

**ANALYSIS OF OFF BRANCH
RAIL COSTS**

By

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PERSONAL IDENTIFICATION

My name is Denver D. Tolliver. I am a research associate for the Upper Great Plains Transportation Institute of North Dakota State University. My primary responsibilities include those of a rail cost analyst and railroad planner in addition to related matters.

I hold an M.U.R.P. from the Virginia Polytechnic Institute and have completed internships with the United States Department of Commerce (Southern Regional Economic Development Internship Program) and the Center for Urban and Regional Studies, V.P.I. For the last two years and a half, I have specialized in the area of railroad economics and cost finding. During that time I have served as a branchline cost analyst for the North Dakota State Highway Department and as a Rail Form A cost analyst for the Transportation Institute. I am familiar with the branchline costing techniques developed by USRA and with the procedures and standards set forth by the Commission regarding branchline costs. I have submitted Rail Form A costs before this Commission on several occasions and am generally familiar with URCS and Form A.

INTRODUCTION

This verified statement will address the subject of off-branch costs. The principal concern is with the calculation and application of the cost update ratio and the development of car ownership and locomotive depreciation expenses.

Only those off-branch movements which are attributable to the Woford-to-York segment have been adjusted. The remaining movements have not been considered in this statement, although the same adjustments might apply to these.

The statement is structured as follows. First, a general over-view of the off-branch costs presented by Burlington Northern is introduced. Second, the adjustments which have been made to these costs are explained, both in terms of procedure and rationale. And third, the effects of the adjustments on the total off-branch costs are ascertained.

The statement begins with a discussion of the off-branch costing procedures employed.

OFF-BRANCH COSTING PROCEDURES

Off-branch costs have been developed using 1977 Rail Form A costs and off-branch service units developed for traffic forwarded or received on the branch. The costs entail only single car adjustments such as the use of actual turn-around days and adjusted locomotive and train weight statistics. Multiple car movements have been treated as single car traffic and system average performance factors have been used for switching and detention time at destination and for intermediate switching locations.

Two factors are of considerable importance in the estimation of off-branch costs. Since the costs are 1977 costs, the cost update ratio employed can have a considerable impact on the total off-branch costs developed, particularly where 1980 costs are at issue.

In addition, the method used to develop freight car ownership and locomotive depreciation expenses can affect off-branch costs most notably where freight car ownership is concerned.

Both adjustments included in this statement are concerned with the treatment of these variables. The cost update ratio employed by the Burlington Northern does *not* entail an employment level adjustment. For this reason, the cost update ratio does not present an accurate representation of updated railroad expense. The development of car ownership expenses, furthermore, relies upon the replacement cost of equipment. This method of valuation, as noted in the verified testimony of Daniel Kuntz, is in conflict with economic rationales for the costing of railroad equipment. Cost adjustments, therefore, have been made with regard to freight car ownership as well as with regard to cost update procedures.

CAR OWNERSHIP COSTS

Car ownership costs have been adjusted to reflect the net original cost of equipment as opposed to the replacement cost. A similar adjustment could be made in terms of road locomotive depreciation. However, the data does not lend itself to a ready adjustment in this regard. Also, the adjustment for original cost valuation with regard to road locomotive units would produce only one percent change, or thereabouts, in the total variable costs. This adjustment, therefore, has not been made with respect to road locomotive units with the understanding, that if done, it would reduce the off-branch costs slightly.

The data necessary for the car ownership adjustment has been taken from Burlington Northern's evidentiary statement; underlying documentation; and replies to interrogatories of the North Dakota Public Service Commission. The adjustment consists of a unit cost adjustment and is explained as follows.

Interrogatory number ten of the interrogatories filed by the North Dakota Public Service Commission requested car day and car mile unit costs on a net original cost basis for each car type handling traffic to and from the branch. The cost studies presented by BN contained the same unit costs on a replacement cost basis for the same range of car types. The discrepancies between the two are illustrated in Table 1.

TABLE 1. CAR OWNERSHIP UNIT COSTS: REPLACEMENT VERSUS ORIGINAL COSTS, 1980				
	Net Original Cost		Replacement Cost	
	Car Mile	Car Day	Car Mile	Car Day
Box, 40 - foot	.0260	2.72	.0484	8.68
Covered Hopper	.0260	6.90	.0484	13.65

Having both sets of unit costs it is possible to adjust the off-branch costs for each car type on the basis of the ratio of the net original investment unit costs to replacement value unit costs. The traffic statistics for doing so are contained in Burlington Northern's summary of off-branch costs. Here, car mile and car day costs are presented for each car type for traffic originated or terminated at Wolford for BN or foreign-owned freight cars. (Private line car mile rentals remained unchanged).

The process by which car ownership costs have been adjusted is depicted in Table 2 along with the traffic statistics relating to Wolford stations. As Table 2 indicates the process is simply a matter of changing the car day and car miles expenses to reflect net

original cost as opposed to the replacement cost of equipment and then adding the unadjusted car mileage rentals for private line tank cars or covered hopper cars to produce the adjusted total for car ownership expenses.

COST UPDATE RATIO

As noted prior, the cost update ratio employed by Burlington Northern does not include an employment level adjustment. This matter is presently before the Commission in Ex Parte 411, pending disposition. There is no established justification, therefore, for the exclusion of the employment level adjustment, barring a Commission ruling otherwise.

TABLE 2. CAR OWNERSHIP COST ADJUSTED: NET ORIGINAL VALUATION		
1ST QUARTER 1980		
1.	Car mile cost, replacement cost basis	836.35
2.	Car mile cost, original cost basis (line 2 adjusted)	449.00
3.	Car day cost, boxcar, replacement cost basis	255.94
4.	Car day cost, boxcar, original cost basis (line 3 adjusted)	80.203
5.	Car day cost, covered hopper, replacement cost basis	1,374.72
6.	Car day cost, covered hopper, original cost basis (line 5 adjusted)	699.53
7.	Private line car mile rentals	.00
8.	Adjusted car ownership cost (L2 + L4 + L6 + L7)	1,229.00
2ND QUARTER 1980		
9.	Car mile cost, replacement cost basis	930.53
10.	Car mile cost, original cost basis	499.87
11.	Car day cost, boxcar, replacement cost basis	365.65
12.	Car day cost, boxcar, original cost basis	114.58
13.	Car day cost, covered hopper, replacement cost basis	2,120.15
14.	Car day cost, covered hopper, original cost basis	1,078.84
15.	Private line car rentals	357.10

TABLE 2. CAR OWNERSHIP COST ADJUSTED: NET ORIGINAL VALUATION		
16.	Adjusted car ownership cost (L10 + L12 + L14 + L15)	2,050.00
3RD QUARTER 1980		
17.	Car mile cost, replacement cost basis	450.96
18.	Car mile cost, original cost basis	242.25
19.	Car day cost, boxcar, replacement cost basis	213.76
20.	Car day cost, boxcar, original cost basis	66.98
21.	Car day cost, covered hopper, replacement cost basis	765.71
22.	Car day cost, covered hopper, original cost basis	389.63
23.	Private line rentals	816.13
24.	Adjusted car ownership cost (L18 + L20 + L22 + L23)	1,514.99
4TH QUARTER 1980		
25.	Car mile cost, replacement cost basis	705.64
26.	Car mile cost, original cost basis	379.06
27.	Car day cost, boxcar, replacement cost basis	204.31
28.	Car day cost, boxcar, original cost basis	64.02
29.	Car day cost, covered hopper, replacement cost basis	1,240.28
30.	Car day cost, covered hopper, original cost basis	631.12
31.	Private line rentals	742.22
32.	Adjusted car ownership cost (L26 + L28 + L30 + L31)	1,816.42

Several points should be considered here regarding the cost update ratio. First of all, the Bureau of Accounts cost update ratio is not a productivity adjustment. Although productivity and employment levels are correlated they are not the one and the same. Any attempt to construe the update ratio as a productivity adjustment is therefore misleading. Secondly, it is not inconsistent to allow for an employment level adjustment within the confines of a unit price multiplier. To do otherwise would be to misstate railroad expenses

which are incurred both as a result of the wage rate and the employment level. For these reasons, an employment level adjustment is a desirable component of the cost update ratio and should be included in this instance.

The cost update ratios as calculated by the Bureau of Accounts entails such an adjustment. These ratios are calculated quarterly for each cost territory. As Table 3 reveals, these are considerably different than the ratio used by Burlington Northern to update rail expenses (1.418197).

January	1.272
April	1.301
July	1.350
October	1.344

Also, it should be pointed-out that the Burlington Northern did not index costs on a quarterly basis. Rather, a single index was used for the entire year. The result is that quarterly differences are obscured by the application of an annual index to quarterly costs. This potential bias has been corrected for, however, in the adjustment which follows where quarterly ICC indices are used as opposed to the composite index of Burlington Northern.

The adjustment itself consists of indexing line-haul and terminal expenses with ICC Western District update ratios. The materials necessary for this adjustment are contained in Burlington Northern's summary of off-branch cost statistics. The calculations involved in the adjustment are presented in Table 4, and draw upon adjusted car ownership information from Table 3. Again, only Woford statistics have been considered.

To walk-through the tables, car ownership and total indexed costs have been taken from Burlington Northern statistics. The indexed line-haul and terminal costs have been determined by subtracting the car ownership expenses. Indexed line-haul and terminal costs have then been deflated by the cost update ratio, yielding the unindexed costs, excluding freight car ownership. The unindexed line-haul and terminal expenses thus determined have then been indexed using the quarterly cost update ratio of the ICC. To this total has been added the adjusted freight car ownership expense from Table 2.

TABLE 4. COST UPDATE ADJUSTMENT AND CUMULATIVE TOTALS		
1ST QUARTER 1980		
1.	Car ownership cost	2,467.02
2.	Total indexed cost	12,492.00
3.	Total indexed cost, line-haul and terminal (L2 - L1)	10,024.99
4.	Burlington Northern ratio	1.418197
5.	Unindexed line-haul and terminal expenses (L3 ÷ L4)	7,068.82
6.	ICC cost update ratio	1.272
7.	Adjusted line-haul and terminal expenses (L5 × L6)	8,991.55
8.	Total adjusted cost (L7 + L8, Table 2)	10,220.57
2ND QUARTER 1980		
1.	Car ownership costs	3,992.55
2.	Total indexed cost	19,362.00
3.	Total indexed cost, line haul and terminal (L2 - L1)	15,369.45
4.	Burlington Northern ratio	1.418197
5.	Unindexed line-haul and terminal expenses (L3 ÷ L4)	10,837.32
6.	ICC update ratio	1.301
7.	Adjusted line-haul and terminal expenses (L5 × L6)	14,099.349
8.	Total adjusted cost (L7 + L16, Table 2)	16,149.739
3RD QUARTER 1980		

TABLE 4. COST UPDATE ADJUSTMENT AND CUMULATIVE TOTALS		
1.	Car ownership cost	2,246.56
2.	Total indexed cost	9,606.34
3.	Total indexed cost, line-haul and terminal (L2 - L1)	7,359.78
4.	Burlington Northern ratio	1.418197
5.	Unindexed line-haul and terminal expenses (L3 ÷ L4)	5,189.532
6.	ICC update ratio	1.350
7.	Adjusted line-haul and terminal expenses	7,005.869
8.	Total adjusted cost (L7 + L24, Table 2)	8,520.86
4TH QUARTER 1980		
1.	Car ownership cost	2,892.45
2.	Total indexed cost	13,812.63
3.	Total indexed cost, line-haul and terminal (L2 - L1)	10,920.18
4.	Burlington Northern ratio	1.418197
5.	Unindexed line haul and terminal expenses	7,700.044
6.	ICC update ratio	1.344
7.	Adjusted line-haul and terminal expenses (L5 × L6)	10,348.8598
8.	Total adjusted cost (L7 + L32, Table 2)	12,164.06181

SUMMARY

Two adjustments have been made to off-branch expenses. Net original investment unit costs have been used in lieu of replacement valued unit costs insofar as car ownership expenses are concerned. In addition, the cost update ratio has been adjusted and ICC quarterly cost indices supplanted in-place of Burlington Northern's composite ratio.

Altogether, the effects of the adjustments on off-branch costs are substantial. The cumulative total of the adjusted costs in Table 3 is \$47,054 as opposed to \$54,000 or thereabouts calculated by Burlington Northern.

