

# How FERC's Peers Estimate Equity Costs

*A Deep Dive*

By David Pomper, Spiegel & McDiarmid, LLP



Through a series of orders that began with *Martha Coakley, Att’y Gen. of Mass. v. Bangor Hydro-Elec. Co.*, 165 FERC ¶ 61,030, 2018 and cited here as *Coakley*, FERC has proposed a new approach to estimating the cost of equity capital invested in pipelines and electric utilities. As this article goes to press, the proposal remains under consideration.

If adopted, it would dilute FERC’s prior sole reliance on the Discounted Cash Flow (DCF) method, as FERC would now also include, with equal weighting, three other methods: The Capital Asset Pricing Model (CAPM), Risk Premium (RP), and Expected Earnings (E/B).

Broadly speaking, DCF finds the discount rate that matches present stock prices to the present value of the expected stream of present and future dividends.

CAPM centers on the return from an economy-wide equity portfolio – the equity market return. The method takes the part of that equity market return that exceeds a risk-free, treasury-type yield, and multiplies it by an individual stock’s beta, meaning its risk, i.e., volatility, relative to the portfolio.

RP infers the relationship between past allowed ROEs and the contemporaneous bond yields, and then extends that relationship to current bond yields.

E/B divides an entity’s actual or forecast accounting earnings by that entity’s contemporaneous equity book value.

As support for using multiple methods, FERC has repeatedly asserted that other federal agencies rely on multiple methods, citing the Federal Communications Commission (FCC), Federal Reserve (Fed), and Surface Transportation Board (STB). While FERC is wise to consider how its sister federal agencies estimate the cost of equity, a review of those agencies’ estimation methods spotlights fatal flaws in FERC’s proposed new approach.

Summarized below are the equity cost estimation methods used by FCC, Fed, and STB; by four other federal agencies, including the Department of Energy, in which FERC is housed; by utility regulators in other nations; and by state regulators.

### Federal Communications Commission

FCC combines two methods: DCF and CAPM. FCC Wireline Competition Bureau Staff Report, *Prescribing The Authorized Rate of Return: Analysis of Methods for Establishing Just and Reasonable Rates for Local Exchange Carriers*, WC Docket No. 10-90, DA 13-1111, May 16, 2013; *In re. Connect Am. Fund*, 28 FCC Rcd. 7123, 7147, 2013; later order, *In re. Connect Am. Fund*, 81 Fed. Reg. 24282, Apr. 25, 2016.

While FCC’s DCF method is not directly comparable to anything advanced at FERC, the FCC’s version of CAPM is

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illuminate. FCC based its equity market return on “the average historical market premium above the 10-year risk free rate for the period 1928-2012 developed by Professor Aswath Damodaran.” It estimated the equity market return as  $2.83\%+5.88\%=8.71\%$ .

That is far below the equity market return of about twelve percent to fourteen percent commonly proffered to FERC by utility-side witnesses. Those witnesses also apply upward size adjustments for small proxy firms’ CAPM value. FCC rejects such an adjustment, finding it inapplicable to rate-regulated small firms.

### Federal Reserve

Under the Monetary Control Act, the Fed charges banks for certain services, at prices that include the banks’ estimated cost of equity. FERC has cited the Fed’s 2007 submission to the STB, in which the Fed described both its past methods and the new method that the Fed adopted in 2006. FERC focused on the Fed’s practice from 2000 through 2005, which had temporarily involved the use of multiple empirical models.

But as the same submission explained, from 2006 forward, the Fed has relied solely on the CAPM. Board of Governors of the Federal Reserve System, *Testimony Before the Surface*

Transportation Board, Ex Parte No. 664, Feb. 15, 2007, at 7 (“the weaknesses of the Comparable Accounting Earnings [method are] widely recognized,” and that method is “not in line with current practice”); (“Because we strive to use a private sector adjustment factor methodology that is consistent with private-sector practice and that the public can easily replicate, we elected to use the CAPM-only approach to estimate the target return on equity for our priced services for implementation with 2006 pricing”).

Like FCC, the Fed’s CAPM aligns more with CAPMs presented to FERC by customer-side witnesses than with their utility-side counterparts. The Fed’s equity market premium is the rolling forty-year historical average difference between equity market returns and three-month Treasury bill returns.

Also like the FCC, the Fed rejects additional factors such as a size adjustment. Currently, the Fed’s CAPM uses an equity market return of 10.33 percent. Board of Governors of the Federal Reserve System, Docket No. OP-1636, 84 Fed. Reg. 1126, n.21, Feb. 1, 2019.



“The Expected Earnings method that FERC is proposing to revive is obsolete.”

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Because the Fed uses a bank beta of 1.0, its CAPM model produces a cost of equity, for banks, that equals this 10.33 percent equity market return: “2.01% + (1.0 \* 8.32%) = 10.33%.” If applied to electric utility stocks’ typical beta of about 0.75, the Fed model would indicate an equity cost of about 2.01% + (0.75 \* 8.32%) = 8.25%.

### Surface Transportation Board

STB’s approach, which has special relevance to electric utilities because it is used in setting rates for shipping coal by rail, combines two methods – CAPM and DCF. See Use of a Multi-Stage Discounted Cash Flow Model in Determining the Railroad Industry’s Cost of Capital, STB Ex Parte No. 664 (Sub-No. 1), 2009 WL 197991, S.T.B. Jan. 23, 2009.

Currently, STB’s CAPM uses an equity market return of 9.93 percent, with no size adjustment. Railroad Cost of Capital – 2018, STB Ex Parte No. 558 (Sub-No. 22), S.T.B. Aug. 5, 2019, applying

a 3.02 percent risk-free rate derived using twenty-year U.S. Treasury bonds, and an equity market premium of 6.91 percent.

If applied to electric utilities stocks’ typical beta of about 0.75, STB’s CAPM for 2019 would indicate an equity cost of about 3.02% + (0.75 \* 6.91%) = 8.20%. The STB’s DCF approach generally resembles FERC’s, in that it blends a first-stage growth rate based on analysts’ five-year forecasts of earnings per share growth with a final-stage growth rate based on long-term GDP growth. Unlike FERC, however, STB includes a middle stage in which growth is based on a railroad-sector average.

STB also has jurisdiction over certain ocean shipping rates – transferred, by the ICC Termination Act of 1995, from the Federal Maritime Commission (FMC). STB does not actively regulate those rates, because STB views such shipping as workably competitive. See Surface Transportation Board, Notice of Proposed Rulemaking, Water Carrier Tariff Filing Procedures, 83 Fed. Reg. 66229, 66230 n.8, Dec. 26, 2018.

Were the STB to find an instance of market power and proceed to set a cost-based rate reflecting water carriers’ estimated cost of equity, however, the agency might consider the FMC’s final estimation policy: Financial Reporting Requirements and Rate of Return Methodology in the Domestic Offshore Trades, Notice of Proposed Rulemaking, 59 Fed. Reg. 16592, Apr. 7, 1994, Final Rule, 60 Fed. Reg. 46047, Sept. 5, 1995.

It discontinued use of any comparable earnings test in determining the reasonableness of a carrier’s return on rate base, finding that test “not well grounded in economic theory, primarily because the method is implemented using accounting data rather than market information, and does not accurately reflect the regulated

carrier’s cost of common-stock equity capital.”

Instead, FMC proposed to rely on a combination of, “DCF, CAPM, and RP [Risk Premium] methods.” In finalizing the rule, FMC liberalized carriers’ options to choose among those three methods and specify their parameters but adhered to its rejection of E/B ratios.

Other federal agencies that need to estimate private-sector costs of equity (but which FERC has not yet cited) also shed important light on the issues raised by Coakley.

### Department of Energy

In promulgating energy efficiency standards, DOE usually considers businesses’ cost of equity, as part of assessing whether they will benefit by paying more upfront for equipment that will cost them less for electricity purchased over time.

For example, DOE recently prescribed energy conservation standards for walk-in coolers and freezers. Energy Conservation

Program: Energy Conservation Standards for Walk-In Cooler and Freezer Refrigeration Systems, 82 Fed. Reg. 31808, July 10, 2017.

Following its usual approach, DOE relied on a CAPM model alone to evaluate the cost of the equity that grocers, restaurants, and other affected businesses would have to invest in more-efficient equipment. See Technical Support Document, December 2016, Chapter 8.

For its CAPM equity market return, DOE looked to the Federal Reserve approach summarized above, applied to data from Damodaran Online. DOE thereby found rolling forty-year historical averages of equity market returns for 1964-2004 through 1973-2013 that averaged 10.3 percent. For the general population of affected businesses, including those comparable in size to electric utilities, DOE did not apply a size adjustment.

### Environmental Protection Agency

The integrated planning model that EPA uses to predict the impact of emissions regulations includes an estimate of the cost of equity that utilities invest in electric generation plants.

In EPA's most recent – November 2018 – iteration of this model, regulated utilities' estimated equity cost is 7.2 percent, based on a CAPM-only model in which the equity market return is 9.75 percent and the equity market risk premium (above a 3.45 percent risk-free rate derived using twenty-year U.S. Treasury bonds) is 6.3 percent. This market premium is taken directly from Damodaran Online. EPA also corroborates its equity market return by reference to the 9.5 percent used by Duff and Phelps.

Unlike the FCC, Fed, STB, and DOE, EPA includes a size adjustment of forty-six basis points. More than offsetting this adjustment, however, EPA also applies another difference from those agencies' approaches, with the effect of substantially reducing the CAPM ROE found for electric utilities. EPA uses actual, observed Betas to estimate the risk of utility stocks relative to a broad equity portfolio – it does not apply the Blume adjustment that moves betas toward 1.0, thereby raising the lower Betas typically observed for electric utilities.

EPA's most recent beta for utilities is 0.53, rather than the 0.75 or so typically seen after that adjustment.

### Transportation Command, Department of Defense

Following the 1948-49 Berlin Airlift, the military organized and contracted with the Civil Reserve Air Fleet, under which commercial aviation supplements military airlift capability when needed and receives financial compensation that includes the cost of equity.

USTRANSCOMM negotiates the compensation formula, which by regulation is based on the CAPM method: it “considers RFR [Risk Free Rate], weighted betas, annualized equity risk premium and a future expected return premium.” Ratemaking

Procedures for Civil Reserve Air Fleet Contracts, Final Rule, 80 Fed. Reg. 30355, 30359, May 28, 2015; 32 C.F.R. § 243.4(e)(1)(i)(B).

### Securities & Exchange Commission

SEC issued rules requiring broker-dealers to hold increased reserves, in order to protect consumers in the event of a default. To evaluate the economic impact of that requirement, SEC estimated the cost to broker-dealers of the additional equity they would need to maintain. It used a CAPM-only model, with “a risk-free rate of 2.5% and an equity risk premium of 7.8%.”

Financial Responsibility Rules for Broker-Dealers, 78 Fed. Reg. 51824, 51187, n.795, Aug. 21, 2013.

Thus, SEC's equity market return was  $2.5\%+7.8\%=10.3\%$ . SEC did not apply a size adjustment. See also Self-Regulatory Organizations; The Options Clearing Corporation; Order Disapproving Proposed Rule Change Concerning The Options Clearing Corporation's Capital Plan, 84 Fed. Reg. 5157, 5170, Feb. 20, 2019, rejecting a “risk premium associated with small stocks”.

While the foregoing survey presents only principal, recent examples of each agency's approach to estimating equity costs, the survey fairly reflects

the findings of a comprehensive Lexis search for relevant terms of art in all Federal Registers, extending back to 1936.

This survey should be usefully considered alongside summaries of the equity cost estimation methods used by other nations' utility regulators (see Bente Villadsen, Michael J. Vilbert, Dan Harris, A. Lawrence Kolbe, Risk and Return for Regulated Industries 201-225 (Brattle Group/Academic Press 2018) (Brattle RRR1); Dr. J. Randall Woolridge, FERC eLibrary No 20190308-5263, Exhibit CAP-600 at 37-46), by state regulators (see Dr. S. Keith Berry, FERC eLibrary No. 20190822-5107, Exhibits SAM-0027 at 96 and SAM-0050), and by academic and financial market practitioners (see Dr. Bradford Cornell, FERC eLibrary No. 20190626-5146, Exhibit A-1 at 4-6).

### Conclusion

In both the federal agency survey and the referenced summaries  
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## How FERC's Peers Estimate Equity Costs

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of international and state regulatory and institutional methods, three points stand out.

One, the E/B method that FERC is proposing to revive is obsolete.

No federal agency still uses any version of that method, and other institutions likewise place no reliance on FERC's proposed E/B method. That is not surprising, as economists consider the E/B method to be "thoroughly discredited." Eugene F. Brigham, Dilip K. Shome, & Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, 14 *Fin. Mgmt.* 33, 33, 1985; see also Brattle RRRRI at 129 (Are book rates of return estimates of the cost of equity? The chief problem with the comparable earnings approach is that the answer to this question is a resounding 'no.' This has long been recognized in the academic literature.").

Two, taking all of these institutions together, the only methods currently in widespread use are CAPM, DCF, and to a lesser extent, RP.

Three, the CAPM methods applied by these institutions align with those presented at FERC by representatives of customers, not utilities: they use equity market returns of about ten percent or less, and generally reject size adjustment

All three of these points come together in the similar methods used by the Federal Reserve and FERC's host department, DOE. Notwithstanding FERC's citation of Federal Reserve testimony as support for using multiple methods and FERC's proposal to include E/B as one of those methods, the Federal Reserve actually relied then, and relies now, only on the CAPM method – which it applies using an equity market return far below what utility representatives use in their models, and no size adjustment. DOE uses a similar approach.

Other institutions' equity cost estimation methods provide no support for FERC's proposed use of proxy company E/B ratios, and no support for a CAPM in which the equity market return, or its premium over the risk-free rate, exceeds historical experience. 

