ 35,685		\$13,290		\$33,776		\$105,456	
Market Value	\$35,685		\$13,290		\$33,776		\$105,456	
COE	12.42%		9.82%		13.16%		12.30%	
Weighted COE	2.36%		0.69%		2.36%		6.89%	
COE	12.30%							

Table 12
2014 Cost of Common Equity Capital

Model	
Capital Asset Pricing Model	11.82%
Multi-Stage Discounted Cash Flow	12.30%
Cost of Common Equity	12.06%

Table 13
2014 Cost & Market Value of Preferred Stock

Railroad	Dividend	Value Per Share	Div. Yield %	Shares (000)	Market Value (\$000)	Market Weight	Weighted Yield
CSX	0	0	0.00%			0.00%	0.00%
KCS	\$1.00	\$27.069	3.69%	242,170	\$6,555	100.00%	3.69%
NSC	0	0	0.00%			0.00%	0.00%
UPC	0	0	00.0%			0.00%	0.00%
Composite					\$6,555		3.69%

Table 14
2014 Average Market Value for Common Equity

Railroad	Average Market Value (\$000)	Average Market Weight
CSX	\$30,985,885	18.62%
KCS	12,134,101	7.29%
NSC	31,589,674	18.98%
UPC	91,699,152	55.11%
COMPOSITE	\$166,408,812	100.00%

Table 15
2014 Capital Structure Mix

Railroad	Type of Capital	Market Value (\$000)	Weight
CSX	Debt	\$10,154,077	24.68%
	Equity	30,985,885	75.32%
	P. Equity	0	0.00%
KCS	Debt	1,562,801	11.40%
	Equity	12,134,101	88.55%
	P. Equity	6,555	0.05%
NSC	Debt	10,241,248	24.48%
	Equity	31,589,674	75.52%
	P. Equity	0	0.00%
UPC	Debt	11,313,021	10.98%
	Equity	91,699,152	89.02%
	P. Equity	0	0.00%
Composite Weight	Debt	33,271,147	16.66%
	Equity	166,408,812	83.34%
	P. Equity	6,555	0.00%
	Total	\$199,686,514	100.00%

Table 16
2014 Cost-of-Capital Computation

Type of Capital	Cost	Weight	Weighted Average
Long-Term Debt	3.58%	16.66%	0.60%
Common Equity	12.06%	83.34%	10.05%
Preferred Equity	3.69%	0.00%	0.00%
Composite Cost of Capital		100.00%	10.65%