Before the U.S. Surface Transportation Board

STB Docket No. EP 766

Joint Petition for Rulemaking—Annual Revenue Adequacy Determinations

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Comments of the
U.S. Department of Agriculture

Bruce Summers
Administrator
Agricultural Marketing Service
U.S. Department of Agriculture
Washington, D.C. 20250

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Authority and Interest

The Agricultural Adjustment Act of 1938 and the Agricultural Marketing Act of 1946 entrust the Secretary of Agriculture with representing the interests of agricultural producers and shippers in improving transportation services and facilities. As one of many ways to accomplish this mission, the U.S. Department of Agriculture (USDA) initiates and participates in Surface Transportation Board (STB or Board) proceedings involving rates, charges, tariffs, practices, and services.

Introduction

Revenue adequacy is a fundamental component of the Nation's rail transportation policy. Railroads are allowed to earn "adequate revenues…to maintain the rail system and to attract capital."[1] However, the rates railroads charge to earn revenue must be "reasonable."[2] Each is a force pulling in the opposite direction. The more a railroad charges above cost, the better is its position in terms of revenue adequacy. Yet, such markups reflect applications of market power, which the Board must also guard against. USDA appreciates the opportunity to provide comments in this proceeding and understands the Board's difficult task in balancing these competing objectives.

In a 2015 paper, Dr. Gerard McCullough identified several key questions regarding revenue adequacy.[3] One unresolved question is whether revenue adequacy defines a lower bound (floor) or upper bound (ceiling). There is an economic rationale for each case. Railroads have exceptionally high fixed costs and need to charge rates high enough, on average, to cover fixed costs plus the costs of each movement (floor). However, total revenue beyond total cost (which includes what economists call "normal profit") is economically inefficient (ceiling).[4]

The Joint Petition (Petition or Petitioners) raises two essential questions about revenue adequacy: (1) *how accurate are revenue adequacy measures?* and (2) *how much revenue adequacy is too much?* The next section considers the Petition in light of imperfections in measuring revenue adequacy and whether the comparison proposal addresses these issues. The comments then address the question of how much is too much and where the Petitioners' proposal could fit into that question. The final section summarizes USDA's comments.

Discussion

Petitioners Have Not Justified Their Proposed New Revenue Adequacy Procedure

The first main question raised by the Petition is about how accurate revenue adequacy measures are. Both railroads and shippers have been critical of revenue adequacy procedures for a long time. Both sides have long argued that critical components of the true revenue adequacy picture

[1] 49 U.S. Code § 10101. Rail transportation policy.
[2] Ibid.
[3] McCullough, Gerard J. "Constrained Market Pricing and Revenue Adequacy: Regulatory Implications for Shippers and Class I U.S. Freight Railroads." University of Minnesota, Department of Applied Economics, Staff Paper No. 15-5. 2015. Also see McCullough, Gerard J. "An Economic Analysis of the Issues in Ex Parte No. 722, Railroad Revenue Adequacy." Journal of Transportation Law, Logistics, and Policy 83, no. 2 (2016): 119.
[4] Economists consider price equal to marginal cost "first-best." Under marginal cost pricing, the value society places on the good (the price) is the same as the value society places on the resources to produce the good (the cost). However, marginal cost pricing does not work in industries with fixed costs, such as the railroad industry. In these industries, "second-best"—price equal to average cost—is efficient. The latter implies the condition total revenue equal to total cost.

are missing from the Board's calculations. In this Petition, as in the past, railroads argue that accounting rates of return are not the same as economic rates of return. At times, the railroads argue the current measures overestimate their rates of return and underestimate their cost of capital, but they also go so far as to say it is impossible to infer economic rates of return from accounting rates of return.[5] At the same time, shippers and others have also long argued that the Board's revenue adequacy measures do not adequately capture railroad health. For shippers, the inaccuracies lead to underestimating railroad health.[6]

At least as far back as 1997, the Board recognized the rail industry's strong financial health despite calculations that found them to be revenue inadequate. In a routine revenue adequacy calculation, the then Vice Chairman commented, "Specifically, but for the Board's determination of 'adequacy,' which is based, I believe, on methodologies that are outdated, no one really doubts that the industry, as a whole, is doing far better economically than our determination suggest [sic]."[7]

In their reply to this Petition, the Joint Shippers provided significant evidence that railroads are and have been revenue adequate for decades. In their response to the Joint Shippers, the Petitioners argue that all of the cited positive financial metrics could be consistent with the railroads just "obtaining the minimum capital to remain 'viable' or merely avoiding bankruptcy."[8] Although USDA agrees the issue is complicated and those metrics alone may not suffice to make a finding of revenue adequacy, the information presented by the Joint Shippers does suggest the railroads are doing much better than barely surviving.

As the past decade has shown, offers from investors to purchase railroads do not seem to reflect an industry struggling to attract capital. As examples, the Joint Shippers point out Berkshire Hathaway's outright purchase of BNSF in 2009 and Kansas City Southern's rejection of an offer to purchase its railroad in 2020. According to Bloomberg, "Railroads have only gotten more expensive as they boosted their profitability by minimizing the labor, capital, and cars needed to operate. [Berkshire Hathaway] offered about 18 times BNSF's expected 2010 earnings per share Bloomberg News calculated at the time."[9] Likewise, a group of investment companies, Blackstone Group Inc. and Global Infrastructure Partners, offered "more than 25 times Kansas City Southern's [KCS] estimated 2021 profits on the same measure."[10] In March 2021, Canadian Pacific Railway (CP) offered to buy KCS for $28.9 billion, an amount the Financial Times said

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[5] Canadian National Railway, Norfolk Southern Railway, and Union Pacific Railroad ("Petitioners"). September 1, 2020. Initial petition in STB Ex Parte 766, *Joint Petition for Rulemaking—Annual Revenue Adequacy Determinations*, p. 15.
[6] The American Chemistry Council, American Fuel and Petrochemical Manufacturers, Corn Refiners Association, Fertilizer Institute, National Industrial Transportation League, and Chlorine Institute ("Joint Shippers"). September 21, 2020. Reply to the petition in STB Ex Parte 766, *Joint Petition for Rulemaking—Annual Revenue Adequacy Determinations*, p. 4.
[7] Surface Transportation Board decision. August 14, 1997. Vice Chairman Owen's comments in STB Ex Parte 552 (Sub-No. 1), *Railroad Revenue Adequacy – 1996 Determination*, p. 2.
[8] Canadian National Railway, Norfolk Southern Railway, and Union Pacific Railroad ("Petitioners"). October 13, 2020. Petitioners' response to replies in STB Ex Parte 766, *Joint Petition for Rulemaking—Annual Revenue Adequacy Determinations*, p. 8.
[9] Sutherland, Brooke. Bloomberg Businessweek. "Not Even a $23 Billion Buyout is Rich Enough for a Railroad Anymore." September 14, 2020.
[10] Ibid.

"represent[ed] a 23 percent premium on KCS's [then] closing stock price."[11] CP's agreement to buy KCS was more than 3 times higher than Berkshire Hathaway's agreement to buy BNSF, even adjusting for inflation.[12] Subsequently, Canadian National Railway offered KCS an additional $4.8 billion in its $33.7 billion offer.[13]

The petitioners argue economic and accounting rates of return are different things, and what matters for economic efficiency is economic rates of return. As with any company seeking to attract capital investment, railroads need to earn an economic rate of return at least as great as their cost of capital. However, while USDA agrees that economic rates of return are not the same as accounting rates of return, the burden of proof is still on the railroads to demonstrate their difficulties in attracting capital. Otherwise, the evidence presented by shippers suggests railroads are having no difficulty attracting investment. If this is the case, then railroads' ability to attract capital implies their economic rate of return on investment exceeds their cost of capital. Furthermore, an economic rate of return above capital costs implies that existing STB measures of revenue adequacy underestimate railroads' returns and/or overestimate their cost of capital. This situation, too, would be in line with shipper testimony that industry estimates of railroad cost of capital—and even railroads' own internal estimates of their cost of capital—are significantly lower than Board estimates.[14]

Railroads and shippers can at least agree that revenue adequacy calculations are imperfect. The Petitioners predicate their comparison proposal on its ability to correct for existing measurement errors, so the relevant question for this petition is the extent to which that premise is true.[15]

The only evidence railroads provide of their financial struggles seems to lie in their proposed comparison procedure itself. However, the problem with the proposed comparison method is its reliance on the same accounting measures the Petitioners criticize. The Petitioners offer no justification for why the comparison proposal would be a more accurate measure of revenue adequacy than existing measures. If the railroads' criticisms of accounting rates of return are correct, then replicating that calculation across 500 very different firms would not offer an improvement. The Petitioners' Verified Statement from Professors Murphy and Zmijewski states:

> "These studies conclude that any specification that includes all of the factors that affect the ability of [return on invested capital] to measure a company's economic rate of return is too complex to model; and that the impacts of various factors that determine the magnitude and direction of the difference between measured accounting rates of return and economic rates of return are interrelated. *Depending on the characteristics of a*

[11] Fontanella-Khan, James, Arash Massoudi, and Robert Wright. The Financial Times. "Canadian Pacific Agrees to buy Kansas City Southern for $29bn." March 21, 2021.
[12] In 2009, Berkshire Hathaway agreed to buy BNSF for $44 billion or about $54.3 billion in today's dollars. In 2020, BNSF hauled 505.3 million tons of carload traffic according to the Board's Freight Commodity Statistics. A ratio of the buy-out and tonnage equates to about $107 per ton. In comparison, KCS hauled 71.4 million tons in 2020. Its buy-out to tonnage is a ratio of about $405 per ton.
[13] Canadian National Railway. April 20, 2021 press release.
[14] Western Coal Traffic League, December 8, 2006, Initial comments in STB Ex Parte 664, *Methodology to be Employed in Determining the Railroad Cost of Capital,* p. 14.
[15] Canadian National Railway, Norfolk Southern Railway, and Union Pacific Railroad ("Petitioners"). September 1, 2020. Initial petition in STB Ex Parte 766, *Joint Petition for Rulemaking—Annual Revenue Adequacy Determinations*, p.3.

particular firm, the difference between accounting rates of return and its economic rate of return can be very large and can be either positive or negative." (Emphasis added.)[16]

If some companies are overestimated and some are underestimated, it is ambiguous what a comparison, with potentially significant measurement error across 500 companies, would show. The approach does not distinguish the variation around the median that occurs due to firms truly having higher or lower revenue adequacy from the variation that occurs due to measurement error.

The Petitioners provide the example of the Board attempting to determine whether the temperature in the District of Columbia (DC) is above or below the national average using a broken thermometer. They assert that using the broken thermometer in all cities would answer the question, but they offer no reason as to why that would be the case.

To be more precise, consider the following formulation:

$$y_i = \mu + t_i + e_i$$

Where y_i is the temperature in each city (the revenue adequacy of a particular firm), μ is the national average temperature (the average or median revenue adequacy of S&P 500 companies), t_i is the true variation in temperature in a particular city compared to the average (the true variation in revenue adequacy compared to the median from the S&P 500 company) and e_i is the thermometer measurement error (the revenue adequacy measurement error).

With this formulation,

$$E(y_i) = \mu,$$

if the expected value of e_i is assumed to be zero. That is, the Petitioners' approach might provide a reasonable estimate of the average temperature, if that assumption holds. However, both t_i and e_i are unobserved. At best, the proposed approach can provide information about the combined value of how much that city's temperature deviates from the average and how much measurement error there was for that city, namely:

$$y_i - E(y_i) = t_i + e_i.$$

Comparing the measured temperature in DC to the estimated national average provides an estimate of the combination of DC's actual temperature and DC measurement error but does not overcome the measurement error. If DC's true temperature is slightly above the national average, and the broken thermometer has a relatively large negative error, then it will look like DC's temperature is below average even though it is not, even if the approach provides an accurate estimate of the national average. Without more information on the variation in t_i and e_i specifically, nothing can be said about the t_i for a particular city. For example, if it is assumed measurement error is constant across firms, then

$$y_i - E(y_i) = t_i,$$

which would make the proposal a valid approach, but the Petitioners' own literature review argues that is not the case. As quoted above, Petitioners do provide additional information on the

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16 Ibid., p. 80.

nature of e_i, arguing it depends "on the characteristics of a particular firm" (i.e., is not constant), is "very large" (i.e., is not negligible enough to ignore), and is "too complex to model" (i.e., apparently even more sophisticated methods would struggle to disentangle t_i from e_i). Based on Petitioners' own argument that revenue adequacy measurement error is large, it is reasonable to conclude the variation observed in their submitted data primarily reflects measurement error variation rather than variation in profitability.

To summarize, the Petitioners' proposal is of questionable necessity. To the extent revenue adequacy is a floor, the Petitioners only argue the existing measures are imperfect (no measure is perfect) and provide insufficient evidence that the existing revenue adequacy measures are significantly overestimated (in contrast to shipper evidence that they are underestimated). Moreover, Petitioners' own criticisms of the revenue adequacy calculations make their proposal also of questionable value in overcoming existing imperfections in revenue adequacy calculations. Relying exclusively on the comparison method, USDA finds nothing substantive in the petition warranting changes to the current rules. Having become more revenue adequate as measured by current methods, the petition seems to be an attempt to move the goalposts further away. Without further justification and clarification from the Petitioners, USDA believes the proposal should be rejected.

Revenue Adequacy Should Have a Role in Individual Rate Cases

In 1985, the Interstate Commerce Commission's *Coal Rate Guidelines* established "constrained market pricing" (CMP). It rests on three main principles or constraints, a revenue adequacy constraint, a management efficiency constraint, and a stand-alone cost constraint.[17] Namely, "a captive shipper should not be required to pay more than is necessary for the carrier involved to earn adequate revenues, nor should it pay more than is necessary for efficient service, and a captive shipper should not bear the costs of any facilities or services from which it derives no benefit."[18] While the Board has not explicitly said how a shipper can present a rate reasonableness case based on the revenue adequacy constraint, it is clear that revenue adequacy and rate reasonableness are closely tied.

As conveyed in CMP, the railroads' ability to differentially price should be related to their revenue adequacy. If a railroad's rate of return is well below the industry cost of capital, significant markups are more reasonable than if the rate of return is above the cost of capital, especially well above. The challenge is where to draw the line and how to put that constraint into practice.

USDA agrees with the Petitioners that a rate of return greater than the cost of capital can be consistent with the competitive market process, but that outcome alone offers no additional clarity on where to draw the line. Such a return could be earned by rigorous competition, the presence of market power, or a mix of the two. Determining whether the rate of return was sufficiently generated through competition is complicated and, as stated above, not accomplished by the Petitioners with their comparison proposal.

Setting aside the accuracy issues of the Petitioners' proposed alternative and the other concerns raised by the Joint Shippers discussed above (such as whether the 500 comparison companies accurately benchmark competition), the proposed comparison procedure is a reasonable first step

[17] Technically, there are four constraints. CMP also includes a "phasing constraint."
[18] STB decision, Ex Parte 665, *Rail Transportation of Grain, Rate Regulation Review*, August 31, 2016.

toward assessing how much is too much. However, from that perspective, one further issue with the proposal is its strict rule that only exceeding the median firm implies revenue adequacy, which represents an arbitrary level of economic profits. Although some economic profits are consistent with competition, shippers should not have to pay discriminatory rates toward railroads' excess profits. The Board might consider the comparison proposal as one of the various pieces of evidence that rates are or are not reasonable. For instance, a railroad being higher in the proposed revenue adequacy distribution might add extra weight to determining whether a rate is unreasonably high. However, such weighting could not be the mechanical calculation railroads propose, given all the concerns raised with revenue adequacy measurement.

USDA believes the solution lies in the Board's Final Offer Rate Review (FORR) proposal in Ex Parte (EP) 755. By design, FORR has procedural constraints, not substantive constraints. Revenue adequacy fits in FORR as a potential source of evidence shippers and railroads could cite. This gives parties freedom to select and present the best evidence to make their case, which might include the comparison proposal. Because the Board chooses one remedy or the other (not an average), it also incentivizes parties to present reasonable evidence, which might include the proposed S&P comparison group, with or without deferred taxes, intangible assets, etc. These factors could be weighed against other sources of evidence, including stand-alone cost and a measure of market power, such as a competitive benchmark.

Importantly, this would not be the blanket profit regulation that the Petitioners fear.[19] Railroads could still earn economic profits, as long as they were not earned by further price discrimination as a result of market power.

It is through this flexibility that FORR captures the foundation behind the Board's statutory requirements to ensure railroads are revenue adequate and rates are reasonable. Revenue adequacy, stand-alone cost, a competitive benchmark, and other sources of evidence are each a measuring stick of important principles expressed in the National Rail Transportation Policy, the Long-Cannon factors, and sound economic reasoning—however, no one factor alone captures the whole picture. The challenge for the Board is to determine when scores on factors, such as these, constitute a violation.

For these reasons, USDA believes the Board should consider moving forward with FORR as a means of incorporating the general concepts behind the proposed comparison method.

Summary

Shippers and railroads both agree that revenue adequacy calculations are imperfect. Shippers have argued in the past that a proper measure of revenue adequacy cannot be based on a mechanical calculation, because any formulaic approach is bound to ignore relevant evidence. The railroads have proposed such a formulaic approach, which USDA believes is subject to the same difficulties and limitations involved with accurately measuring revenue adequacy. Indeed, the Petitioners criticize the very metrics that would comprise their formula, such that it becomes unclear how their proposal would improve upon existing methods rather than further obfuscate

[19] Canadian National Railway, Norfolk Southern Railway, and Union Pacific Railroad ("Petitioners"). September 1, 2020. Initial petition in STB Ex Parte 766, *Joint Petition for Rulemaking—Annual Revenue Adequacy Determinations*, p. 67.

the truth. The Petitioners should provide further justification and clarification on the concerns raised herein and by shipper comments.

USDA believes a general approach that compares railroads' revenue adequacy to similar competitive firms is a reasonable perspective to include in attempting to assess how much revenue adequacy is too much and/or how reasonable are individual rates. However, the issues themselves are too ambiguous and complicated to be formulaic and should be a part of a broader analysis that captures other relevant factors, like a railroad's pricing strategy. USDA believes FORR to be the best venue for such an analysis and encourages the Board to move forward on EP 755.

Respectfully submitted,

Bruce Summers
Administrator
Agricultural Marketing Service
U.S. Department of Agriculture
Washington, D.C. 20250