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SURFACE TRANSPORTATION BOARD

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Finance Docket No. 35506

WESTERN COAL TRAFFIC LEAGUE – PETITION FOR DECLARATORY ORDER

OPENING EVIDENCE AND ARGUMENT OF
NATIONAL CORN GROWERS ASSOCIATION

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NATIONAL CORN GROWERS ASSOCIATON

The National Corn Growers Association ("NCGA") hereby submits its opening evidence and argument in support of the Petition for Declaratory Order filed herein by Western Coal Traffic League ("WCTL") and the Board's Decision and Order served September 28, 2011.

Interests of NCGA, Its Members, and Corn Farmers Whose Interests NCGA Represents

Founded in 1957, NCGA represents approximately 36,000 dues-paying corn growers and the interests of more than 300,000 farmers who contribute through corn check-off programs in their States. NCGA and its 48 affiliated State associations and check-off organizations work together to help protect and advance corn growers' interests.

The issues presented in this proceeding potentially affect many if not all NCGA members and the farmers whose interests NCGA seeks to protect who are customers of BNSF Railway Company ("BNSF") (and, depending on the manner in which the STB resolves the issues, perhaps the other U.S. railroads as well), because the Board's rulings could affect (1) its jurisdiction over captive rail rates, (2) the Uniform Rail Costing System ("URCS") costs of BNSF (and potentially, as precedent, other railroads) it determines to be appropriate for regulatory purposes, and (3) the methodology by which it calculates railroad revenue adequacy. The Board's revenue-adequacy methodology in turn has a direct impact on railroad rates prescribed by the STB in response to shipper complaints under at least one of its rate-prescription methodologies.

To the extent that the Board prescribes a rail rate as a percentage of the railroad's variable costs, as it recently did in a proceeding involving Basin Electric Power Cooperative ("Basin Electric"), the acquisition premium paid by Berkshire Hathaway, Inc. for BNSF would, if passed through in whole or in part, directly impact such a prescribed rate in a manner adverse to the rail shipper. Some of NCGA's members and the farmers whose interests NCGA attempts to protect are customers of Basin Electric and would be harmed directly by such an action through higher electricity rates. Moreover, many other NCGA members and the farmers whose interests NCGA attempts to protect are customers of other electric cooperatives, public power entities, investor-owned utilities, or other electricity generators which also are, in turn, customers of BNSF (or the other railroads who may benefit if the Board's determination with respect to BNSF results in a precedent beneficial to those other railroads). Therefore, any decision to allow all or any portion of the acquisition premium paid by Berkshire Hathaway to be applied to BNSF's URCS costs or investment base for revenue-adequacy determinations would have a direct and adverse impact on NCGA and its members and the farmers whose interests NCGA exists to protect.

In 2010, NCGA had a Report ("Review and Analysis of Corn Rail Rates," February 2010) prepared by "Informa Economics an Agra Informa Company" on the impacts on NCGA members of various railroad actions in recent years. The Report (Section VII, Appendix A, BNSF Railway, at 50-51) demonstrated that some of the examples of traffic that were studied for purposes of the Report are charged rates in excess of 180% of variable costs; rates from Iowa, Minnesota, and Nebraska to the Southwest feed markets in Texas were charged 193%, 193%, and 247% of variable costs (higher than the rates prescribed for Basin Electric), respectively. Addition of some of the Berkshire Hathaway-paid premium to the URCS costs of BNSF may make the traffic that was being charged 193% of variable costs no longer subject to the Board's jurisdictional threshold of 180% of variable costs, and make the traffic being charged rates as high as 247% of variable costs appear to be charged significantly less than 247% of variable costs. NCGA would be very concerned if traffic that is now subject to the Board's jurisdiction would no longer be subject to that jurisdiction because of the Berkshire Hathaway-paid premium and if traffic for which rate relief is appropriate would no longer be entitled to relief as a result of the premium.

With respect to STB determinations of revenue adequacy, if all or any portion of the Berkshire Hathaway acquisition premium leads to a write-up of BNSF's investment base, the Board's methodology will likely show BNSF to be more "revenue-inadequate" than in previous years (even though most other observers, including Berkshire Hathaway itself, believe BNSF has been financially healthy), and therefore, the adjustment applied under the Board's "three-benchmark" guidelines for determining a maximum reasonable rate will lead to higher prescribed rates than would otherwise be the case, causing further harm to NCGA and its members.

Introduction and Summary of Position

WCTL seeks a declaratory order from the STB that BNSF's URCS costs for 2010 not be adjusted in any amount for the acquisition premium (calculated by WCTL to be at least $7.625 billion) paid by Berkshire Hathaway when it acquired the remaining shares of BNSF in 2010 that it did not already own. BNSF replied in opposition to WCTL's Petition, but stated that, if the Board were to institute a declaratory proceeding to consider the acquisition-premium issue, the proceeding should also include consideration of the impact of such premiums on the revenue adequacy determinations of the STB.

The STB issued a decision and order on September 28, 2011, instituting a declaratory proceeding, and stating that it would consider both the URCS costing issue raised by WCTL and the "revenue adequacy" issue raised by BNSF.

The NCGA supports WCTL's position and urges the Board not to permit any acquisition premium in BNSF's URCS costs nor allow the acquisition premium to affect the Board's determination of BNSF's revenue adequacy. The Board clearly has authority to grant the relief requested by WCTL and deny the relief requested by BNSF, despite past claims by the railroads that the Board is obliged to use replacement costs to determine the value of railroad assets and must include "write-ups" paid for a railroad or its assets in the investment base used to determine railroad revenue adequacy. The Board has rejected the railroads' arguments about use of replacement costs before and should do so again. Although the Board has in the past allowed write-ups of railroad assets, the Courts have held that the Board is entitled to deference on the methodology it uses for determining whether to permit write-ups (or write-downs) of railroad assets.

Fundamentally, there is a simple reason that the acquisition premium should not be included in BNSF's URCS costs and that it not affect the Board's revenue adequacy calculations for BNSF: BNSF did not pay the premium. BNSF should not be permitted to include in its costs an amount that it did not pay and the Board should not treat BNSF as less revenue adequate (or allegedly more "revenue inadequate") based on a premium paid by a different entity (Berkshire Hathaway).

The implications for rail shippers of the Board's decision in this proceeding may be profound. First, captive shippers who have a prescribed rate from the STB, based on the revenue/variable cost ratio for their traffic (such as Basin Electric, which was held to be entitled to a prescribed rate from BNSF equal to approximately 240 percent of BNSF's variable costs for serving Basin's Laramie Station[1]) should not have that prescribed rate effectively raised by the payment of an acquisition premium. Second, the "jurisdictional threshold" for the Board's jurisdiction over captive rail rates should not be effectively altered by the payment of an acquisition premium; Congress could not have intended to allow the payer of a premium to effectively oust the Board from jurisdiction over a portion of the railroad's rates simply by payment of the premium. Third, a railroad should not be deemed less revenue-adequate (or allegedly more "revenue-inadequate) because another entity decided to pay a premium over book value for the railroad. Paying a premium for a railroad is a sign of its robust financial health, not its alleged "revenue inadequacy." Indeed, the fact that Berkshire Hathaway made a "bet on America" by buying all of BNSF is the best possible evidence of its revenue adequacy, as Berkshire Hathaway's letter to stockholders in February 2011 demonstrates.

Finally, the Board's practice in recent merger and acquisition proceedings, such as the Union Pacific-Southern Pacific merger and the Conrail acquisition proceeding, to allow significant "write-ups" in URCS costs and investment bases for revenue-adequacy

[1] Western Fuels Association and Basin Electric Power Cooperative v. BNSF Railway, STB Docket No. 42088 (served Feb. 18, 2009), slip op. at 2, aff'd in part and remanded in part sub nom. BNSF Railway v. STB, 604 F.3d 602, 613 (D.C. Cir. 2010).

calculations due to payment of merger or acquisition premiums, could only encourage railroads to pay more such premiums. This is bad public policy, because it encourages acquisitions and mergers without regard to whether the customers and the public actually benefit from such transactions. Other regulatory agencics cither do not allow such "write-ups," or do so only if the regulated entity demonstrates with certainty (such as through rate reductions) that customers will benefit from the payment of the premium. The failure of both the ICC and the STB to ensure customer protection when premiums were paid leads to the "fatal circularity" (as the late Professor Alfred E. Kahn referred to it) that leading economists and regulatory experts warn against.

Argument

I.

THE BOARD HAS ALL NECESSARY AUTHORITY TO GRANT THE RELIEF REQUESTED BY WCTL AND TO DENY THE RELIEF REQUESTED BY BNSF.

One would think it obvious that the STB has all necessary authority to determine the appropriate methodology for determining URCS costs, what a proper URCS cost is or is not, and to determine what the proper amount is to assign to railroad property or other "investments" for purposes of the Board's "Return on Investment" ("ROI") calculation used to determine railroad revenue adequacy. Yet, the railroads have argued in the past that the Board and its statutory predecessor, the Interstate Commerce Commission ("ICC") must adhere to the supposed requirement of GAAP accounting[2] and the findings of the Railroad Accounting Principles Board ("RAPB") to allow acquisition premiums to

[2] 49 U.S.C. § 11161.

be passed through into the investment bases of the railroads.[3] The railroads are not correct.

The ICC itself held that it is not bound by the RAPB Findings and Recommendations:

> "To conclude this discussion, it should be noted that the Commission does not, in any event, agree with the argument that the RAPB's determinations cannot be modified by the Commission. Our views on this subject were explained in Railroad Cost Recovery Procedures -- Productivity Adjustment [citing 5 ICC 2d 434, 440 (1989)]."[4]

Moreover, Congress required that the STB "periodically review its cost accounting rules and shall make such changes in those rules as are required to achieve the regulatory purposes of this part."[5] It is, therefore, crystal-clear that the STB has the authority to revise URCS costs and its URCS costing methodology as it deems appropriate (provided, of course, that it has a rational basis for doing so).[6]

Similarly, the Board has ample authority to determine the appropriate valuation of railroad property for purposes of its ROI calculation used to determine if a railroad is earning adequate revenues. In Standards for Railroad Revenue Adequacy, Ex Parte No.

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[3] *E.g.*, May 23, 2011 "Reply of BNSF Railway Company" (at 2-6).

[4] Adoption of the Uniform Railroad Costing System as a General Purpose Costing System for All Regulatory Costing Purposes, Ex Parte No. 431 (Sub-No. 1), 5 I.C.C. 2d 894, 906 (1989), 1989 ICC LEXIS 263.

[5] 49 U.S.C. § 11161; *see, e.g.*, Farmers Union Cent. Exch. v. FERC, 584 F.2d 408, 418 (D.C. Cir. 1978) ("After all, it is rates, not bookkeeping, that the statute requires to be reasonable and there is no assurance . . .that reasonable accounting measures translate automatically into reasonable rates.").

[6] Under 49 U.S.C. § 10707(d)(1)(B), with respect to the calculation of the jurisdictional threshold in any particular rate proceeding, the Board is required to use "unadjusted costs, calculated using the Uniform Rail Costing System cost finding methodology…," but "with adjustments specified by the Board." Therefore, in yet another context, Congress made it clear that the STB has authority to make appropriate adjustments to what the railroads claim that the URCS methodology otherwise requires.

393 (Sub-No. 1), 3 ICC 2d 261, 272 (1986), 1986 LEXIS 15, aff'd on other grounds sub nom. Conrail v. ICC, 855 F.2d 78 (3d Cir. 1988), the ICC rejected use of current or replacement costs for railroad assets, stating: "In sum, the issue of the appropriate valuation of land defies a practical solution." It also stated that it could not perform valuation studies of railroad property, which would in any event be out of date by the time the valuation process concluded and subject to wildly varying opinions about the valuations:

> "Revaluation of road properties as contemplated by the AAR was previously considered and rejected by the Commission in 1976. As concluded then [citing Ex Parte No. 271, Net Investment - Railroad Rate Base & Rate of Return, 345 I.C.C., 1492, 1516-1517 (1976).]:
>
> > 'To properly value railroad property which has depreciated, as well as property which has appreciated, would require valuation studies of the kind undertaken by the Commission in the 1920's. Such studies . . . are not practical. They are out of date when completed, not to mention extremely expensive and subject to wildly varying opinions on value.'
>
> We reaffirm this earlier view. A complete revaluation of the railroads' investment base is beyond our foreseeable resources and would, in any case, be of questionable validity."[7]

More recently, the Association of American Railroads ("AAR") tried again to have the Board use replacement cost, rather than historic or book value, to determine revenue adequacy or inadequacy. The Board again rejected the AAR Petition, without even commencing a declaratory proceeding, on the same practicality and questionable-validity grounds as before.[8]

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[7] 3 I.C.C.2d at 272-73; 1986 ICC LEXIS at 43.

[8] Association of American Railroads – Petition Regarding Methodology for Determining Railroad Revenue Adequacy, Ex Parte No. 679, served Oct. 24, 2008, slip op. at 5-7.

Of particular note, the STB stated in its recent Ex Parte No. 679 decision rejecting the railroads' replacement-cost Petition that, in the 1980s, "[t]hree different federal agencies have already carefully examined the issue of whether and how to use a replacement-cost approach in the revenue adequacy calculation."[9] After explaining the three fundamental problems with such an approach – (1) the need to estimate the current replacement costs of railroad assets, (2) the need to estimate the "real" cost of capital to avoid double-counting the effects of inflation, and (3) the need to identify rail assets that would not need to be replaced once they had been fully depreciated – the Board stated that "GAO and the RAPB reviewed the same issue, agreed that using a replacement-cost approach instead of a historical-cost approach would be impractical, and echoed the ICC's conclusion that there was no feasible way to identify and revalue those assets that would not be replaced."[10]

So, it is crystal-clear that the Board has the authority to use historic or book values, without "write-ups" for acquisition premiums, for the railroads' assets, in calculating their URCS costs and in calculating their "investment bases" that are an essential part of the Board's ROI calculations performed in the annual revenue adequacy calculations for the Class I railroads.[11]

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[9] *Id.*, slip op. at 5.

[10] *Id.*

[11] *See also,* Association of American Railroads v. ICC, 978 F.2d 737, 740-43 (D.C. Cir. 1992)(deferring to the ICC's determination to use the written-down values of railroad assets when they were purchased for less than book value); Coal Exporters Ass'n of the U.S. v. United States, 745 F.2d 76, 98 (D.C. Cir. 1984)(Staggers Rail Act does not require maximization of railroad revenue without regard to shippers' interests or the actual revenue needs of the railroads). The controlling principles are that regulatory agencies get deference with respect to their determination of the most appropriate

II.

THE BOARD SHOULD GRANT THE RELIEF SOUGHT BY WCTL AND DENY THE RELIEF SOUGHT BY BNSF.

NCGA respectfully urges the Board to use its full authority to prevent the pass-through to captive customers of the multi-billion dollar acquisition premium brought about by Berkshire Hathaway's acquisition of BNSF in 2010.

In his recent 2010 Annual Report, Berkshire Chairman Warren Buffet stated that BNSF's 2010 returns were so impressive that BNSF was able to "replenish" over $22 billion in cash Berkshire paid for BNSF with the deal "increase[ing] Berkshire's 'normal' earning power by nearly 40% pre-tax and by well over 30% after-tax." Berkshire Hathaway Inc, 2010 Chairman's Letter to Shareholders (Feb. 26, 2011). BNSF now apparently wants more. We understand (from the expert testimony accompanying WCTL's Petition) that BNSF's Annual "R-1" report includes a massive $7,625,000,000 asset premium write-up that BNSF seeks to include in the rate base. This write-up would, if BNSF has its way, also be included in the Board's costing systems used to develop BNSF variable costs and the Board's "jurisdictional threshold," establish prescribed maximum rates for captive shippers, and determine railroad revenue adequacy.

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valuation methodology, provided they have a rational explanation for the methodology chosen and have adequately explained any departure from past precedent, but that they must carry out their mission to protect customers (1) by preventing the "writing up" of assets due to acquisition or merger premiums where the customers have no say in the decision to acquire or merge or in the amount of the premium paid, and (2) by determining that a railroad does not need to earn a return on an acquisition premium, particularly one paid by another unregulated entity.

In the Union Pacific-Southern Pacific merger and in the Conrail acquisition proceedings, the STB allowed write-ups of assets acquired by one railroad from another on the basis of their assumption that such transactions would improve efficiency and therefore deliver efficiency gains to the customers. That assumption has not proven to be correct, but in any event, it has no application to the acquisition of a railroad by a financial holding company such as Berkshire Hathaway.

First, it is critical that the STB not permit any adjustment in BNSF's URCS variable costs used to determine the Board's 180 percent-of-variable-cost "jurisdictional threshold" in 49 U.S.C § 10707(d)(1)(A) that defines the Board's jurisdiction over railroad rates. There are many rail rates over 180 percent of variable costs, but not necessarily a great deal over 180 percent of variable costs, that would effectively be below the Board's jurisdictional threshold if the acquisition premium paid for BNSF by Berkshire Hathaway for BNSF is treated as increasing BNSF's URCS variable costs.[12] If the Board were to allow the Berkshire Hathaway acquisition premium to increase BNSF's URCS variable costs, it would effectively allow the regulated entity – BNSF – to deregulate a substantial part of its traffic. Ironically, the higher the arbitrary premium paid, the more traffic effectively would be deregulated: traffic that would be vulnerable to substantial rate increases that the Board would be powerless to prevent. Congress simply could not have intended to allow a major railroad to play the proverbial "fox that guards the chicken coop" by determining its own variable costs, and therefore determining the jurisdictional threshold or floor on the Board's regulatory authority over that railroad's rates.[13]

NCGA and its members, and other shippers and shipper interests, fear that what

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[12] For example, a rate of $18.00/ton, for a movement with variable costs of $10.00/ton, has an R/VC (revenue to variable cost ratio) of 180 percent. Any increase in that rate would trigger the STB's jurisdiction. However, if BNSF's variable costs are treated as though they were increased by the acquisition premium, say to $12.00/ton for the same movement, the R/VC ratio would now be 150 percent ($18.00/$12.00), and BNSF would be free to raise that rate by 20 percent, to $21.60/ton (because $21.60 divided by $12.00 is 180 percent) before Board jurisdiction would apply to the rate.

[13] *See, e.g.*, 49 U.S.C. § 10707(d)(1)(B) (allowing the Board to make appropriate adjustments to URCS costs for purposes of the jurisdictional threshold).

BNSF is really engaged in here is a transparent attempt to turn "cost-based" ratemaking into "deal-based" ratemaking, allowing Berkshire Hathaway to profit from significant rate increases without fear of review by the Board. While merger and acquisition premiums are precluded by general rule from being included in the rate base in other regulated industries as a means of consumer protection,[14] BNSF is clearly attempting to

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[14] *See, e.g.*, Startrans IO LLC, 130 FERC ¶ 61,209 (2010) at 61,924 (citing FERC decisions requiring evidence of tangible, concrete and specific demonstration of benefits to customers to justify write-up of asset values due to acquisition premium); Rio Grande Pipeline Co. v. FERC, 178 F.3d 533, 541 (D.C. Cir. 1999)("As noted above, normally when a facility is acquired by one regulated entity from another, the purchaser may only include the seller's depreciated original cost in its rate base, even though the price paid by the purchaser may exceed that amount."). We are not aware of any case in which FERC even considered, let alone allowed, a premium paid by an unregulated entity (such as a holding company) to be used to "write up" the costs or the investment base of the regulated entity that was acquired. FERC's policy follows the teaching of experts such as the late Professor Alfred E. Kahn and Professor Jerome E. Hass (who used to work at FERC).

After the UP-SP merger, Professors Kahn and Hass provided counsel for NCGA with a Statement and Report, respectively, which explain why acquisition premiums should not be included in asset values, notwithstanding the Board's policy at the time. *See* Attachment A. In his Statement (at 3), Professor Kahn explained that acquisition premiums must not be applied to asset valuations in either the process of setting rates or determining revenue adequacy, or else a "fatal circularity" results:

> "Whenever and wherever the net book value of a company's stock or assets has served as the basis for determining the permissible return for regulatory purposes – as it is in the STB's revenue adequacy calculations – it is axiomatic that those book values must be based on the original cost of the assets. As the U.S. Supreme Court has recognized, to incorporate market-value-based write-ups in the rate base to which the allowable rate of return is applied in determining a regulated company's revenue requirements or entitlements – which in turn determine its allowable prices – is to introduce a fatal circularity into the process: allowable prices are set on the basis of market value of the assets which must be based in turn on the expected prices.
>
> "It would similarly eviscerate the regulatory process if the net book value that serves as the investment base in these revenue adequacy calculations were not the original cost of the assets when they were first constructed or acquired but the prices <u>at which they were subsequently valued</u> in or as the result of asset transfers, mergers or acquisitions. To permit rates (or calculations of revenue adequacy) to be based on the prices of those subsequent transfers would be to permit easy evasion of regulation: the assets could be transferred at prices inflated above net

exploit loopholes here and impose unwarranted acquisition "costs" on consumers. BNSF is the largest railroad in the Nation by volume, with its network covering the entire western two-thirds of the United States. Therefore, many of the NCGA members and the farmers whose interests NCGA represents would be adversely impacted by this premium, if it is permitted to be included in the rate base. American businesses and consumers are already feeling the effect of high prices on commodities in the current economic environment. Allowing acquisition premiums to be included in BNSF's rate base would make the situation even worse, to the detriment of the nation's economy.

We would also note that the purchase of BN by Berkshire Hathaway, an entity that is not subject to the regulation of the Board, is unlike nearly all prior transactions in which the STB or ICC sometimes allowed the inclusion of an "acquisition premium" to inflate the rate base. While we do not believe the Board or the ICC acted properly in those proceedings either, it is worth noting that the justification cited in most of those proceedings does not apply to this proceeding. In all but one of those previous proceedings, the transaction was a merger of two railroads (or acquisition by one railroad of all or a part of another railroad) and the resulting company was a railroad. In those cases, the Board or the ICC had to determine whether to allow the transaction and found that the inclusion of the acquisition premium was justified by the un-quantified "efficiencies" resulting from the merger or acquisition. In the case of BNSF's acquisition by Berkshire Hathaway, of course, a financial entity paid a premium to purchase BN "lock, stock and barrel" without review of the transaction by the Board. There were no

original cost and those inflated valuations would then automatically be translated into correspondingly inflated revenue or return targets for subsequent revenue adequacy calculations."

efficiencies that resulted from the merger of two railroad companies.[15]

Eleven United States Senators have recently written the Board urging it to take appropriate action to address this matter. WCTL has requested that the Board block BNSF from subjecting rail consumers to this asset-premium write-up of at least $7.625 billion. (NCGA relies on WCTL's expert witness Crowley's calculation of the amount of the premium). We fully support this request and respectfully request that the Board promptly take all appropriate actions to deny the BNSF attempts to burden consumers with any part of its acquisition premium.

Finally, the relief sought by BNSF – to write-up asset valuations in revenue-adequacy calculations to account for acquisition premiums – was essentially denied by the Board already, just three years ago, in Ex Parte No. 679.[16] The merits were so clear there, that the Board declined AAR's petition for declaratory order without even commencing a declaratory proceeding. The Board should reach the same conclusion with respect to BNSF's request to include the acquisition premium in its "investment" base for purposes of the Board's annual determinations of BNSF's revenue adequacy.

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[15] The ICC apparently permitted write-up of C&NW when it was acquired by Blackstone Group. So far as we are aware, no one objected to that action, so the treatment of the premium in that transaction does not constitute precedent. In any event, the Board is not bound by the ICC's action there, if it now concludes that the action was erroneous or inappropriate, as it should. There is simply no conceivable reason why a premium paid by a non-regulated entity should be treated as a cost incurred by the regulated entity.

[16] Association of American Railroads – Petition Regarding Methodology for Determining Railroad Revenue Adequacy, Ex Parte No. 679, served Oct. 24, 2008, slip op. at 5-7.

Conclusion

For the foregoing reasons, and those stated by WCTL in its Petition filed herein, the Board should (1) grant the relief sought by WCTL, and (2) deny the relief sought by BNSF. Specifically, the Board should ensure that the assets of BNSF are not increased to account for the premium paid for BNSF by Berkshire Hathaway, for both URCS costing purposes and for purposes of determining BNSF's revenue adequacy.

Respectfully submitted,

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October 28, 2011

CERTIFICATE OF SERVICE

I hereby certify that I have served, this 28th day of October, 2011, a copy of the foregoing Comments on the persons listed on the Board's official service list in Finance Docket No. 35506.

Stuart C. Hall

Stuart C. Hall

ATTACHMENT A

STATEMENT OF PROFESSOR ALFRED E. KAHN AND REPORT OF PROFESSOR

JEROME E. HASS ON RAILROAD REVENUE ADEQUACY STANDARDS

(FEBURARY 1997)

NATIONAL ECONOMIC
RESEARCH ASSOCIATES
[illegible]
[illegible]

STATEMENT OF PROFESSOR ALFRED E. KAHN

AND

REPORT OF PROFESSOR JEROME E. HASS

ON

RAILROAD REVENUE ADEQUACY STANDARDS

FEBRUARY 1997

STATEMENT OF PROFESSOR ALFRED E. KAHN[1]
ON RAILROAD REVENUE ADEQUACY STANDARDS

The attached analysis by Professor Jerome E. Hass of the methods by which the Surface Transportation Board ("STB") determines whether individual railroads are or are not "revenue adequate" and of the results it produces demonstrate, incontestably in my view, that

- the method itself is totally discredited;
- its flaws are irremediable, and
- any attempt at this stage to devise an alternative method would not only be costly but would serve no useful purpose.

In these circumstances, it is my considered opinion that STB's entire exercise to determine the adequacy of railroad revenues should be abandoned.[2]

1. The method is discredited, quite simply, by the nonsensical results it produces. The core of the <u>economic</u> concept of revenue adequacy is as a test of the ability of a company to raise capital to undertake any and all economically justifiable investments. To this strictly economic criterion might arguably be attached the additional traditional regulatory condition that the company be able to raise that capital <u>without diluting the equity of its existing shareholders</u>.[3]

This criterion translates into the requirement that present holders as well as future purchasers of the company's stock must see a reasonable prospect that it will earn a return at least equivalent to the cost of capital on the totality of the net book value of its investments or assets.

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[1] Robert Julius Thorne Professor of Political Economy, Emeritus, Cornell University; Special Consultant, National Economic Research Associates, Inc.

[2] Insofar as the STB undertakes annual revenue adequacy reviews in order to meet the requirements of Section 205 of the Railroad Revitalization and Regulatory Reform Act of 1976, adoption of my recommendation would require legislative action.

[3] See the demonstration in my *The Economics of Regulation* that a company may be able to raise capital for all efficient future investments, but *only* at the expense of such dilution, when it is either able or permitted by its regulators to earn (more precisely, because future investors <u>expect</u> it to be able to earn) something less than the cost of capital on the totality of its investments (Vol. 1, pp. 46-47).

There is a simple market measure of whether that requirement is or is not being met—namely, the relationship between the market value of the company's stock—the price that new purchasers are willing pay for it and at which existing shareholders willingly continue to hold it—and its net book value. If that ratio is equal to or greater than unity—that is, if the market value equals or exceeds net book value—that means that investors collectively expect earnings on invested capital to exceed the cost of capital.

In its revenue adequacy determination for 1995, the STB found that 8 of the 11 Class I railroads were "revenue inadequate." Here are the market to book ratios at the end of 1995 and 1996 for the six Class I railroads in the revenue inadequate group that are publicly traded:

RAILROAD	1995 MARKET-TO-BOOK RATIO	1996 MARKET-TO-BOOK RATIO
AT & SF	2.32 (a)	2.30 (a)
Burlington Northern	2.32 (a)	2.30 (a)
Conrail	2.13	2.81
CSX Transportation	2.26	1.88
Kansas City Southern	2.60	2.23
Southern Pacific	3.53	2.13(b)

(a) BN and AT&SF were merged during 1995; ratios are for BNSF.
(b) SP was merged in 1996 with UP; ratio for 1996 is UP ratio.

Observe that in every case the market/book ratio is well in excess of unity: the lowest ratio is 1.88, the average is 2.41 and the median 2.30

I find this comparison definitive. Clearly investors collectively expect the prices these companies can be expected to be able to charge and the volume of business they can be expected to attract will be far more than sufficient to produce a return in excess of the costs of capital—and are therefore willing to make capital available to them on terms that involve no dilution of existing shareholders' equity.[4] While it could be argued that the observed deviations

[4] The willingness of these railroads to plow back earnings rather than pay them out as dividends further corroborates this conclusion. Since they are not subject to an obligation to serve, it would be irrational for them to reinvest (continued...)

between market prices and book values are to at least some extent attributable to non-railroad assets and operations. It is highly unlikely that these very high ratios can be entirely explained by those operations, as Professor Hass explains.

II. The force of this evidence is magnified by the consideration, also adduced by Professor Hass, that the net book value of the assets of these companies has been inflated as a result of acquisitions and/or mergers. Whenever and wherever the net book value of a company's stock or assets has served as the basis for determining its permissible return for regulatory purposes—as it is in the STB's revenue adequacy calculations—its is axiomatic that those book values must be based on the original cost of the assets. As the U.S. Supreme Court has recognized, to incorporate market-value-based write-ups in the rate base to which the allowable rate of return is applied in determining a regulated company's revenue requirements or entitlements—which in turn determine its allowable prices—is to introduce a fatal circularity into the process: allowable prices are set on the basis of the market value of assets which must be based in turn on the expected prices.

It would similarly eviscerate the regulatory process if the net book value that serves as the investment base in these revenue adequacy calculations were not the original cost of the assets when they were first constructed or acquired but the prices at which they were subsequently valued in or as the result of asset transfers, mergers or acquisitions. To permit rates (or calculations of revenue adequacy) to be based on the prices of those subsequent transfers would be to permit easy evasion of regulation: the assets could be transferred at prices inflated above net original cost and those inflated valuations would then automatically be translated into correspondingly inflated revenue or return targets for subsequent revenue adequacy calculations.

(...continued)

retained earnings in this way if they did not expect the investments to earn an adequate return. For 1995 and 1996, the average retention rates [for these "non-revenue-adequate" carriers?] were 80 and 76 percent, respectively, with the lowest being 65 percent (Conrail in 1996).

Yet, as Professor Hass points out, this is exactly what has happened in the present instance: the asset valuations entailed by the numerous mergers, acquisitions, consolidations and reorganizations of railroads since 1980 have found their way into the book values on the basis of which the revenue adequacy assessments have continued to be made—in a self-justifying cycle of upward valuations of assets and correspondingly increased net revenues required for revenue adequacy.

I emphasize that this flaw is in addition to the—already decisive—record of prevailing market to book ratios far in excess of unity: the ratios would presumably be even higher if the denominators reflected the true (depreciated) original acquisition costs of the companies' assets rather than the prices at which they have been transferred to other railroads or new surviving entities.

III. Not only would an archeological endeavor by the STB to redetermine the true original costs for the railroads (let alone remedy all the other deficiencies in the STB's methods that Professor Hass identifies) be somewhere between extremely difficult and impossible. The final decisive consideration is that it would serve no useful purpose. The continuing effort to assess revenue adequacy is a vestigial carryover from the era of thoroughgoing regulation of the railroads, public-utility-style. But the railroads have been deregulated for more than 16 years. With most rail traffic moving under contract or exempt from regulation, the only remaining regulation is of the rates they charge captive shippers. The ceiling applied by the agency in every major rate case during the past dozen years in fulfillment of that responsibility—stand-alone cost—makes no use of revenue adequacy determinations; and I am informed that there are no recommendations, by either shippers or carriers, that the stand-alone cost ceilings be modified either upward or dowaward on the basis of those determinations.

* * * * *

In sum, the present method of determining revenue adequacy produces results totally discredited by the ultimate test—the behavior of investors and financial markets; it incorporates a fatal circularity; and it serves no purpose such as might justify the forbidding effort to correct those defects. It is time to give the exercise the burial—decent or otherwise—that it has richly earned.

Consulting Economists

An Evaluation of the Measurement and Use of the STB's Annual Railroad Revenue Adequacy Determination

Jerome E. Hass[1]

I. INTRODUCTION

Price regulation of commerce is called for in situations where workable competition (existing or potential) is deemed ineffective. Traditional regulation relied on the principle that regulation should emulate that which would occur in a competitive market—where prices are cost-based. Traditional regulation thus allows the regulated entity to charge prices that are no greater than the prudent costs incurred in providing the good or service in question.

An important element of the cost of service is the return allowed on invested capital. As articulated in the famous Supreme Court Hope and Bluefield cases, the return on invested capital must be sufficient to allow the regulated entity to attract and retain the capital necessary to provide adequate service. This gives rise to the measure called the cost of capital and the court mandate that a regulated entity must have revenues sufficient to cover not only operating costs but also allow the enterprise the fair opportunity to earn its cost of invested capital.

Under the Railroad Revitalization and Regulatory Reform Act of 1976, the Interstate Commerce Commission ("ICC") was charged with the responsibility to develop and promulgate railroad revenue adequacy standards. With the passage of the Staggers Rail Act of 1980, full regulation of railroad prices and service became history. But there are still selected situations which call for railroad regulation and it appears that findings regarding railroad revenue adequacy play an important role in some aspects of that regulation.[2] While Congress abolished the ICC at the end of 1995, its successor, the Surface Transportation Board ("STB" or "Board"), was given the responsibility of continuing to determine whether railroads are revenue adequate.

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[2] It is apparently common for the railroads to refer to the fact that the majority of Class I railroads fail the STB's revenue adequacy test in cases where the Board has jurisdiction, both those involving possible rate reductions and other contexts (such as mergers and line crossings).

The purpose of this report is to examine the reasonableness of the measure used by the STB to determine railroad revenue adequacy. As demonstrated below, the measure used by the STB is fatally flawed and is clearly giving erroneous signals. Given that the flaws are not easily remedied, that the railroads are financially very healthy, and that there is no meaningful regulatory role for revenue adequacy determinations to play, it is time to abolish the requirement for this arcane and meaningless exercise.

II. MEASURING REVENUE ADEQUACY

The application of the principle of allowing a regulated entity the opportunity to earn the cost of capital on its invested capital appears to be straight-forward and gives rise to the notion of revenue adequacy. As practiced by the STB, revenue adequacy is the simple determination as to whether a railroad's most recent year's revenues produced operating income (revenues less operating costs) that resulted in earning a return on invested capital at least a great as its cost of capital. In making this comparison, the STB first determines the railroad industry's cost of capital (which it estimated to be 11.7 percent for 1995) and then compares the rates of return earned on invested capital by each of the Class I railroads to that cost of capital in order to judge whether these railroads are "revenue adequate," where a railroad's revenue is deemed adequate if its rate of return on average invested capital equals or exceeds the estimated cost of capital for the industry.

RETURN ON INVESTMENT. The STB's measure of the rate of return on invested capital is the ratio of after-tax income from railroad operations to capital invested in railroad assets (the average of railroad assets , including working capital, less accumulated deferred income taxes). The STB's measure of rate of return on invested capital, which it calls "Return on Investment" or "ROI," is seriously flawed for a number of reasons.

First, the numerator includes one-time "special charges" that can materially alter the reported ROI. The Association of American Railroads ("AAR") reported that during 1995 seven Class I railroads recorded special charges totaling $1.742 billion on a pre-tax basis. *Analysis of Class I Railroads, 1995*, p. 4. On an after-tax basis ($1.132 billion using a 35% tax rate), the overall return on capital for the industry would increase from 7.7 to 10.3 percent if these special charges were not considered.[3]

Second, there are problems with the denominator of the STB's ROI measure because of the book accounting treatment of mergers in the industry. While major mergers, such as ATSF/BN and SP/UP get lots of attention, smaller scale acquisitions take place all the time (such as BN's acquisition of Washington Central, IC's purchase of CCP Holdings and KCS's acquisition of MidSouth Corporation and its purchase of 49 percent of the shares of Mexrail, which owns Tex-Mex). These acquisitions or mergers are usually made at premium prices over the book values of the underlying assets. To the extent that the intangible value paid is reflected in the subsequent value of railroad assets, the denominator of the STB's measure of return on investment no longer reflects depreciated original cost and the notion of earning a reasonable return on cost is lost.[4]

The flaw actually creates a problem with the numerator as well—because the intangible assets created by the acquisition are subsequently amortized, reducing the operating income (similar to depreciation expenses). Hence the overall effect of the accounting for acquisitions at prices in excess of book values is to increase the denominator and reduce the numerator of the ROI measure in subsequent years.[5]

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[3] In a recent STB filing regarding "bottleneck" issues, James N. Heller noted in his Verified Statement that the removal of these one-time charges in order to reflect more fundamental profitability resulted in the ROIs of individual railroads increasing from 0.4 percent to 61.1 percent. For example, the combined BNSF ROI would increase from 5.8 percent to 9.7 percent if the expenses of $735 million associated with "merger, severance and asset charges" were removed from the numerator of the ROI calculation (on an after-tax basis).

[4] The extent to which book values increase through this process is unknown. In 1994, UP and CNW reported Net Road and Equipment values of $9.141 and $1.413 billion, respectively, and $10.55 billion in total. In 1995, after the acquisition was complete, the combined UP/CNW reported Net Road and Equipment of $13.52 billion, for a composite increase of nearly $3 billion in Net Road and Equipment. UP's acquisition of the 70 percent of CNW that it did not already own was for about $1.2 billion, which was about $1 billion more than its book value. The extent to which the $1 billion is reflected in the $3 billion increase is unclear. Heller (see fn. 3) reports that the acquisition of SF by BN resulted in a "write-up" of $2.8 billion in SF's investment base and that UP's acquisition of SP will result in a write-up in 1996 of $2.9 billion in SP's investment base.

[5] There also appears to be another flaw in the STB's ROI measure. The STB bases the numerator of its return calculation on Net Railroad Operating Income, taken from Schedule 210 of Form R-1. Net Railroad Operating Income excludes both the income from the leasing of railroad assets and lease payments for leased railroad assets. Insofar as the leased railroad assets are included in the denominator of the ROI measure, the income

(continued...)

Third, ROI, like many short-term measures, also suffers from extreme swings as railroad operating margins change over time.[6]

COST OF CAPITAL. The cost of capital for the Class I railroads is determined by the STB as the weighted average of the costs of debt (in various forms), preferred equity, and common equity, where the weights are the market values of the various forms of capital. The STB's cost of capital measure also has several serious flaws.

First, the Board's analysis inappropriately mixes before-tax and after-tax costs of debt and equity, respectively; given the return on railroad investment is expressed on an after-tax basis, then the interest expense component of the weighted cost of capital should be adjusted to reflect the tax deductibility of interest as a matter of economic consistency.

Second, the weights used in the cost of capital estimation should be based on book values of debt , preferred and common equity, not market values; given that market values for the stocks of the railroads are substantially in excess of their book values, this mis-weighting results in a substantial overstatement of the cost of capital for the railroads[7].

Third, the STB's estimate of the cost of equity is based on a constant dividend growth rate stock price model (sometimes called the "discounted cash flow" model); the growth component is set at 10.69 percent, a rate that is impossible to sustain in perpetuity; in an economy with an expected inflation rate of about 3 percent, a real growth rate of 7.7 percent would eventually result in the railroads overtaking the world.[8]

(...continued)
therefrom (and the lease expenses associated with those assets that helped produce operating income) should not be excluded.

[6] For example, Southern Pacific's Net Revenues from Operations fell from $224 million to a negative $21 million from 1994 to 1995.

[7] It is easy to get confused on this issue. Most finance textbooks advocate the calculation of the weighted cost of capital using market value weights, a prescription that is perfectly correct for a non-regulated entity seeking an estimate of its cost of capital as a hurdle rate for forward-looking investment decision-making. But in a regulated rate-setting context, the return is allowed on the historic cost of the net assets (rate base) and is set to earn the costs of debt and equity capital on the book values of the debt and equity.

[8] The growth component was based on five-year earnings per share growth projections made by security analysts. While several studies have tested the reasonableness of such projections as indicators of investor expectations and found them to have explanatory power, regulatory agencies that face cost of capital problems on a repeated

(continued...)

Fourth, although insignificant in 1995 (only 1.2 percent of total capital), the cost of preferred stock was severely understated because the cost of Conrail's Series A ESOP convertible junior preferred (the dominant issue of preferred stock outstanding among the Class I railroads) was set at its market dividend yield of 3.03 percent; the stock is clearly selling on the basis of its conversion value and should be treated as common stock with common stock cost.

If these four changes are made to the cost of capital estimate, the result is a reduction in the weighted cost of capital from 11.7 percent (as reported in the STB's "Railroad Cost of Capital—1995," Ex Parte 523, June 5, 1996) to 10.3 percent. The latter is based on a cost of debt of 7.4 percent before tax (as per the STB), an income tax rate of 35 percent, a 12.5 percent cost of equity (STB's estimate was 13.4 percent) and a 29/71 debt-to-equity capital structure (based on book values as reported in *Analysis of Class I Railroads, 1995*, Association of American Railroads, lines 76, 78, 79, 80, 81, 82 and 97).[9]

Note that simply adjusting the ROI to exclude one-time ("special") charges and adjusting the cost of capital estimates, as discussed above, results in the industry ROI equaling the estimated industry cost of capital—implying that, without further adjustment for acquisition write-ups, the industry is revenue adequate.[10]

(...continued)
basis have expressed concerns about sole reliance on such short-term forecasts. See, e.g., Ozark Gas Transmission System, 68 FERC, ¶ 61,882, 61,107 (1994), wherein the Federal Energy Regulatory Commission found that "five year projections are not of themselves incorrect, but merely limited to too brief a time period to meet the requirement of the DCF model." Similarly, in Wyoming Interstate Company, Ltd., 69 FERC ¶ 61,259, 61,922 (1994), the Commission found that the 'securities' analysts' projected growth rate for the next five years ... implicitly ignored any potential changes in the growth rate over the remaining life of the firm ... (and) is inherently inconsistent with the theory of the constant growth rate DCF model."

[9] For the set of seven Class I railroads used by the STB to calculate the industry cost of capital, the debt-to-equity ratio based on market values was estimated to be 26/74; using a conservative 2:1 composite market-to-book ratio for these railroads, the book value debt-to-equity ratio would be 41/59 and the resultant after-tax weighted cost of capital would be 9.3 percent.

[10] It should also be noted that the Board's methodology is flawed because it uses a company-specific after-tax return on investment measure that reflects the tax deductibility of interest on the specific company's debt with an industry average cost of capital. If all railroads had similar capital structures, such a comparison would be acceptable. But the utilization of debt varies substantially across Class I railroads: for example, at the end of 1995 Soo Line had a debt-to-equity ratio of 67/33 compared to CSX's 13/87; Grand Trunk Western's equity was (continued...)

III. INTERPRETING REVENUE ADEQUACY

There is no meaningful relationship between the STB's measure of revenue adequacy and the financial well-being of the Class I railroads.

First, if investors expect that the prices of the regulated entity are or will be set so that the entity will not have the fair opportunity to earn its cost of capital, then the book value of its equity (as the residual capital suppliers) will exceed its market value.[11] In the case of the Class I railroads, at the end of 1995 market-to-book ratios for the 8 publicly-traded railroads ranged from 2.13 to 3.53 times and averaged 2.53 times.[12] This strongly suggests that investors expect the railroads to earn more than the cost of capital in the future.[13]

It should be noted that some of the divergence between market values and book values may be attributable to non-railroad assets which are carried on the books at cost but may be worth substantial sums if and when sold (such as real estate). For example, in testimony associated with its acquisition by Union Pacific, Southern Pacific Transportation Company indicated that it had a real estate portfolio worth about $1 billion.[14] This translates into about $6.40 per share, so that the remaining market value of the railroad assets for SP at the end of 1995 was about $17.60 per share, which was 2.59 times book value. Similarly, the market prices of these railroad companies also reflect non-rail activities. For example, railroad

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negative. Given substantial variations in debt utilization, the after-tax weighted average costs of capital for the Class I railroads is likely to differ substantially between railroads and using a composite average, even if calculated correctly, would be inappropriate.

[11] For example, if the book value of the regulated firm's stock is $20 per share and the market expects the firm to earn 10 percent on its book value, then the market value of the shares will be $16 if the market requires a return on 12.5 percent to adequately compensate for time value and risk.

[12] See the attached exhibit. The highest ratio was that of Southern Pacific, which was in the midst of a merger. The next-highest ratio was Illinois Central at 3.34 times. The ratios at the end of 1996 (when the high SP ratio is replaced by a high Conrail ratio) were, on average, somewhat less, but still well above 2 times. Weighted averages (using equity market values as weights) were only slightly less than simple averages.

[13] This expectation could be achieved by decreases in operating costs as well as price increases. *Value Line* (September 20, 1996) reports that operating margins (the complement of operating costs) for the railroad industry (at the company level, which include non-rail activities) have increased from 22.6 percent in 1992 to 26.1 percent in 1995 and are predicted to get to 30.1 percent in the 1999-2001 time frame.

[14] Deposition of Lawrence Yarberry, Chief Financial Officer for Southern Pacific, STB Finance Docket No. 32760.

operating revenues were only 46 percent of the total revenues of CSX for 1995. However, railroad activities accounted for 75 percent of CSX's assets and 79 percent of its total operating profits. Kansas City Southern Industries received a large fraction of its operating income from non-rail activities. But all the other Class I railroads were owned by companies that had virtually all (85 percent or more) of their assets and operating revenues associated with railroading activities. Thus, it appears that while non-railroading activities and assets could account for a portion of the observed differences between book and market values for companies that own Class I railroads, the very large differences between the observed ratios and unity cannot be explained on the basis of these non-rail activities.[15]

Second, there is the objective evidence from the railroad companies themselves. If investments in railroad activities are not expected to earn at least the cost of capital, then these firms should not be retaining the earnings they generate for their shareholders but rather pay those earnings out as dividends so that shareholders can reinvest them elsewhere to make an adequate return. In 1995, all of the Class I railroads, with the exception of Union Pacific, retained (plowed back) more than 60 percent of their earnings; Union Pacific retained only 43 percent. Overall, the industry average was 73 percent for 1995 and 67 percent for 1996. This evidence supports the contention that the managements and boards of directors of these companies believed that the investment opportunities within the industry were financially attractive.

Third, the very title of the measure suggests than if an inadequacy is found, it is associated with revenues. This may not be the case. While there are clearly large year-to-year changes in the operating ratio (ratio of operating expenses to revenues) in the industry, there are strong pressures to decrease the ratio over time. Some railroads have ratios near or below 70 percent (Illinois Central and Norfolk Southern), while others struggle to get below 100 percent (Soo Line and GTW). When coupled with increases in capital turnover (more efficient use of

[15] Non-rail activities and assets might pull the market-to-book ratios down. This would be the case if the non-rail activities were not very profitable. Such is likely the case at CSX: in 1995, the ratios of operating income to assets for rail and non-rail activities (barge, container shipping, and intermodal) were 8.7 and 6.9 percent, respectively.

capital), the result is an expectation of increasing returns to invested capital even without price increases:

Return on Invested Capital = Income/Revenues x Revenues/Capital
= Profit Margin x Capital Turnover

During 1995, the Class I railroads operated at an after-tax profit margin of about 8.9 percent (13.7 percent before-tax at a 35 percent tax rate) and a capital turnover rate of 0.73.[16] If the after-tax margins can be increased to, say, 11 percent and capital turnover improved to, say, 0.85, then the after-tax return on invested capital would increase from the 6.5 percent realized in 1995 to 9.35 percent. While these numbers are only illustrative, they do indicate how relatively small changes can produce dramatic effects, effects that could result in the industry being deemed more than revenue adequate without any increases in prices.[17] The most recent *Value Line* (December 20, 1996) states that "[t]he railroads have done a good job of lowering their fixed costs over the past five years, and we think this trend will continue."

Fourth, there is a clear divergence between the notion that eight of the eleven Class I railroads were revenue inadequate in 1995 and the ability of these firms to raise cash and the willingness of others to pay substantially more than book value for acquisitions. It is generally believed that if the regulated entity does not have a fair opportunity to earn its cost of capital, then it will not be able to attract new capital or will be able to do so only at the expense of existing capital suppliers. But the railroads are active issuers of debt to finance equipment purchases, system improvements and acquisitions. Those which have debt rated by Moody's carry investment grades (with the exception of SPRR's senior note, rated Ba1) and their transportation trust certificates are often highly rated. Several railroads have either sold stock outright or used stock as currency in acquisitions over the past several years.[18] Value Line rates

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[16] The AAR 1995 report indicates a before-tax profit margin of 13.58 percent for all Class I railroads.

[17] The degree to which investors expect improvements can, perhaps, best be seen in the "synergies" predicted in recent acquisitions. For example, UP's acquisition price for the stock of SP was based on synergies in excess of $750 million per year pre-tax. See *The Wall Street Journal*, December 1, 1995, page B10. The joint railroad revenues of Southern Pacific and Union Pacific in 1995 were $9.54 billion, so that the synergies would increase the after-tax (at 35 percent) margin of the combined companies by 5.1 percent.

[18] Even Southern Pacific, thought to be among the most financially weak of the Class I railroads, was able to sell stock substantially in excess of its book value in 1993 and 1994.

the financial strength of the seven Class I railroads it follows from moderate (B for KCS) to strong (A+ for NS). Standard & Poor's November 30, 1995 *Industry Survey* stated that "[a]lthough the industry if failing to earn its cost of capital as defined by the ICC, it is in fact a picture of health."

UP paid $35 per share for CNW, which had a book value the year before the acquisition of $7; BN paid $20 per share for ATSF, which had a book value of $6.67 per share the year before its acquisition; UP paid $25 per share for SP, which had a book value of $6.80 per share the year before its acquisition; and the bidding war for Conrail has pushed its price to $110 per share, which had a book value of about $32.83 share at the end of 1995.

Fifth, even if all the defects discussed above were corrected, the method of measuring revenue adequacy chosen by the Board is flawed. That is, the Board's measure could signal inadequacy in a given year while, at that time, the current revenues are entirely adequate in terms of providing a reasonable return on invested capital when judged in the proper context.

The best way to illustrate this point is to compare two alternative cost-of-service methodologies, both fully compensatory (i.e., although their price patterns are different over time, both sets of prices allow investors full recovery of their investment and a reasonable return thereon): depreciated original cost and trended original cost. Under the Depreciated Original Cost ("DOC") methodology, the rate base is the depreciated original cost of the net assets (assets at cost less accumulated depreciation) less accumulated deferred income taxes (consistent with Schedule 250) and the return on the equity-financed portion of the rate base is set in nominal terms (such as the 13.4 percent used by the STB). As accumulated depreciation increases over time and the rate base declines, the cost-based price of the service declines, other cost-of-service components held constant. Under the Trended Original Cost ("TOC") methodology, only the real portion of the return on equity is reflected in current rates; the inflation component of the return on equity is deferred until a later date. Hence the TOC rate base is greater than the DOC rate base by the accumulated deferred return balance.[19] The TOC

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[19] See "Inflation and Rate of Return Regulation," Stewart C. Myers, A. Lawrence Kolbe, and William B. Tye, *Research in Transportation Economics*, Vol.2, pp. 83-119, 1985. The Federal Energy Regulatory Commission uses the Trended Original Cost methodology in its regulation of oil pipelines.

methodology produces pricing that start at a lower level than those under the DOC methodology, and these cost-based prices drift upward over time rather than downward, as they would under the DOC methodology. Hence, if a regulated entity were pricing its service using a TOC-based pricing scheme, in the early years of the life of the rate base (or, more generally, during the time when the firm is adding to its asset base), its revenues will appear "inadequate" when measured against those necessary under a DOC methodology.

The STB's methodology is effectively a DOC-based approach to cost of service. Yet, it is logical that the railroads should be using a TOC-based approach to pricing their services over time (so that prices tend to rise with inflation). Hence, it is entirely plausible that the test applied by the Board is yielding false-negative results: railroad revenues appear to be inadequate, but are factually adequate when judged according to the inter-temporal scheme under which they are being played out.

IV. CONCLUSIONS

The requirement that the STB shall annually determine the railroad revenue adequacy should be put to rest. The Board's measure of return on investment for each Class I railroad is fraught with short-comings and severely short-sighted; and the cost of capital estimate it uses as a benchmark against which to judge adequacy is severely flawed as well. Simple measures, such as market-to-book ratios, retention rates and debt ratings indicate that the railroads have a high degree of financial integrity and are expected to earn returns on the book value of equity well in excess of their cost of capital. They clearly have no difficulty in raising capital without causing any dilution for existing shareholders. Yet all but three of the eleven Class I railroads reviewed by the STB indicate revenue inadequacy. Given the fatal flaws in the STB's methodology and the potential misunderstandings that result from its publication, now is the time to remove the substantial burden on both the railroads and STB staff of making the filings and calculations necessary to produce this useless and potentially misleading statistical analysis.

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Professor Kahn received his Bachelor's and Master's degrees from New York University and a Doctorate in Economics from Yale University. Following service in the Army, he served as Chairman of the Department of Economics at Ripon College, Wisconsin. He moved to the Department of Economics at Cornell University, where he remained until he took leave to assume the Chairmanship of the New York Public Service Commission. During his tenure at Cornell, Professor Kahn served as Chairman of the Department of Economics, member of the Board of Trustees of the University and Dean of the College of Arts and Sciences.

Throughout his career, Professor Kahn has served on a variety of public and private boards and commissions including: the Attorney General's National Committee to Study the Antitrust Laws; the senior staff of the President's Council of Economic Advisors; the Economic Advisory Council of American Telephone & Telegraph Company; the National Academy of Sciences Advisory Review Committee on Sulfur Dioxide Emissions; the Environmental Advisory Committee of the Federal Energy Administration; the Public Advisory Board of the Electric Power Research Institute; the Board of Directors of the New York State Energy Research and Development Authority; the Executive Committee of the National Association of Regulatory Utility Commissioners; the National Commission for Review of Antitrust Laws and Procedures; the New York State Council on Fiscal and Economic Priorities; the Governor of New York's Fact-Finding Panel on Long Island Lighting Company's Nuclear Power Plant at Shoreham, L.I.; the Governor of New York's Advisory Committee on Public Power for Long Island; the National Governing Board of Common Cause; and, in 1990, as Chairman of the International Institute for Applied Systems Analysis Advisory Committee on Price Reform and Competition in the USSR.

He has also served as a court-appointed expert in State of New York v. Kraft General Foods, Inc., et al., U.S. District Court, S.D.N.Y.; Advisor to New York-Governor Carey on Telecommunications Policy; and as a consultant to the Attorneys General of New York, Pennsylvania and Illinois, the Ford Foundation, the National Commission on Food Marketing, Federal Trade Commission, Antitrust Division of the Department of Justice, the U.S. Department of Agriculture and the City of Denver on charging and financing of Stapleton Airport.

He has received L.L.D. honorary degrees from Colby College, Ripon College, Northwestern University, the University of Massachusetts and Colgate University, and an honorary D.H.L. from the State University of New York, Albany; he also received the Distinguished Transportation Research Award of the Transportation Board Forum, The Alumni Achievement Award of New York University, the award of the American Economic Association's Transportation and Public Utilities Group for Outstanding Contributions to Scholarship, The Henry Edward Salzberg Honorary Award from Syracuse University for Outstanding Achievement in the Field of Transportation, and the Burton Gordon Feldman Award for Distinguished Public Service from Brandeis University; and was elected to membership in the American Academy of Arts and Sciences and Vice President of the American Economic Association. He is a regular commentator on PBS's "The Nightly Business Report."

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	UNIVERSITY OF MISSOURI
1937-1938	Teaching Assistant

CONSULTANCIES AND PROFESSIONAL ACTIVITIES:

1994-	American Airlines on code-sharing
1994-	Antitrust Division, U.S. Department of Justice, on the application of Ameritech for waivers of the interexchange restrictions in the AT&T Modified Final Judgment
1993-1994	Court-appointed expert in State of New York v. Kraft General Foods, Inc., et al., U.S. District Court, S.D.N.Y.
1992	New Zealand Telecom on the progress of competition in New Zealand telecommunications
1992	Rochester Telephone Company on corporate restructuring and deregulation
1992	Russian Government on economic reform
1991	British Mercury on terms of competition with British Telecom
1989	City of Denver on charging and financing of Stapleton Airport
1988-1990	Attorneys General, New York and Pennsylvania, on airline mergers
1985	Attorney General, State of Illinois, on Illinois Bell rates
1981-1984	City of Long Beach, California, the Coca-Cola Company and American Airlines on antitrust litigation
1981-	Economic commentary, Nightly Business Report (PBS)
1980-1982	Advisor to Governor Carey on Telecommunications Policy
1968	Ford Foundation
1966	National Commission on Food Marketing
1965,1974	Federal Trade Commission
1963-1964	Antitrust Division, Department of Justice
1960-1961	U.S. Department of Agriculture
1957-1961	Boni Watkins, Jason & Co.

See also the list of testimony below.

MEMBERSHIPS:

1992-	Member, New York State Telecommunications Exchange
1992-93	Member, Ohio Blue Ribbon Panel on Telecommunications Regulation
1991-	Board of Editors, *Review of Industrial Organization*
1990-92	Chairman, International Institute for Applied Systems Analysis Advisory Committee on Price Reform and Competition in the USSR
1986	Governor Cuomo's Advisory Panel on public power for Long Island

1983-89	Governor Cuomo's *Fact-finding* Panel on Long Island Lighting Company's Nuclear Power Plant at Shoreham, L.I.
1983-90	New York State Council on Fiscal and Economic Priorities
1982-	*The American Heritage Dictionary* Usage Panel
1982-1985	Governing Board, Common Cause
1980-1986	Director, New York Airlines
1978-1979	National Commission for the Review of Antitrust Laws and Procedures
1975-1977	Project Committee, Electric Utility Rate Design Study, Electric Power Research Institute
1974-1975	National Academy of Science Review Commission on Sulfur Oxide Emissions
1974-1977	Public Advisory Board, Electric Power Research Institute
1974-1977	Environmental Advisory Committee, Federal Energy Administration
1974-1977	Executive Committee, National Association of Regulatory Utility Commissioners, and Chairman, Committee on Electric Energy
1968-1974	Economic Advisory Board, American Telephone & Telegraph Corporation
1965-1967	Economic Advisory Committee, U.S. Chamber of Commerce
1967-1969	Chairman, Tompkins County Economic Opportunity Corporation
1964-1969	Board of Trustees, Cornell University
1961-1964	Board of Editors, *American Economic Review*
1953-1955	Attorney General's National Committee to Study the Antitrust Laws

HONORS AND AWARDS:

May 1995	Wilbur Cross Medal for outstanding achievement, Yale University
Mar 1989	Burton Gordon Feldman Award for Distinguished Public Service, Gordon Public Policy Center, Brandeis University
Feb 1989	Distinguished Service Award, Public Utility Research Center, University of Florida
Nov 1988	International Film and TV Festival of New York, Bronze Medal presented to The Nightly Business Report/WPBT2 for Editorial/Opinion Series written by Alfred E. Kahn
Apr 1986	Harry E. Salzberg 1986 Honorary Medallion for outstanding achievement in the field of transportation
Oct 1984	Distinguished Transportation Research Award of the Transportation Research Forum
1981-1982	Vice President, American Economic Association
1978	Richard T. Ely lecturer, American Economic Association, 1978
1978	Rejection Scroll, International Association of Professional Bureaucrats
May 1985	State University of New York (Albany), DHL. (Hon.)
May 1983	Colgate University, LL.D. (Hon.)
June 1982	Northwestern University, LL.D. (Hon.)
May 1980	Ripon College, LL.D. (Hon.)
May 1979	University of Massachusetts, LL.D. (Hon.)
May 1978	Colby College, LL.D. (Hon.)
1977-	Fellow of the American Academy of Arts and Sciences
1976	Distinguished Alumni Award, New York University

1976	American Economic Association, Section on Public Utilities and Transportation, citation for distinguished contributions
1954-1955	Fulbright Fellowship, Italy
1935-	Phi Beta Kappa
1939-1940	Yale-Brookings Fellow

BOOKS:

The Economics of Regulation, 2 volumes, John Wiley, 1970 and 1971. Reprinted by The MIT Press, 1988, with a new "Introduction: A Postscript, Seventeen Years After," pp. xv-xxxvii.

Integration and Competition in the Petroleum Industry, (with Melvin G. DeChazeau), Petroleum Monograph Series, Volume 3 (Yale University Press, 1959). Reprinted in 1971.

Fair Competition: The Law and Economics of Antitrust Policy (with Joel B. Dirlam) (Cornell University Press, 1954). Reprinted by Greenwood Press, 1970.

Great Britain in the World Economy (Columbia University Press, 1946). Reprinted in 1968.

MAJOR ARTICLES:

"How to Treat the Costs of Shared Voice and Video Networks in a Post-regulatory Age," *Policy Analysis*, #264, November 27, 1996, Cato Institute.

"Competition and Stranded Cost Re-revisited," 36 *Natural Resources Journal* (1996) forthcoming.

"Deregulation of the Public Utilities—Transitional Problems and Solutions," *Economic Papers*, Economic Society of Australia, September 1995, pp. 1-17. (Published in *Réseaux* nos. 72-73 Juillet/Octobre 1995 by CNET as "Déréglementation des Services Publics: Problèmes transitoires et solutions.")

"The Challenge for Federal and State Regulators: Transition from Regulation to Efficient Competition in Electric Power," with William J. Baumol and Paul L. Joskow, Edison Electric Institute, December 9, 1994.

"Competition in the Electric Industry is Inevitable and Desirable," *The Electric Industry in Transition*, Public Utility Reports, Inc. and New York State Energy Research and Development Authority, December 1994, Chapter 3, pp. 21-31.

"Can Regulation and Competition Coexist? Solutions to the Stranded Cost Problem and Other Conundra," *The Electricity Journal*, Volume 7, Number 8, October 1994, pp. 23-35.

"The Pricing of Inputs Sold to Competitors: A Comment," in *Yale Journal on Regulation*, Vol. 11, No. 1, Winter 1994, pp. 225-240.

"Airline Deregulation," in *The Fortune Encyclopedia of Economics*, David R. Henderson, Ph.D., ed., New York: Warner Books, 1993, pp. 379-384.

"Change, Challenge and Competition The Report of the National Commission to Ensure a Strong Competitive Airline Industry, August 1993," *Regulation*, No. 3, 1993.

"The Competitive Consequences of Hub Dominance: A Case Study," in *Review of Industrial Organization*, Vol. 8, 1993, pp. 381-405.

"Pricing of Telecommunications Services: A Comment," in *Review of Industrial Organization*, Vol. 8, 1993, pp. 39-41.

"The Purposes and Limitations of Economic Regulation; The Achievements and Problems of Deregulation" and "Reflections and Conclusions on British and U.S. Experience: The Future of Regulation," in *Incentive Regulation: Reviewing RPI-X & Promoting Competition, Proceedings 2*, Based on papers presented at two CRI seminars in London on 4 June and 15 July 1992, CRI (Centre for the Study of Regulated Industries), October 1992, pp. 1-17 and 93-104.

"Market Power Issues in Deregulated Industries," in *Antitrust Law Journal*, Vol. 60, Issue 3, American Bar Association, 1992, pp. 857-866.

"Regolamentazione e concorrenza nelle imprese de pubblica utilità: un <<inquadramento teorico>>," *L'INDUSTRIA* / n.s., a. XIII, n. 2, aprile-giugno 1992, pp. 147-166.

"Least cost planning generally and DSM in particular," in *Resources and Energy* 14 (1992), Elsevier Science Publishers, North-Holland, pp. 177-185.

"Price Deregulation, Corporatization and Competition" (with M.J. Peck), in *What is to be Done? Proposals for the Soviet Transition to the Market*, M.J. Peck and T.J. Richardson, eds., New Haven: Yale University Press, 1991.

"Thinking About Predation--A Personal Diary," in *Review of Industrial Organization*, Vol. 6, The Netherlands: Kluwer Academic Publishers, 1991, pp. 137-146.

"An Economically Rational Approach to Least-Cost Planning For Electric Power," *The Electricity Journal*, Vol. 4, Number 5, June 1991, pp. 11-20.

"The Changing Focus of Electric Utility Regulation," *Research in Law and Economics*, Richard O. Zerbe, Jr., Victor P. Goldberg, eds., Vol. 13, JAI Press, Inc., Spring 1991, pp. 221-231.

"The Soviet Economic Crisis: Steps to Avert Collapse" (co-author), Executive Report 19, International Institute for Applied Systems Analysis, Laxenburg, Austria, February 1991.

"Telecommunications, Competitiveness and Economic Development--What Makes Us Competitive?", *Public Utilities Fortnightly*, Vol. 126, No. 6, September 13, 1990, pp. 12-19.

"Deregulation: Looking Backward and Looking Forward," *Yale Journal on Regulation*, Vol. 7, Spring 1990, pp. 325-354.

"Do We Need to Curb the Investments Foreigners are Making in the United States?" in *The Impact of Foreign Investment in the United States*, Touche Ross & Co., June 1989.

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"Competition: Past, Present and Future, Perception vs. Reality," in *Proceedings: 1988 Utility Strategic Issues Forum Planning in a Competitive Environment*, Palo Alto, CA: Electric Power Research Institute, March 1988.

"Thinking About The Record of Deregulation," in The Donald S. MacNaughton Symposium Proceedings 1987, *Economic Deregulation: Promise and Performance*, Syracuse, NY: Syracuse University, 1988, pp. 21-35.

"In Defense of Deregulation," in *Cleared For Takeoff: Airline Labor Relations Since Deregulation*, Jean T. McKelvey, Editor, Ithaca, NY: Cornell University ILR Press, 1988, pp. 343-347."

"I Would Do It Again," *Regulation*, 1988 Number 2, pp. 22-28.

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"Airline Deregulation - A Mixed Bag, But a Clear Success Nevertheless," *Transportation Law Journal*, Volume 16, No. 2, Spring 1988, pp. 229-251.

"Surprises of Airline Deregulation," *The American Economic Review, Papers and Proceedings*, Volume 78, No. 2, May 1988, pp. 316-322.

"Thoughts on the Past, Present, and Future of Telecommunications Regulation," talk presented to the Current Issues in Telephone Regulation conference at the University of Texas, Austin, October 5, 1987, reprinted in *Telecommunications Deregulation: Market Power and Cost Allocation Issues*, John R. Allison and Dennis L. Thomas, eds., Westport, CT: Quorum Books, 1990, pp. 259-268.

"The Future of Local Telephone Service: Technology and Public Policy," Fishman Davidson Center for the Study of the Service Sector, The Wharton School of the University of Pennsylvania, Discussion Paper #22, June 1987. Reprinted in *Toward The Year 2000*, ITT Key Issues Lecture Series, 1986, (New York: ITT Corp. 1987), pp. 86-99.

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"The Tyranny of Small Decisions and the Perils of Big Ones," in *Allocation, Ethics, and Innovation in Research and Public Policy*, National Symposium on Science and Technology, Cornell University, Washington, D.C., May, 20, 1986.

"The Theory and Application of Regulation," *Antitrust Law Journal*, Spring Meeting Issue, 1986, Volume 55, Issue 1, pp. 177-184, from ABA Antitrust Section Annual Meeting.

"Transportation Deregulation....And All That," Honorary Salzberg Memorial Lecture, Syracuse University School of Management, Syracuse, New York, April 1986. Reprinted, revised, in *Economic Development Quarterly*, May 1987, Volume 1, Number 2, pp. 91-99.

"Frontier Issues in Telecommunications Regulation," Mountain Bell Academic Seminar, Lakewood, Colorado, August 1985.

"Telecommunications Regulation: A Case Study of the Impact of a Technology on Social Institutions," for presentation at Cornell University Electrical Engineering Centennial Symposium, Ithaca, New York, June 12, 1985.

"Public Policies for Our Telecommunications Future," in *Funding the Future of Telecommunications*, a conference sponsored by Rensselaer Polytechnic Institute, supported by the NYNEX Telephone Companies, Saratoga Springs, New York, June 3-5, 1985.

"Industrial Policy and Deregulation," *Federal Bar News & Journal*, Washington, D.C., January 1985.

First Distinguished Lecture on Economics in Government, "The Macroeconomic Consequences of Sensible Microeconomic Policies," Dallas, December 28, 1984. American Economic Association meetings.

"The Regulatory Agenda," and "Concluding Comments: The Future of Access," in Alan Baughcum and Gerald R. Faulhaber, *Telecommunications Access & Public Policy*, Ablex Publishing Corporation, Norwood, New Jersey, 1984, pp. 205-210 and pp. 245-253.

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"The Next Steps in Telecommunications Regulation and Research," *Public Utilities Fortnightly*, Arlington, VA., July 19, 1984.

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"Economic Policies For The 80s," Oppenstein Brothers Foundation Lecture, Rockhurst College and the University of Missouri, Kansas City, April 19, 1983.

"The Relevance of Industrial Organization," *Industrial Organization, Antitrust, and Public Policy*, John V. Craven, ed., Kluwer-Nijhoff, 1983.

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"Deregulation: Its Meaning and Implications for Antitrust Enforcement," New York State Bar Association, 1983 *Antitrust Law Symposium*, pp. 2-14.

"The Passing of the Public Utility Concept: A Reprise," in *Telecommunications Today and Tomorrow*, Eli Noam (ed.) Harcourt Brace Jovanovich, 1983.

"Deregulation and Vested Interests: The Case of Airlines," *The Political Economy of Deregulation*, Roger G. Noll and Bruce M. Owen, eds., American Enterprise Institute Studies in Government Regulation, 1983.

"An Alternative to Reaganomics," *Increasing Understanding of Public Problems and Policies*, 1982, Farm Foundation, January 1983.

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"The Airline Industry: Is It Time to Reregulate?" *Second Annual William A. Patterson Transportation Lecture*, The Transportation Center, Northwestern University. Published jointly with National Economic Research Associates, 1982. Reprinted in *The World Economy*, December 1982, London: Basil Blackwell, pp. 341-360.

"On Changing the Consumer Price Index, A Comment," *Journal of Policy Analysis and Management*, Vol. 1 (Summer 1982), pp. 512-15.

"The Political Feasibility of Regulatory Reform: How Did We Do It?" *Reforming Social Regulation: Alternative Public Policy Strategies*, Leroy Graymer and Frederick Thompson (eds.), Sage Publications, 1982.

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"The New Merger Wave," *N/E/R/A Topics*, National Economic Research Associates, December 1981.

"Liberals Must Face Facts," *Challenge*, Nov/Dec. 1981, pp. 25-32.

"Is Inflation Abating?" *NERA Topics*, National Economic Research Associates, November 1981.

"Utility Regulation Revisited," National Economic Research Associates: New York, 1981, republished in *Current Issues in Public Utility Economics: Essays in Honor of James C. Bonbright*, Albert L. Danielsen and David R. Kamerschen (eds.), Lexington, MA., D.C. Heath and Company, 1983.

"Must We Live With Inflation Through the 1980s?" *Major Issues of the 1980s Lecture Series*. Sponsored jointly by the Lowell Institute of Boston and Harvard University Extension, April 1981.

"Ethical Values in a Market System," *Across the Board*, The Conference Board, April 1981, pp. 57-63.

"Can Liberalism Survive Inflation?" *The Economist*, March 7, 1981, pp. 21-25.

"Health Care Economics: Paths to Structural Reform," in Mancur Olson (ed.), *A New Approach to the Economics of Health Care*, Washington, American Enterprise Institute, 1981.

"Regulation and the Imagination," *Proceedings of a Regulatory Council Conference*, United States Regulatory Council, July 22, 1980, pp. 1-9.

"Health Care and Inflation: Social Compassion and Efficient Choice," *National Journal*, August 2, 1980, pp. 1294-97.

"A Paean to Legal Creativity" (with Michael Roach), *Administrative Law Review*, Washington, D.C., Winter 1979, Volume 31, No. 1, pp. 97-114.

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"The Changing Environment of International Air Commerce," *Air Law*, (Netherlands Journal), Volume 3, No. 3, 1978.

"Deregulation of Air Transportation--Getting from Here to There," *Regulating Business: The Search for an Optimum*, Institute for Contemporary Studies, San Francisco, California, 1978, pp. 37-63.

"Load Control, Resource Conservation and King Charles' Head," Iowa State University Regulatory Conference, *Proceedings*, May 19, 1977, pp. 68-74.

"Recent Developments in Cost Analysis and Rate Design," *Proceedings of the Third Annual Symposium on Problems of Regulated Industries*, Kansas City, Missouri, February 14, 1977, pp. 15-28.

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"New Rate Structures in Communications" (with Charles A. Zielinski), *Public Utilities Fortnightly*, March 25, 1976, pp. 19-24 and April 8, 1976, pp. 20-23.

"Efficient Rate Design: The Transition from Theory to Practice," *Proceedings of the Symposium on Rate Design Problems of Regulated Industries*, February 23-26, 1975, Kansas City, Missouri, pp. 34-51.

"Between Theory and Practice: Reflections of a Neophyte Public Utility Regulator," *Public Utilities Fortnightly*, January 2, 1975, pp. 3-7.

"Economic Theory as a Guideline for Government Intervention and Control: Comment," *Journal of Economic Issues*, Vol. VIII, No. 2, June 1974.

"Market Power Inflation: A Conceptual Framework," in *The Roots of Inflation*, Burt Franklin and Co., 1975.

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"Evaluation of Economic Regulation: Discussion," *Ibid*, LXI (May 1971) 235-237.

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"Dual Pricing in Southern Louisiana: A Reply," *Land Economics*, XLVI (August 1970): 338-42.

"The Combined Effects of Prorationing, the Depletion Allowance and Import Quotas on the Cost of Producing Crude Oil in the United States," U.S. Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, 91st Congress, 1st Session, *Government Intervention in the Market Mechanism, Hearings, The Petroleum Industry*, Part I, Washington, 1969, Reproduced in *Natural Resources Journal* (January 1970) X:53-61.

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"The Graduated Fair Return," *The American Economic Review*, March 1968.

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"The Merits of Reserving the Cost-Savings From Domestic Communications Satellites for Support of Educational Television" (with Joel B. Dirlam), *Yale Law Journal*, Volume 77, No. 3, January 1968, pp. 494-520.

"Tyranny of Small Decisions: Market Failures, Imperfections, and the Limits of Economics," *Kyklos*, Volume 19, 1966.

"Mergers in the Petroleum Industry and Problems of the Independent Refiner," U.S. Senate Judiciary Committee, *Economic Concentration*, Part II, Washington, 1965, pp. 562-609.

"The Depletion Allowance in the Context of Cartelization," *The American Economic Review*, Volume 54, 1964, pp. 286-314.

"Efficiency in the Use of Natural Resources: Discussion," *The American Economic Review, Papers and Proceedings*, Volume 54, May 1964, pp. 221-226.

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"Price Discrimination in Law and Economics" (with Joel B. Dirlam), *The American Journal of Economics and Sociology (Essays in Honor of Harry Gunnison Brown)*, Volume 11, April 1952, pp. 281-313.

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U.S. CONGRESSIONAL TESTIMONY:

Aviation Subcommittee of the House Committee on Public Works and Transportation on international aviation policy, May 9, 1991.

Subcommittee on Aviation of the Senate Committee on Commerce, Science and Transportation on airline concentration at hub airports, September 22, 1988.

Subcommittee on Aviation of the Senate Committee on Commerce, Science and Transportation on airline safety and re-regulation, November 4, 1987.

Subcommittee on Telecommunications and Finance, House Committee on Energy and Commerce, on competition and deregulation of the telecommunications industry, July 15, 1987.

Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, on competitive issues in the airline industry, March 25, 1987.

Subcommittee on Monopolies and Commercial Law, Committee on the Judiciary, U.S. House of Representatives, on the Administration's proposed amendments to Section 7 of the Clayton Act, February 26, 1986.

Subcommittee on Aviation of the Senate Committee on Commerce, Science and Transportation on Computerized Reservation Systems, March 19, 1985.

Joint Economic Committee, United States Senate, Hearing on the Economic Issues of a Changing Telecommunications Industry, October 3, 1983.

House Subcommittee on Aviation on "Competitive Problems Raised by Computerized Reservation Systems," June 22, 1983.

House Committee on the Judiciary, on H.R. 1878, "The Shipping Act of 1983," May 19, 1983.

House Committee on Public Works and Transportation on "Coal Slurry Pipelines," April 13, 1983.

House Committee on the Judiciary, on H.J. Res. 350, A Plan to Balance the Federal Budget, August 4, 1982.

Senate Committee on the Judiciary, on S. 1215, the Malt Beverage Competition Act, June 21, 1982.

Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, "Development, Operation and Implementation of the United States International Aviation Policy," December 9, 1981.

Joint Economic Committee, U.S. Congress on "Trucking Regulation," November 17, 1981.
Subcommittee on Monopolies and Commercial Law, House Committee on the Judiciary, "Mergers," August 26, 1981.

Senate Committee on Commerce, Science and Transportation, on S. 898, "The Telecommunications Act of 1981," June 11, 1981.

Subcommittee on Telecommunications, Consumer Protection, and Finance, House Committee on Energy and Commerce, "Telecommunications Regulation," May 28, 1981.

Subcommittee on Health, Senate Committee on Finance, on "The Health Incentives Reform Act," March 19, 1980.

House Budget Committee Inflation Task Force, on the "Treatment of Housing Costs in the Consumer Price Index," January 24, 1980.

Senate Committee on Banking, Housing, and Urban Affairs, on "The Chrysler Loan Guarantee Act," November 15, 1979.

Subcommittee on Surface Transportation, House Committee on Public Works and Transportation, on "Trucking Deregulation," October 4, 1979.

Senate Committee on Commerce, Science, and Transportation, on "Trucking Deregulation," June 26, 1979.

Subcommittee on the Legislative Process, House Rules Committee, on "Sunset Legislation," May 23, 1979.

Testimony on food prices and inflation, before:

a) House Subcommittee on Domestic Marketing, Consumer Relations and Nutrition; and Subcommittee on Department Investigations, Oversight and Research, Committee on Agriculture, April 4, 1979.

b) Subcommittee on Antitrust and Monopoly, Senate Committee on the Judiciary, April 6, 1979.

Testimony on hospital cost containment legislation, before:

a) Subcommittee on Health and the Environment, House Interstate and Foreign Commerce Committee; and Subcommittee on Health, House Ways and Means Committee, March 12, 1979.

b) Health Subcommittee, Senate Finance Committee, March 13, 1979.

Subcommittee on Environmental Pollution, Senate Committee on Environment and Public Works, on "Environmental Regulation and Inflation," February 27, 1979.

Testimony on authorization and appropriations for the Council on Wage and Price Stability, before:

a) Subcommittee on Economic Stabilization, House Committee on Banking, Finance and Urban Affairs, February 6, 1979.

b) Senate Subcommittee on Commerce, Consumer and Monetary Affairs, February 7, 1979.

c) Senate Committee on Banking, Housing and Urban Affairs, February 9, 1979.

d) Subcommittee on Treasury, Postal Service, and General Government, House Committee on Appropriations, May 24, 1979.

e) House Appropriations Committee, February 6, 1980.

f) Senate Committee on Banking, Housing, and Urban Affairs, March 17, 1980.

g) Subcommittee on Treasury, Postal Service, and General Government, House Committee on Appropriations, March 31, 1980.

h) Senate Committee on Banking, Housing and Urban Affairs, April 21, 1980.

i) Subcommittee on Treasury, Postal Service, and General Government, Senate Committee on Appropriations, April 23, 1980.

j) Subcommittee on Economic Stabilization, House Banking Committee, May 6, 1980.

House Committee on Ways and Means, on "Real Wage Insurance," January 30, 1979.

Testimony on the President's anti-inflation program, before:

a) Subcommittee on Economic Stabilization, House Committee on Banking, Currency, and Housing, November 22, 1978.

b) Subcommittee on Economic Growth and Stabilization, Joint Economic Committee, December 6, 1978.

c) House Committee on the Budget, January 30, 1979.

d) Subcommittee on Treasury, Postal Services, and General Government, House Committee on Appropriations, February 14, 1979.

e) Senate Budget Committee, March 7, 1979.

f) Subcommittee on Commerce, Consumer and Monetary Affairs, House Committee on Government Operations, June 28, 1979.

g) Economic Stabilization Subcommittee, House Committee on Banking, Finance and Urban Affairs, October 10, 1979.

h) Economic Stabilization Subcommittee, Senate Committee on Banking, Housing and Urban Affairs, October 11, 1979.

Subcommittee on Aviation, Senate Commerce, Science, and Transportation Committee, on S. 3363, "The International Air Transportation Competition Act of 1978," August 23, 1978.

National Commission for the Review of Antitrust Laws and Procedures, on "Economic Regulation and Antitrust Exemptions and Immunities," July 26, 1978.

Senate Commerce Committee, on S. 3064, "Airline Noise Legislation," June 14, 1978.

Testimony on CAB appropriations, before:

a) House Subcommittee on Appropriations, February 28, 1978.

b) Senate Subcommittee on Appropriations, March 2, 1978.

Testimony on United States international aviation negotiations, before:

a) Subcommittee on Aviation, House Committee on Public Works and Transportation, September 29, 1977

b) Aviation Subcommittee, House Public Works and Transportation Committee, on H.R. 11145, March 6, 1978.

House Budget Committee Task Force on Tax Expenditures, Government Organization, and Regulation, on "Airline Regulation," July 14, 1977.

Senate Antitrust and Monopoly Subcommittee, Oversight Hearings on Antitrust Enforcement, on "Enforcement of the Antitrust Laws," May 4, 1977.

Subcommittee on Investigations and Review, House Committee on Public Works and Transportation, on "The Effects of the Clean Water Act on the Electric Utility Industry," April 19, 1977.

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Omnibus, Docket Nos. G-9277, et al.

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Commission, for Pacific Telephone & Telegraph Company, August 18, 1983; the Missouri Public Service Commission, September 8, 1983; and Texas Public Service Commission, September 19, 1983, for Southwestern Bell Company.

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EDUCATION:

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1983-	Special Consultant
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1977-	Professor of Finance and Business Strategy Clifford H. Whitcomb Faculty Fellow (1993-94) Mobil Corporation Scholar (1991)
1994-95	Director, Managerial Skills Program
1979-1982	Director, Public Program
1972-1977	Associate Professor
1969-1972	Assistant Professor
1967-1969	Lecturer
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1978-1980	Advisor to Secretary and Deputy Secretary, Department of Energy, on Alaska Natural Gas Transportation System (ANGTS)
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ACADEMIC ACTIVITIES AND INTERESTS:

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OTHER ACTIVITIES:

1996	Visiting Professor, Vienna Institute, Vienna Austria
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1994-1995	Visiting Professor, University of Agriculture, Nitra, Slovakia
1993-1994	Visiting Professor, LETI-Lovanium MBA Program, Electro-Technical University, St. Petersburg (Russia)
1990-1995	Visiting Professor, International Management Institute-Kiev (Ukraine)
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1982-1983	Member, Government Accounting Office, Review Panel on Alternatives to ANGTS
1979-1980	Chairman, LNG Import Advisory Committee, U.S. Congress Office of Technology Assessment
1970-1992	Lecturer and Coordinator, Management Development Program, Corning Glass Works, Corning, New York
1968- present	Lecturer and Coordinator, Executive Development Program, Cornell University

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"Responsible Regulation of Return on Equity," Finance Division Annual Meeting of the Edison Electric Institute, May 12, 1977, New York.

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TESTIMONY BEFORE REGULATORY AGENCIES:

September, 1996	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the Company's cost of equity capital (supplemental).
August, 1996	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the Company's cost of equity capital.
April, 1996	State of Alaska, Department of Revenue, "Report of Professor Jerome E. Hass," regarding certain income tax issues (confidential).
February, 1996	State of Alaska, Department of Revenue, "Report of Professor Jerome E. Hass," regarding certain income tax issues (confidential).
January, 1996	Federal Energy Regulatory Commission on behalf of Refinery Holding Company, Chevron USA Products Company and the Estate of El Paso Refinery, L.P. regarding various tariff issues for Santa Fe Pipeline Partners (sur-surrebuttal).
December, 1995	Federal Energy Regulatory Commission on behalf of Liquid Energy Corporation and Enserch Processing Company regarding various tariff issues for Chevron Pipe Line Company (LPGS) (surrebuttal).
August, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company, Chevron USA Products Company and the Estate of El Paso Refinery, L.P. regarding various tariff issues for Santa Fe Pipeline Partners (rebuttal).
June, 1995	Federal Energy Regulatory Commission on behalf of Liquid Energy Corporation and Enserch Processing Company regarding various tariff issues for Chevron Pipe Line Company (LPGS).
June, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company regarding various tariff issues for Chevron Pipe Line Company (APS) (surrebuttal).

May, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company regarding various tariff issues for Chevron Pipe Line Company (APS) (supplemental).
March, 1995	Federal Energy Regulatory Commission on behalf of Refinery Holding Company regarding various tariff issues for Chevron Pipe Line Company (APS).
December, 1994	New Jersey Board of Public Utilities on behalf of Comcast (multiple) regarding the cost of capital.
November, 1994	Connecticut Department of Public Utility Control on behalf of Comcast Cablevision regarding the cost of capital (Affidavit).
November, 1994	New Jersey Board of Public Utilities on behalf of Garden State Cablevision regarding the cost of capital.
June, 1994	Federal Energy Regulatory Commission on behalf of Refinery Holding Company, Chevron USA Products Company and the Estate of El Paso Refinery, L.P. regarding various tariff issues for Santa Fe Pipeline Partners.
December, 1993	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
December, 1992	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
December, 1991	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
January, 1991	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Rochester Gas & Electric.
February, 1990	Illinois Commerce Commission on behalf of Illinois Power Company regarding the cost of common equity and the proper capital structure to use in ratemaking.
February, 1990	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Rochester Gas & Electric.
November, 1989	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Central Hudson Gas & Electric Corporation.

October, 1989	Federal Energy Regulatory Commission on behalf of the State of Alaska regarding the proper capital structure and rates of return on debt and equity for the Endicott Pipeline Company.
April, 1989	Federal Energy Regulatory Commission on behalf of Air Transport Association of America regarding the profitability of Buckeye Pipe Line Company, L.P., and the ability of the Commission to rely upon market forces in place of active regulation.
October, 1988	New York State Public Service Commission on behalf of Multiple Intervenors regarding the cost of common equity and target cash interest coverage ratio for Central Hudson Gas & Electric Corporation.
March, 1988	Illinois Commerce Commission on behalf of Illinois Power Company regarding the cost of common equity.
June, 1987	South Dakota Public Utilities Commission on behalf of Otter Tail Power Company regarding the cost of common equity.
March, 1987	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity to the company under different Shoreham and Nine Mile Point II status scenarios.
November, 1986	Minnesota Public Utilities Commission on behalf of Otter Tail Power Company regarding the cost of common equity.
November, 1986	Federal Energy Regulatory Commission on behalf of the State of Alaska regarding the proper capital structure and rates of return on debt and equity for the Kuparuk Transportation Company.
August, 1985	California Public Utilities Commission on behalf of Pacific Gas & Electric Company regarding the costs and benefits to customers from different interim tariffs for the Diablo Canyon plant.
February, 1985	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity to the company under different Shoreham status scenarios.
January, 1985	Illinois Commerce Commission on behalf of Illinois Power Company regarding the cost of common equity and the effects on the costs of capital of placing construction work-in-progress in rate base.
November, 1984	Maine Public Utilities Commission on behalf of Central Maine Power Company regarding the cost of common equity.
October, 1984	Arizona Corporation Commission on behalf of Arizona Public Service regarding an operating incentive system for the Company's base load units.

February, 1984	Arizona Corporation Commission on behalf of Arizona Public Service regarding the use of incentive systems for electric utilities.
January, 1984	New York State Public Service Commission on behalf of Long Island Lighting Company regarding the cost of common equity.
January, 1984	Federal Energy Regulatory Commission on behalf of the State of Alaska and the Department of Justice on the methodology of setting tariffs for the Trans-Alaska Oil Pipeline.
December, 1983	Department of Public Utility Control on behalf of United Cable Television of Connecticut regarding proper ratemaking and cost of equity.
May, 1983	Illinois Commerce Commission on behalf of Illinois Power Company regarding customers' costs and benefits from permitting construction work in progress in rate base.
1981-1983	Public Service Commissions in Minnesota, North Dakota and South Dakota and the Federal Energy Regulatory Commission on behalf of Otter Tail Power Company regarding the cost of common equity.
March, 1979	Testimony before the Philadelphia Gas Commission relating to proper practices for service termination, billing, and other customer-related activities of the Philadelphia Gas Works.
September, 1976	Before the Federal Power Commission on behalf of the Commission Staff regarding the determination of the fair market value and net salvage value of a pipeline proposed to be abandoned from gas transmission service.

TESTIMONY BEFORE COURTS:

June, 1994	Long Island Lighting Company v. The Assessor and the Board of Assessment for the Town of Brookhaven, et al, Supreme Court of the State of New York, County of Suffolk. Testified regarding the maximum economic values and present conditions of the Shoreham Nuclear Power Station for the years 1984 through 1991.
June, 1992	Niagara Mohawk Power Corporation et al. v. Stone & Webster Engineering Corporation, et al. United States District Court for the Northern District of New York. Testified regarding the reasonableness of financing costs incurred by plaintiffs associated with repairs to the Nine Mile Point 2 nuclear power plant.
August, 1990	Long Island Lighting Company v. The Assessor and the Board of Assessment for the Town of Brookhaven, et al, Supreme Court of the State

of New York, County of Suffolk. Testified regarding the maximum economic values and present conditions of the Shoreham Nuclear Power Station for the years 1976 through 1983.

November, 1989	Continental Airlines, et al. v. American Airlines, et al. U.S. District Court (Central District of California). Testified regarding the reasonableness of the rate of return earned by American Airlines on its computerized reservation system investment.
February, 1989	ETSI Pipeline Project, et al. v. Burlington Northern, et al. U.S. District Court (Eastern District of Texas). Gave oral expert testimony regarding the determination of damages to Houston Light & Power customers arising from the actions of railroads which forced cancellation of the ETSI project, a coal slurry pipeline.
October, 1987	Shamrock Associates v. Horizon Corporation et al. U.S. District Court (Southern District of New York). Gave oral expert testimony regarding fairness of two security transactions between Horizon Corporation and MCO Holdings and provided estimates of damages to Horizon therefrom.
July, 1984	Exxon Corporation v. The United States, U.S. Claims Court. Filed expert report and testified on behalf of Exxon regarding valuation of refining and marketing assets seized in Cuba.
April, 1984	State of Alaska v. Phillips Petroleum Company, Alaska District Court. Filed expert report on behalf of State in royalty litigation regarding the value of natural gas produced in Cook Inlet for liquification and sale to Japan.
February, 1982	Carl F. Mason, et al v. Cities Service Oil Company, et al. Testified on behalf of producers in royalty litigation regarding value of natural gas sold in interstate commerce.

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