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SURFACE TRANSPORTATION BOARD

DECISION

Docket No. EP 558 (Sub-No. 19)

# RAILROAD COST OF CAPITAL—2015

Digest:[1] The Board finds that the cost of capital for the railroad industry, which is calculated each year, was 9.61% for 2015. This figure represents the Board's Office of Economics estimate, which the Board adopts, of the average rate of return needed to persuade investors to provide capital to the freight rail industry.

Decided: August 3, 2016

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 by decision served on March 2, 2016 (subsequently corrected on March 10, 2016) to update the railroad industry's cost of capital for 2015. In that decision, the Board solicited comments from interested parties on the following issues: (1) the railroads' 2015 current cost of debt capital; (2) the railroads' 2015 current cost of preferred equity capital (if any); (3) the railroads' 2015 cost of common equity capital; and (4) the 2015 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 Industry's Cost of Capital (Use of MSDCF), EP 664 (Sub-No. 1) (STB served Jan. 28, 2009). Western Coal Traffic League (WCTL) replied to AAR's submission.

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[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.

WCTL acknowledges that AAR appears to have followed the Board's established methodology for estimating the cost of equity and the cost of capital, but asserts that there is no reason to believe that AAR's resulting values are accurate. (WCTL Reply 1.) WCTL raises several concerns with respect to the methodology used to determine the cost of capital, and asserts that AAR's values remain substantially overstated due to known flaws in the Board's established methodology. (Id.) Specifically, WCTL asserts that: (1) the AAR's estimated values substantially overstate the values used by the financial and investment community; (2) buyback programs result in even greater Multi-Stage Discounted Cash Flow (MSDCF) distortion; (3) the inclusion of Kansas City Southern Corporation's (KCS) second-stage growth rate further "taints" the MSDCF; (4) the market risk premium is overstated; (5) AAR's beta interpretation is suspect; and (6) the Board should "prepare to treat operating leases as debt." (Id. at 2-11.)

AAR submitted rebuttal comments in response to WCTL's reply arguments.

## DISCUSSION AND CONCLUSIONS

*Morgan Stanley Report*

In its reply, WCTL asserts that AAR's estimated values substantially overstate the values used by the financial and investment community. (WCTL Reply 2-4.) Specifically, WCTL compares AAR's calculations to Morgan Stanley's Freight Transportation Report, Rails: End of the Pricing Renaissance? Time for Quality and Defense, dated February 23, 2016. According to WCTL, this report states, among other things, that the cost of capital for the Class I industry is 7.5%, using the 7.2% cost of capital for Union Pacific Corporation and an imputed tax shield of 30 basis points.[3] (Id. at 4.) WCTL argues that AAR's 9.61% after-tax estimate is at least 28% overstated relative to the values utilized by the financial and investment community. WCTL therefore argues that the Board should not adopt AAR's value without further analysis, which it contends shows that the MSDCF model is flawed and that the Capital Asset Pricing Model (CAPM) should utilize a lower market risk premium. (Id.)

On rebuttal, AAR asserts that WCTL's selective use of excerpts from a single analyst report cannot be relied upon for sweeping generalizations. (AAR Rebuttal 5.) AAR also argues that WCTL failed to provide clear insight into the underlying assumptions used in the Morgan Stanley report, and that there was no way for the Board to know how Morgan Stanley arrived at its estimate for the submitted companies' weighted-average cost of capital. (Id. at 5-6.)

WCTL argues that the Morgan Stanley report provides a reason to depart from the Board's established cost-of-capital methodology in this proceeding. As the Board and the parties learned during prior rulemakings on this matter, there is no one "correct" methodology for determining cost of capital, and different methodologies can lead to sometimes different

[3] According to WCTL, Union Pacific Corporation has the median cost of capital value of the three domestic carriers identified in the Morgan Stanley report. WCTL, therefore, asserts that using the UP-value as the starting point is conservative.

outcomes (which is one reason we use a blended approach). And if two methodologies are compared over a period of years, one will yield higher figures in some years, while the other will yield higher figures in others. See, e.g., the chart in AEP Texas N. Co. v. BNSF Ry., NOR 41191 (Sub-No. 1), slip op. at 10 (STB served May 15, 2009), vacated and remanded, in part, on other grounds, AEP Texas N.Co. v. STB, 609 F.3d 432 (D.C. Cir. 2010). Thus, the fact that the results of one analyst or company are different from the results under our methodology is not surprising. In any event, it is not clear how Morgan Stanley calculated its figure (e.g., how it calculated cashflows; what number of stages were included in the DCF model; and how the terminal cash flow perpetual growth rates were determined). It is clear that it did not include all of the Class I carriers, as required by the Board's regulations. Thus, WCTL has provided no reason the Board should depart from our precedent and hold up our annual determination just because one analyst's analysis is different from the Board's. As the parties are aware, the cost-of-capital determination is used in various other proceedings, and so it is important that the Board completes its annual proceedings in a timely fashion. That is why the Board has held that any challenge to the Board's methodology underlying the cost-of-capital determination should be addressed in a separate petition for rulemaking in a proceeding within Docket No. EP 664, and not within this annual Docket No. EP 558 proceeding.[4]

*2015 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, 1 I.C.C.2d 989 (1985).[5] According to AAR, the following four railroad holding companies meet these criteria: CSX Corporation (CSX); KCS; Norfolk Southern Corporation (NSC); and Union Pacific Corporation (UPC).[6]

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[4] See R.R. Cost of Capital—2012, EP 558 (Sub-No. 16), slip op. at 10 (STB served Aug. 30, 2013); 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) (recent experience has shown that the most appropriate way for the agency to review such petitions—while also completing its annual cost-of-capital determination in a timely fashion—is to maintain separate proceedings: one (Docket No. EP 558 sub-numbered proceedings) for the annual estimate and another (Docket No. EP 664 sub-numbered proceedings) for petitioners to advocate changes to the cost-of-capital model.).

[5] The composite railroad includes those Class I carriers that: (1) are listed on either the New York Stock Exchange (NYSE) or the American Stock Exchange (AMEX); (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).

[6] In the Board's decision instituting this proceeding, the Board noted that CSX transferred its stock exchange listing from the NYSE to the Nasdaq Global Select Market (Nasdaq), effective after the market closed on December 21, 2015. The Board, however, determined that, for purposes of the 2015 cost-of-capital determination, the Board would waive its requirement that a company's stock must be listed on either the NYSE or the AMEX in the year for which the cost of capital was being determined. The Board stated that the aforementioned requirement was "designed to insure the availability of stock price data." R.R.

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As discussed below, the Board's Office of Economics (OE) has examined the procedures used by AAR to calculate the following components for the railroad industry's 2015 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. Based on that review, the Board estimates that the 2015 railroad cost of capital was 9.61%.

## DEBT CAPITAL

AAR developed its 2015 current cost of debt using bond price data from Bloomberg Professional (Bloomberg), a subscription service used since Railroad Cost of Capital—2011, EP 558 (Sub-No. 15) (STB served Sept. 13, 2012). AAR's cost-of-debt figure is based on the market-value yields of the major forms of long-term 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.

*Accounting Standards Update—Leases*

In its reply, WCTL asserts that the financial and investment community treats operating leases as debt when evaluating the leverage of firms such as railroads, and that the Board should "be prepared" to do the same. (WCTL Reply 11.) According to WCTL, in February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU), No. 2016-02, Leases (Topic 842), that calls for many operating leases to be treated as debt.[7] (Id.) WCTL states that public business entities are required to adopt the new reporting for fiscal years beginning after December 15, 2018, but that entities may start the treatment earlier. (Id.) WCTL, therefore, asserts that the Board appears to have the discretion under generally accepted accounting principles (GAAP) to apply the new rules starting from an earlier date, and that the Board should promptly initiate a rulemaking to address the matter. (Id.)

On rebuttal, AAR states, among other things, that the changes put forth in ASU No. 2016-02, Leases (Topic 842) will not be effective until December 2018, and that, until then, GAAP rules treating operating leases as expenses remain in place. (AAR Rebuttal 14.) Additionally, given the high number of rulemaking proceedings currently open and being contemplated by the Board, AAR submits that the Board should not waste its limited and valuable administrative resources by opening a proceeding on this issue. (Id. at 15.)

The Board monitors FASB issuances and is aware of the guidance contained in ASU No. 2016-02, Leases (Topic 842). The new standard, which will become effective December 2018,

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Cost of Capital—1984, 1 I.C.C.2d at 1004. And, because CSX's stock price data was reported on the NYSE and/or the Nasdaq in 2015, the Board concluded that it would have available stock price data that could be used in the Board's computation of the rail industry's cost of capital for 2015.

[7] ASU No. 2016-02, Leases (Topic 842) is available on FASB's website at http://www.fasb.org , under "Standards" and "Accounting Standards Updates Issued."

is being reviewed by OE to determine whether it is appropriate for our accounting and reporting purposes. Until further notice, the Board will continue to apply its established methodology rather than altering the current treatment of operating leases.

*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 2015, for all issues (a total of 99) that were publicly traded during the year. (AAR Opening, V.S. Gray 8.) To develop the current (in 2015) market value of bonds, AAR used these traded bonds and additional bonds that were outstanding but not publicly traded during 2015. 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 $32.7 billion ($32.1 billion traded, and $0.55 billion non-traded). (AAR Opening, V.S. Gray 9.) Based on the yields for the traded bonds, AAR calculated the weighted average 2015 yield for all bonds to be 3.508%. (AAR Opening, V.S. Gray 10.) 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 2015 yields for these government securities, AAR added basis points[8] to these yields to compensate for the additional risks associated with the ETCs.

There were four ETCs outstanding during 2015. (AAR Opening, V.S. Gray 14-15.) Using the yield spreads, AAR calculated the weighted average cost of ETCs to be 2.535%[9] and their market value to be $870 million for 2015. (Id. at 15).

OE has examined AAR's ETC calculations and based on that review, the Board accepts the cost and market value of the ETCs using AAR's data. **Table 3** in the Appendix shows a summary of the ETC computations.

[8] A basis point equals 1/100th of a percentage point.

[9] This percentage is lower than the 2014 figure of 3.244%. See R.R. Cost of Capital—2014, EP 558 (Sub-No. 18), slip op. at 7.

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*Cost of Conditional Sales Agreements (CSAs)*

CSAs normally represent a small fraction (less than 1%) of total railroad debt. However, for 2015, **Table 4** in the Appendix shows that no CSAs were modeled.[10] (AAR Opening, V.S. Gray 16.)

*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 $1.082 billion for 2015.[11] (AAR Opening, V.S. Gray 17.) OE has examined AAR's calculations for the market value for capitalized leases and miscellaneous debt, and based on that review, the Board accepts the market value using AAR's data. **Table 5** in the Appendix shows the calculations for capitalized leases and miscellaneous debt to be $1.082 billion.

*Total Market Value of Debt*

AAR calculated that the total market value for all debt during 2015 was $34.646 billion. (AAR Opening, V.S. Gray 20.) 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 first calculating a yield on a new issue that included flotation costs, and then deducting a yield that did not include flotation costs. The difference between the two yields is the flotation costs expressed in percentage points. For 2015, 13 new issues were reported in eight filings with some filings reporting multiple issues. (AAR Opening, V.S. Gray 20.) A simple average of the 13 flotation cost figures is 0.071%. (Id.) AAR calculated the 2015 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. (Id.) (citing 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

[10] 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.

[11] This figure consists of $1.28 billion of capitalized leases and $(202.1) million of miscellaneous debt. (AAR Opening, App. D.)

(continued . . . )

assuming that coupons are paid twice per year and that the duration for new ETCs is 15 years, yields flotation costs of 0.072%.

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.[12] All other debt is excluded from the weight calculation because a current cost of debt for other debt has not been determined.[13] AAR calculated that flotation costs for debt equal 0.071%. (AAR Opening, V.S. Gray 22.)

OE has reviewed AAR's calculations concerning flotation costs and has determined that AAR's computation is correct. Based on OE's analysis, the Board finds that the cost factors developed for the various components of debt are reasonable.[14] **Table 7** in the Appendix shows these calculations.

*Overall Current Cost of Debt*

AAR concluded that the railroads' cost of debt for 2015 was 3.55%.[15] (AAR Opening, V.S. Gray 23.) OE has verified that the percentage put forth by AAR is correct. Based on OE's analysis, **Table 8** in the Appendix shows the overall current cost of debt.

## COMMON EQUITY CAPITAL

The cost of common equity capital is estimated 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 + β×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, the railroads were asked to provide the average yield to maturity in 2015 for a 20-year U.S. Treasury Bond. Similarly, the railroads were asked to provide an

[12] 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 2015. (AAR Opening, V.S. Gray 17.)

[13] 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 17-18.)

[14] AAR calculated the 2015 flotation costs for bonds using publicly available data from electronic filings with the SEC.

[15] This percentage is lower than the 2014 cost of debt (3.58%). See R.R. Cost of Capital—2014, EP 558 (Sub-No. 18), slip op. at 8. As explained above, the Board's 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.

estimate for RP based on returns experienced by the S&P 500 since 1926. Finally, the railroads were asked to calculate beta using a portfolio of weekly, merger-adjusted railroad stock returns for the prior five years in the following equation:

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

$\alpha$ = 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, 1 I.C.C.2d at 1003-04;

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

$\varepsilon$ = 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 2015 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 2015 risk-free rate to be 2.55%. (AAR Opening, V.S. Gray 28.) OE has examined AAR's data and the data from the Federal Reserve's website. Based on that examination, the Board has determined that AAR's computation is correct.

*RP – The Market-Risk Premium*

Using the approach settled upon in Cost of Capital Methodology, EP 664, slip op. at 7-9, AAR submitted data reflecting a market-risk premium of 6.90%. The Ibbotson SBBI Classic Yearbook published by Morningstar, which was previously used as the source of the market risk premium for 2013 and 2014, has been discontinued. AAR has replaced the former source with Duff & Phelps' 2016 Valuation Handbook—Guide to Cost of Capital, which uses the same method as Ibbotson and provides the same data reflecting the market-risk premium. (AAR Opening, V.S. Gray 29-30.)

In its reply, WCTL argues that, although AAR explained in its opening statement that it relied on Duff & Phelps for the 1926-based historical market-risk premium, because Ibbotson/Morningstar no longer published those values, Duff & Phelps actually recommends the use of a lower market-risk premium—5.0%, as of December 31, 2015 (and 5.5% as of January 31, 2016). (WCTL Reply 9.) According to WCTL, using the 5.0% market-risk premium along with AAR's 1.2167 beta and 2.55% risk-free rate results in a cost of equity of 8.63% ((5% x 1.2167) + 2.55%). (Id.) WCTL states that the resulting cost of capital, using

AAR's capital structure and cost of debt, is 7.70% ((8.63% x 0.8184) + (3.5% x 0.1816)). (Id.) WCTL argues that the 7.70% cost of capital is virtually identical to the Morgan Stanley UP-based figure, thereby evidencing that the Board could greatly improve its estimate of the opportunity cost of capital for the railroad industry by abandoning the MSDCF and relying on a more contemporary market-risk premium instead of a higher, historical market-risk premium. (Id.)

On rebuttal, AAR claims that, despite WCTL's assertion that Duff & Phelps recommends use of a market-risk premium of 5.0%, as of December 31, 2015, the supporting information supplied by WCTL states that the 5.0% market-risk premium is to be "matched with a normalized risk free rate of 4.0%." (AAR Rebuttal 11.) According to AAR, the two largely offset each other. (Id. at 12.) Additionally, AAR asserts that it appears WCTL accidentally used 3.5% for the cost of debt instead of 3.55%. (Id.) AAR states that WCTL's calculation, with these two corrections, results in a cost of capital of 8.89%, not the 7.70% claimed by WCTL. (Id.) Further, if one were to substitute Duff & Phelps' latest market-risk premium recommendation of 5.5%, AAR argues that a weighted average cost of capital of 9.39% would be calculated. (Id.)

OE has examined the underlying data here and the Board agrees with AAR's assessment that the market-risk premium is 6.90%. WCTL has offered proposals on how to calculate the market-risk premium in 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, Docket No. EP 664 (Sub-No. 2). That rulemaking is still pending at the Board, and WCTL's arguments about the market-risk premium will be addressed in that proceeding.

*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: $R - SRRF = \alpha + \beta(RM - SRRF) + \varepsilon$. EP 664, slip op. at 9-10. Applying the modified approach for assigning the new shares outstanding,[16] as described in Railroad Cost of Capital—2010, EP 558 (Sub-No. 14), slip op. at 6 (STB served Oct. 3, 2011), AAR's calculations estimate that the value of beta is 1.2167.[17] (AAR Opening, V.S. Gray 34.)

In its opening statement, AAR's witness, John T. Gray, asserted the following regarding AAR's interpretation of the beta calculation:

> The 2015 beta is lower, but not dramatically different, than the beta for 2014 (1.2503). Like the 2014 beta, the 2015 beta is between the 2012 and 2013 estimates, which were 1.1543 and 1.3499, respectively. This is the seventh consecutive year that the railroad

[16] 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.

[17] AAR uses the SAS General Linear Model procedure to compute regression data. The Board uses a standard Excel regression method.

> beta has been above 1.0. Clearly, the equity market regards railroad stocks as consistently more volatile, and of higher risk, than the market in general. In the real investment world, this risk is a reflection of the declining traffic railroads are facing in coal markets, and the volatility of energy-related markets. The equity market regards these risks as a systemic part of railroad investment.

(Id.)

On reply, WCTL asserts that AAR's beta interpretation is suspect. (WCTL Reply 9-11.) First, WCTL argues that declining coal markets and volatile energy-related markets do not necessarily represent systemic risks, but rather specific markets. (Id.) Second, WCTL asserts that railroad industry betas declined in both 2014 and 2015, and coal markets and energy markets varied substantially in those two years. (Id.) According to WCTL, the fact that the railroad industry betas, measured over a five-year period, declined in both years suggests that railroad betas are not tied directly to coal prices or energy market volatility, that the high railroad beta of 2013 was an anomaly, and that lower and/or declining beta values may be more representative of a longer-term or emerging trend. (Id.) WCTL further argues that, although railroad betas have been above 1.0 for seven consecutive years, such information is not conclusive proof that the market views railroad stocks as carrying more risk than the market in general. (Id. at 11.)

In its rebuttal, AAR notes that, although WCTL criticizes AAR's interpretation of the beta calculation, WCTL does not actually challenge AAR's calculation. (AAR Rebuttal 13.) Further, AAR contends that WCTL's speculations regarding the effects of lower energy prices on railroad risk are largely irrelevant to this proceeding. (Id.) And, according to AAR, if WCTL had considered the impact of low natural gas prices on rail coal volumes, it would have come to the same conclusion as AAR—that price declines have clearly increased industry risk. (Id.)

As AAR notes, while WCTL criticizes AAR's interpretation of the beta calculation, there has been no actual challenge to the calculation. Further, a review of AAR's workpapers indicates that AAR has utilized the same approach in calculating the CAPM's beta as in previous cost-of-capital determinations, and OE has independently calculated and verified the same data. To the extent that WCTL questions the Board's established methodology in determining the beta calculation, that argument will be addressed in the pending proceeding in Docket No. EP 664 (Sub-No. 2), as that issue has already been raised there. The Board, therefore, agrees with AAR's calculated estimate that the value of beta is 1.2167.

*Cost of Common Equity Capital using CAPM*

Using the modified approach for assigning the new shares outstanding, the Board calculates the cost of equity as $RF + \beta \times RP$, or $2.55\% + (1.2167 \times 6.90\%)$, which equals 10.95%. **Tables 9** and **10** in the Appendix show the calculations of the cost of common equity using CAPM. (See also AAR Opening, V.S. Gray 35.)

To calculate the 2015 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 2015. AAR calculated the

combined 52-week average market value of the railroads as $156.11 billion. (AAR Opening, V.S. Gray 24.)

*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 2011-2015 periods by the total sales over the same period. To obtain the 2015 average cash flow, the cash-flow-to-sales ratio is multiplied by the sales revenue from 2015. The 2015 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' 2011-2015 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 the Institutional Brokers Estimate System (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. The third-stage growth rate of 4.84% was calculated by using the sum of the figures for long-run expected growth in real output (3.24%) and long-run expected inflation (1.60%).[18]

In its reply, WCTL asserts that stock buybacks distort the MSDCF. (WCTL Reply 4.) According to WCTL, the MSDCF uses earnings per share (EPS) growth rates as a proxy for growth in firm-wide cashflows, which are discounted by the cost of equity to equal the market cap. (Id.) However, WCTL states that an accurate EPS forecast reflects changes in shares as well as changes in earnings. (Id.) WCTL, therefore, argues that the impact of these buybacks on the MSDCF is very substantial, and that an MSDCF model that depends heavily on such projections should not be utilized. (Id. at 8.)

WCTL further argues that the MSDCF is tainted by inclusion of KCS in the simple average for the second-stage growth rate. (Id.) According to WCTL, KCS and UP each receive the same weight even though KCS has 1/8th the market value of UP. WCTL asserts that a small carrier such as KCS should not have such a disproportionate impact on the average.

On rebuttal, AAR states that WCTL's contentions regarding an overstatement of growth rates in the MSDCF due to stock repurchases are unfounded. (AAR Rebuttal 7.) AAR argues, among other things, that the Board rejected that argument when it was first raised in Use of MSDCF, EP 664 (Sub-No. 1), slip op. at 12, and that nothing has changed since then to warrant reconsideration of that decision. (AAR Rebuttal 7.) AAR further argues that the Board should disregard WCTL's selective challenge to the second-stage industry growth rate in the MSDCF model. AAR states that it included KCS because that railroad meets the stated criteria of Railroad Cost of Capital—1984. (AAR Rebuttal 9.) Additionally, AAR argues that WCTL's criticism misunderstands the MSDCF second-stage growth rate. (Id.) According to AAR, the MSDCF does not utilize a weighted average to establish the second-stage growth rate because it assumes "that over a middle horizon, growth of any particular company will lie more in line with the industry as a whole." (Id., citing Ibbotson SBBI 2013 Valuation Yearbook 51 (2013).) Thus,

[18] According to AAR, until the 2013 cost-of-capital determination, the long-run nominal growth rate used was that provided by Morningstar/Ibbotson in its Ibbotson SBBI Valuation Yearbook. (AAR Opening, V.S. Gray 42.) AAR states that this publication has been discontinued. However, another valuation reference book, the Ibbotson SBBI Classic Yearbook, was expanded to contain many of the statistics found in the Valuation Yearbook. (Id.) Using data from the Classic Yearbook, the Federal Reserve, and the Bureau of Economic Analysis, AAR states that it replicated the Ibbotson calculations for real growth rates and long-term inflation for both the 2013 and 2014 cost-of-capital determinations. (Id.) For the 2015 cost-of-capital determination, AAR states that it used a similar methodology, although the SBBI long-term government yields were no longer available because Morningstar discontinued publication of the Ibbotson SBBI Classic Yearbook. (Id.) To replace the SBBI long-term government yields, AAR used the 20-year U.S. Treasury Bond yields. (Id.) According to AAR, these numbers are very close to the SBBI long-term government yields. (Id. at 42-43.) Appendix M in AAR's opening statement contains the calculations for the stage three growth rate for 2013 through 2015. (Id., App. M.)

AAR asserts that the simple average is intended to model the fact that "other companies 'catch' their industry growth leaders, or the leaders fall back to the rate of the slower growth railroads." (Id. at 9, citing AAR Opening, V.S. Gray 41.) Also, AAR argues that if the Board were to modify the MSDCF model, the Board would have to consider all of the assumptions within the model and not selectively choose certain assumptions. (AAR Rebuttal 9-10.)

As stated in previous cost-of-capital determinations, we will not address any proposed changes to the Board's cost-of-capital methodology in the annual Docket No. EP 558 proceedings. We further note that this argument regarding rail carriers' stock buyback programs has already been raised in a separate petition for rulemaking, Docket No. EP 664 (Sub-No. 2), and will be addressed in that proceeding.

We also disagree with WCTL's criticism regarding the inclusion of KCS in the MSDCF second-stage growth rate. As AAR correctly points out, KCS meets the criteria for 2015, see R.R. Cost of Capital—1984, 1 I.C.C.2d at 1003-04, and WCTL has not contested that fact. As noted above, any proposed changes to the Board's established cost-of-capital methodology should be proposed in a separate petition for rulemaking in a Docket No. EP 664 proceeding, and not within the annual Docket No. EP 558 proceedings. See R.R. Cost of Capital—2012, EP 558 (Sub-No. 16), slip op. at 10; Cost of Capital Methodology, EP 664, slip op. at 18.

OE has reviewed the evidence provided by AAR. Based on that review, the Board finds that the growth rates are correct and consistent with the Board's approved methodology, and they will be used in the determination of the cost of equity for 2015.

*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 December 31, 2015, and shares outstanding from the 2015 Q3 10-Q reports filed with the SEC.

OE has reviewed AAR's evidence. Based on that review, the Board finds that the market values used in the 2015 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 10.97%. (AAR Opening, V.S. Gray 45.) Accordingly, the Board calculates the MSDCF as 10.97%, and this estimate will be averaged 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 2015 was 10.96%. (See AAR Opening, V.S. Gray 46.) This figure is based on an estimate of the cost of

equity using a CAPM of 10.95% and a MSDCF estimate of 10.97%. **Table 12** shows both costs of common equity for each model, and the average of the two models.

## 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—2014, EP 558 (Sub-No. 18), slip op. at 15. AAR computed the market value of preferred equity during 2015 to be $6.588 million. AAR computed the cost of preferred equity to be 3.68%. (AAR Opening, V.S. Gray 50.)

OE has determined that the AAR's computations are correct. Based on that review, **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.

OE has determined that the average market values of debt, common equity, and preferred equity are $34.646 billion, $156.111 billion, and $6.6 million respectively. The percentage share of debt increased, from 16.66% in 2014 to 18.16% in 2015. The percentage share of common equity decreased, from 83.34% in 2014 to 81.84% in 2015. The percentage of preferred equity for 2015 was de minimis.[19] Based on that review, **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 2015 capital structure mix.

## COMPOSITE COST OF CAPITAL

Based on the evidence furnished in the record, the 2015 composite after-tax cost of capital for the railroad industry, as set forth in **Table 16** in the Appendix, was 9.61%. 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 2015 cost of capital was 1.04 percentage points lower than the 2014 cost of capital (10.65%). See R.R. Cost of Capital—2014, EP 558 (Sub-No. 18), slip op. at 15.

[19] The weight for preferred equity is 0.003%, which rounds to 0.00%.

## CONCLUSIONS

The Board finds that for 2015:

1. The cost of railroad long-term debt was 3.55%.

2. The cost of common equity was 10.96%.

3. The cost of preferred equity was 3.68%.

4. The capital structure mix of the railroads was 18.16% long-term debt, 81.84% common equity, and 0.00% preferred equity.

5. The composite railroad industry cost of capital was 9.61%.

It is ordered:

1. This decision is effective on September 4, 2016.

2. This proceeding is discontinued.

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

# APPENDIX

**Table 1**
**2015 Traded & Non-traded Bonds**

| Railroad | Traded vs. Non-traded | Number | Market Value ($000) | % Market Value to All Bonds |
|---|---|---|---|---|
| CSX | Traded[1] | 28 | $10,885,400 | 97.72% |
| | Non-traded | 3 | 254,338 | 2.28% |
| | Total | 31 | 11,139,738 | 100.00% |
| KCS | Traded[2] | 10 | 286,722 | 58.29% |
| | Non-traded | 7 | 205,159 | 41.71% |
| | Total | 17 | 491,881 | 100.00% |
| NSC | Traded[3] | 25 | 10,242,632 | 99.18% |
| | Non-traded | 2 | 84,903 | 0.82% |
| | Total | 27 | 10,327,535 | 100.00% |
| UPC | Traded[4] | 36 | 10,726,281 | 99.92% |
| | Non-traded | 3 | 8,486 | 0.08% |
| | Total | 39 | 10,734,767 | 100.00% |
| **Composite** | Traded | 99 | $32,141,035 | 98.31% |
| | Non-traded | 15 | 552,886 | 1.69% |
| | Total | 114 | 32,693,921 | 100.00% |

[1] Includes 2 bonds issued during 2015, prorated based on date of issue.
[2] Includes 6 bonds issued during 2015, prorated based on date of issue.
[3] Includes 2 bonds issued during 2015, prorated based on date of issue.
[4] Includes 7 bonds issued during 2015, prorated based on date of issue.

**Table 2**
**2015 Bonds, Notes, & Debentures**

| Railroad | Number of Traded Issues | Market Value Traded Issues ($000) | Current Cost | Weighted Cost |
|---|---|---|---|---|
| CSX | 28 | $10,885,400 | 3.594% | 1.217% |
| KCS | 10 | 286,722 | 4.116% | 0.037% |
| NSC | 25 | 10,242,632 | 3.665% | 1.168% |
| UPC | 36 | 10,726,281 | 3.253% | 1.086% |
| **Composite** | **99** | **$32,141,035** | | **3.508%** |

**Table 3**
**2015 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 | 4 | 869,998 | 2.535% | 22,054 |
| **Composite** | **4** | **$869,998** | **2.535%** | **$22,054** |

**Table 4**
**2015 Conditional Sales Agreements**

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

**Table 5**
**2015 Capitalized Leases & Miscellaneous Debt**

| Railroad | Capitalized Leases ($000) | Miscellaneous Debt[1] ($000) | Total Other Debt ($000) |
|---|---|---|---|
| CSX | $5,800 | $2,999 | $8,799 |
| KCS | 21,303 | (30,423) | (9,120) |
| NSC | 1,739 | (505,313) | (503,574) |
| UPC | 1,254,882 | 330,635 | 1,585,517 |
| **Composite** | **$1,283,724** | **$(202,102)** | **$1,081,622** |

[1] Miscellaneous debt includes unamortized debt discount.

**Table 6**
**2015 Market Value of Debt**

| Type of Debt | Market Value of Debt ($000) | Percentage of Total Market Value (Excluding Other Debt) |
|---|---|---|
| Bonds, Notes, & Debentures | $32,693,921 | 97.41% |
| ETCs | 869,998 | 2.59% |
| CSAs | 0 | 0.00% |
| Subtotal | $33,563,919 | 100.00% |
| Capitalized Leases/Miscellaneous Debt | 1,081,622 | NA |
| **Total Market Value of Debt** | **$34,645,541** | **NA** |

**Table 7**
**2015 Flotation Cost for Debt**

| Type of Debt | Market Weight (Excludes Other Debt) | Flotation Cost | Weighted Average Flotation Cost |
|---|---|---|---|
| Bonds, Notes, & Debentures | 97.41% | 0.071% | 0.0692% |
| ETCs | 2.59% | 0.072% | 0.00187% |
| CSAs | 0.00% | 0.000% | 0.0000% |
| **Total** | **100.00%** | | **0.071%** |

**Table 8**
**2015 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 | 97.41% | 3.508% | 3.4171% |
| ETCs | 2.59% | 2.535% | 0.0657% |
| CSAs | 0.00% | 0.00% | 0.0000% |
| Subtotal | 100.00% | | 3.483% |
| Flotation Cost | | | 0.071% |
| **Weighted Cost of Debt** | | | **3.55%** |

**Table 9**
**2015 Summary Output**

| **Regression Statistics** | | | | | |
|---|---|---|---|---|---|
| Multiple R | 0.772122 | | | | |
| R-Square | 0.596173 | | | | |
| Adjusted-R Square | 0.594614 | | | | |
| Standard Error | 0.019808 | | | | |
| Observations | 261 | | | | |
| | | | | | |
| ANOVA | | | | | |
| | Df | SS | MS | F | Significance F |
| Regression | 1 | 0.150028 | 0.150028 | 382.363295 | 6.43285E-53 |
| Residual | 259 | 0.101624 | 0.000392 | | |
| Total | 260 | 0.251652 | | | |
| | | | | | |
| | Coefficients | Standard Error | T Stat | P-Value | |
| Intercept | -8.977243E-05 | 0.001233 | -0.072826 | 0.942001 | |
| X-Variable | 1.216664 | 0.062220 | 19.554112 | 6.43285E-53 | |

**Table 10**
**2015 CAPM Cost of Common Equity**

| | | |
|---|---|---|
| Risk-Free Rate (RF) | 2.55% | |
| RF+(Beta x Market Risk Premium) | 2.55% + (1.2167 x6.90%) | 10.95% |
| **Cost of Equity** | | **10.95%** |

**Table 11**
**2015 MSDCF Railroad Cost of Equity**
**($ in millions)**

| Railroad | CSX | | KCS | | NSC | | UPC | |
|---|---|---|---|---|---|---|---|---|
| Initial CF | $1,036 | | $27 | | $899 | | $3,122 | |
| Input for Terminal CF | $1,863 | | $422 | | $1,726 | | $4,348 | |
| Stage 1 Growth Rate | 6.20% | | 8.45% | | 0.80% | | 6.50% | |
| Stage 2 Growth Rate | 5.49% | | 5.49% | | 5.49% | | 5.49% | |
| Stage 3 Growth Rate | 4.84% | | 4.84% | | 4.84% | | 4.84% | |
| 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 | $1,100 | 986 | $29 | $26 | $906 | $825 | $3,325 | $2,986 |
| 2 | 1,168 | 939 | 31 | 26 | 913 | 757 | 3,542 | 2,855 |
| 3 | 1,241 | 895 | 34 | 26 | 920 | 694 | 3,772 | 2,730 |
| 4 | 1,317 | 852 | 37 | 26 | 928 | 637 | 4,017 | 2,610 |
| 5 | 1,399 | 811 | 40 | 25 | 935 | 585 | 4,278 | 2,496 |
| 6 | 1,476 | 768 | 42 | 25 | 987 | 561 | 4,513 | 2,364 |
| 7 | 1,557 | 726 | 44 | 24 | 1,041 | 539 | 4,761 | 2,239 |
| 8 | 1,642 | 687 | 47 | 23 | 1,098 | 518 | 5,022 | 2,121 |
| 9 | 1,733 | 650 | 49 | 22 | 1,158 | 497 | 5,298 | 2,009 |
| 10 | 1,828 | 615 | 52 | 21 | 1,222 | 477 | 5,589 | 1,902 |
| Terminal | $51,657 | $17,372 | $19,298 | $7,905 | $49,063 | $19,167 | $124,785 | 42,480 |
| | | | | | | | | |
| | | | | | | | | |
| ΣPV | $25,300 | | $8,149 | | $25,256 | | $66,792 | |
| Market Value | $25,300 | | $8,149 | | $25,256 | | $66,792 | |
| COE | 11.51% | | 9.34% | | 9.86% | | 11.38% | |
| Weighted COE | 2.32% | | 0.61% | | 1.98% | | 6.06% | |
| **COE** | **10.97%** | | | | | | | |

**Table 12**
**2015 Cost of Common Equity Capital**

| **Model** | |
|---|---|
| Capital Asset Pricing Model | 10.95% |
| Multi-Stage Discounted Cash Flow | 10.97% |
| **Cost of Common Equity** | **10.96%** |

**Table 13**
**2015 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 | $27.205 | 3.68% | 242,170 | $6,588 | 100.00% | 3.68% |
| NSC | 0 | 0 | 0.00% | | | 0.00% | 0.00% |
| UPC | 0 | 0 | 0.00% | | | 0.00% | 0.00% |
| **Composite** | | | | | **$6,588** | | **3.68%** |

**Table 14**
**2015 Average Market Value for Common Equity**

| Railroad | Average Market Value ($000) | Average Market Weight |
|---|---|---|
| CSX | $30,953,397 | 19.83% |
| KCS | 10,703,708 | 6.86% |
| NSC | 28,072,534 | 17.98% |
| UPC | 86,381,744 | 55.33% |
| **COMPOSITE** | **$156,111,383** | **100.00%** |

**Table 15**
**2015 Capital Structure Mix**

| Railroad | Type of Capital | Market Value ($000) | Weight |
|---|---|---|---|
| CSX | Debt | $11,148,537 | 26.48% |
| | Equity | 30,953,397 | 73.52% |
| | P. Equity | 0 | 0.00% |
| KCS | Debt | 482,761 | 4.31% |
| | Equity | 10,703,708 | 95.63% |
| | P. Equity | 6,588 | 0.06% |
| NSC | Debt | 9,823,961 | 25.92% |
| | Equity | 28,072,534 | 74.08% |
| | P. Equity | 0 | 0.00% |
| UPC | Debt | 13,190,282 | 13.25% |
| | Equity | 86,381,744 | 86.75% |
| | P. Equity | 0 | 0.00% |
| Composite Weight | Debt | 34,645,541 | 18.16% |
| | Equity | 156,111,383 | 81.84% |
| | P. Equity | 6,588 | 0.00% |
| | Total | $190,763,512 | 100.00% |

**Table 16**
**2015 Cost-of-Capital Computation**

| Type of Capital | Cost | Weight | Weighted Average |
|---|---|---|---|
| Long-Term Debt | 3.55% | 18.16% | 0.65% |
| Common Equity | 10.96% | 81.84% | 8.97% |
| Preferred Equity | 3.68% | 0.00% | 0.00% |
| **Composite Cost of Capital** | | **100.00%** | **9.61%** |