

CHAPTER 3 REVENUE GENERATION

INTRODUCTION

In the ten years from 1976 to 1985, USRA predicts that ConRail revenue will rise from \$2.81 billion to \$6.18 billion, an increase of 111 percent. Figure 2 traces this dramatic growth back to 1970 and divides it among its five key components.

- improved mix and volume of traffic (primarily coal and TOFC)
- inflation
- maintenance of base level traffic
- rate increases above inflation adjustments
- passenger revenues and operating subsidies

While the most striking aspect of the figure is the tremendous growth in inflation relative to real traffic growth, the small increase in traffic volume indicates a reversal begun in the 1970's of the long-term decline in Northeastern traffic (Figure 3). Most of the reversal is due to an increase in coal which accounts for 62.2 percent of the growth in total tonnage, though only a 24.7 percent increase in revenue. A second major area of growth is in TOFC (trailer on flat car) or piggyback shipments which account for 14.7 percent of revenue growth.

The following four key assumptions, critical to the revenue forecast, are investigated:

- baseline traffic growth
- coal traffic growth
- TOFC traffic growth
- inflation and regulatory impacts.

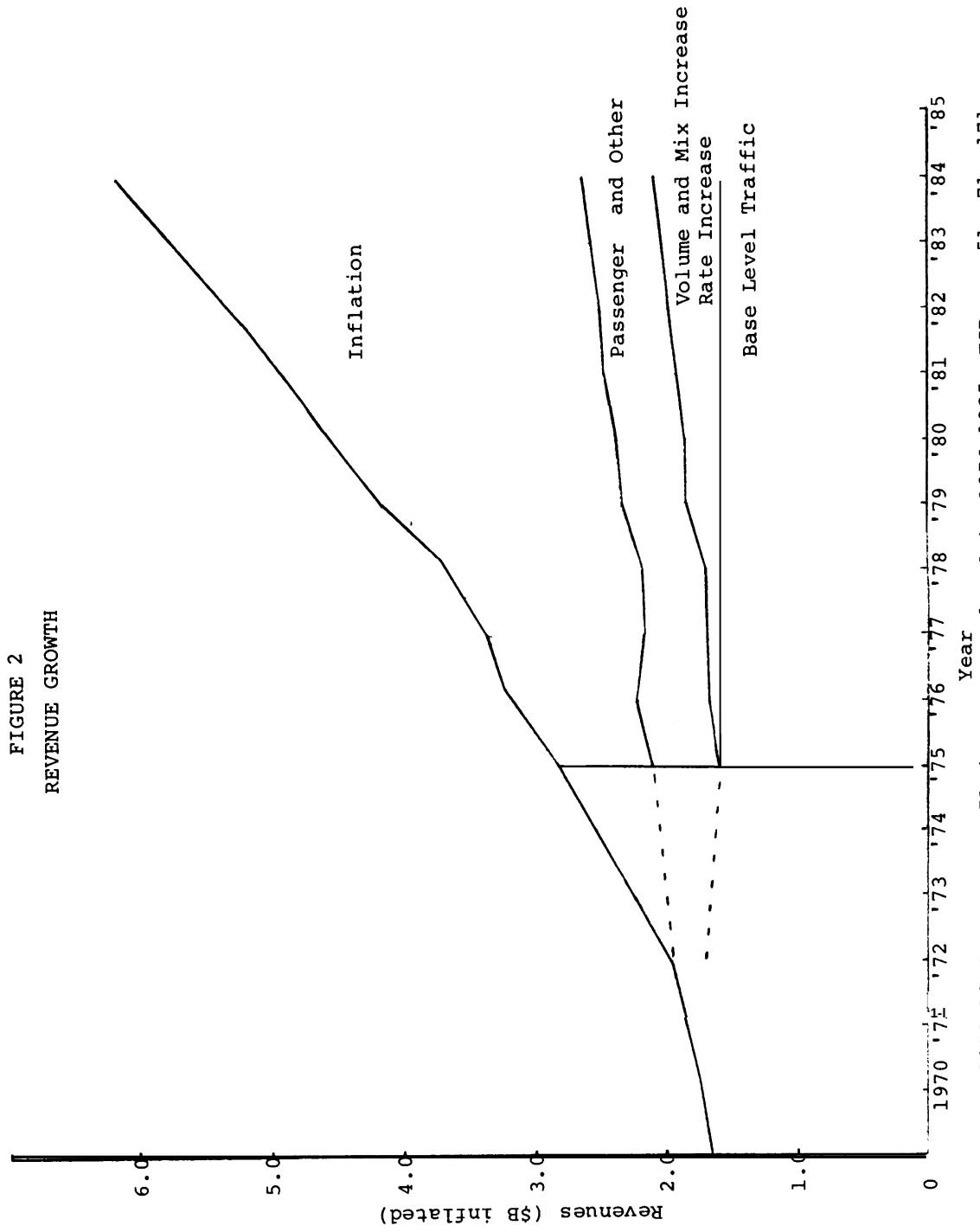
BASELINE TRAFFIC GROWTH

Figure 2 indicated that the increase in revenue due to changes in the volume and mix of traffic and rate increases between 1973 and 1985 would be \$283.8 million. The tonnage increases projected for the twelve principal commodities are shown in Table 2. Between 1973 and 1985, tonnage will increase 15.4 percent (1.20 percent annually). But, revenues in constant dollars will increase more rapidly, by 15.7 percent (1.22 percent annually). Nonetheless, this growth rate in revenues is lower than the expected growth in real GNP during the same period, 51 percent (3.5 percent annually). This discrepancy is explained, however, by the fact that historically railroad tonnage as a percentage of GNP has been decreasing by .15 percent annually.

TABLE 2 - PROJECTED 1973-1985 FREIGHT PERFORMANCE

Commodity	Million Tons				Revenue	
	19/ 3	1985	1973-85 % Change	% of Total Increase	Constant Dollars % Increase	% of Total Increase
Farm Products	10.7	8.8	-17.8	- 3 . 9	- 3 . 8	- 1 . 0
Metallic Ores	28.7	31.9	+11.1	+6 . 5	+11.9	+3 . 2
Coal	84.5	115.1	+36.2	+62.2	+33.4	+24.7
Non-Metallic Metals	19.4	18.1	- 6 . 0	- 2 . 6	- 1 . 6	.3
Food Products	23.6	20.5	-13.1	- 6 . 3	-10.49	- 7 . 0
Lumber	8.6	8.9	+2 . 9	+0 . 6	+7 . 7	+1 . 6
Pulp & Paper	18.8	21.4	+13.8	+5 . 3	+24.9	+9 . 6
Chemicals	21.1	21.9	+3 . 8	+ 1.6	+5 . 7	+2 . 9
Stone, Clay & Glass	14.6	14.6	0	0	0	.4
Primary Metals	26.0	31*7	+21.9	+11.6	+23.2	+13.4
Transportation Equipment	13.9	17.4	+25.2	+7 . 1	+29.4	+24.8
Waste	15.5	18.7	+20.6	+6 . 5	+33.8	+8 . 7
Coke	7.0	7.8	+11.4	+1 . 6	+16.1	+1 . 6
TOFC	7.8	10.6	+35.9	+5 . 7	+36.8	+14.7
Other	16.9	18.6	+10.1	+3 . 4	- 4 . 0	+2 . 7
TOTAL	317.1	366.0	15.4	+99.3	+15.7	+99.2

SOURCE: FSP, p. 171



SOURCE: 1970-1974, ENCB, p. 71 (Penn-Central Only); 1976-1985, FSP, pp 51, 71, 171

The ICC assessment of the PSP expressed serious doubts about the growth forecasts, considering them generally "optimistic." The constant (1973) dollar revenue outlook in the FSP can be summarized as follows:

	<u>1973-1985</u>	<u>Revenue Growth</u>
1. Growth in coal tonnage		+ \$ 70.1 million
2. Trailer on flat car growth		+ 41.6 million
3. Baseline growth in other traffic		+ 161.8 million
4. Selective rate increases		+ 53.3 million
5. Diversion to long-haul routes		+ 30.0 million
6. Light density line abandonments		41.8 million
7. Market transfers to solvents		31.2 million
		+ \$283.8 million

SOURCE: FSP, p. 170 as adjusted by EEA.

In fact, the projections indicate a "hopeful" reversal of the trends in the Northeast since the mid-1950's (Figure 3). Between 1955 and 1974, coal and other freight carried on the Eastern railroads declined 26 percent. Both USRA and its critics emphasized basic weaknesses which still remain: population out-migration, diminished growth in traffic volumes, out-migration of manufacturing centers and raw material sources and competition from trucks for short hauls. As seen in Table 2, the largest contributions to the expected total 1973-1985 gain in revenue are expected to result from increased shipments of transportation equipment (24.8 percent), from increased coal revenues (24.7 percent), and from increased TOFC (14.7 percent). In absolute terms, the gain in coal revenues (in 1973 dollars) is expected to be \$70 million versus a \$41 million TOFC increase. These ConRail expectations are worth examining in detail because they are decisive factors in the revenue outlook.

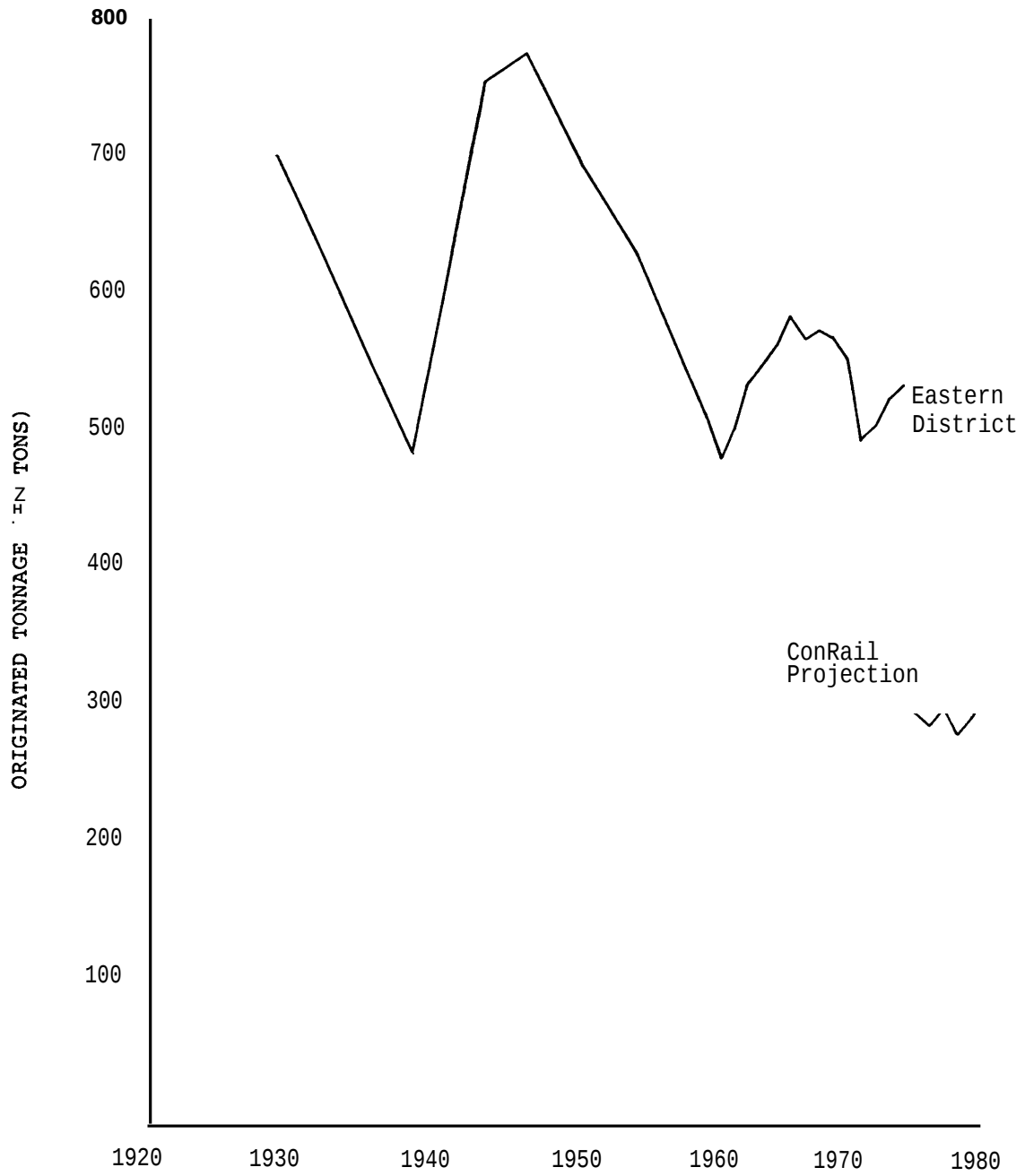
COAL PROJECTIONS - THE USRA APPROACH

Focusing on the year 1980 for which already announced coal production plans are relatively firm, USRA projects a slight growth in ConRail coal traffic of 10 million tons or 12 percent. This projection is questionable both in the face of an increase in national coal production of from 30 to 50 percent and on methodological grounds.

Step one in the projection is a forecast of national coal production. USRA'S consultant used an econometric forecast of future growth which when coupled with an input/output model (IN-FORUM) yields estimates of national production by industry and commodity groups. For coal the 1980 production estimate is 785 million tons. This estimate is extremely conservative in comparison with projections of 895 million tons prepared by FEA, and similar projections from other sources.

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FIGURE 3

Eastern District Originated Tonnage and
ConRail Tonnage



Source: FSP pp. 171
Railroad Facts - 1975 pp. 28

Despite criticism of the Preliminary System Plan by the ICC and others that focused on whether the forecast was too optimistic, (coal provided 62 percent of the increase in Con-Rail tonnage after 1973) , a combination of factors support the higher estimate. Substantial new coal-fired electric capacity is scheduled to come on-line, industry users of oil and gas are converting to coal where possible (e.g. in cement production), and coal exports overseas and to Canada have already surged.

Step two of the USRA analysis consisted of projecting the Eastern district share of national production. Here the USRA forecast is also in error. The methodology used projects two ratios: the rail fraction of total production (rail loadings/national production) and the Eastern share of national rail loadings (Eastern rail/total rail). These two ratios together give the Eastern rail share of national production. The projection was based on historical trends, with relatively little change expected from current figures. A third relationship is implicit in these variables: the Eastern share of total production. This ratio has not changed dramatically in recent years. However, analysis of potential supply done by FEA (Coal Supply Task Force Report of the Project Independence Blue Print) and modelling conducted by Energy and Environmental Analysis, Inc. for the National Science Foundation project a sharp shift in shares. Currently, Eastern production is about 75 percent of national production. By 1980, Eastern production may be from 45 to 62 percent of national production. Using this corrected estimate, and the USRA baseline of 785 MT annual production yields an estimate of Eastern production and hence Eastern rail originations 20 to 40 percent lower than USRA'S. But, because USRA'S assumption of national coal production of only 785 MT in 1980 is too low, the mistakes fortuitously cancel each other.

Step three in the USRA analysis focuses on the rail share of Eastern production. USRA treated this issue indirectly in the methodology described above (i.e. by estimating Eastern rail share of national rail tonnage) . The question should be: What is the split of Eastern production between rail, water, mine-mouth use and truck transport? The USRA analysis indicates, albeit indirectly, that the rail share is constant (at roughly 50 percent).

Step four is the allocation of rail traffic between ConRail and the solvent railroads. USRA does not explicitly state the method by which this is done, but the projections prepared allot most of the increased Eastern originations to the non-ConRail lines.

TABLE 3 - EASTERN RAIL ORIGINATIONS, USRA ESTIMATES

	<u>ConRail</u>	<u>Non-ConRail</u>
1973 (million tons)	42.6	144
1980 (million tons)	44.9	178
% Increase	5%	24%

The explanation given is that sulfur regulations will result in most of the increased coal production occurring in West Virginia and Virginia where no ConRail lines begin. (The Penn-Central has a West Virginia line but USRA proposed to sell it to the Chessie.)

AN ALTERNATIVE ESTIMATE

A recent survey by the National Coal Association of new coal mining capacity shows high gross additions to capacity in Illinois, Indiana, Ohio and Pennsylvania, where ConRail coal shipments originate. These planned expansions must be adjusted for replacement of retirements (equal to 1/30 per annum) and for a ConRail share. The acquisition of lines by solvent railroads will not give them greater access to or better routes from these producing areas. Hence ConRail's share of rail loadings in these states should be constant. With these assumptions, the forecast of net growth from identified new coal production capacity in states with current ConRail originations is 34 million tons. Of this total, assuming historical portion of ConRail originations to total production in these areas holds, 9.2 million tons would be expected to originate on ConRail. This estimate is almost certainly an understatement, since smaller operations are not adequately represented in the Coal Association survey, and many probable expansions are not yet announced. Even taking into account the loss of 6.3 million tons of West Virginia originations to the Chessie system, there is likely to be more and possibly substantially more growth than the 2.3 million tons projected by USRA.

In addition, a significant amount of ConRail coal traffic will be coal received from other systems. This accounts for 55 percent of ConRail coal traffic now.¹ USRA projects coal received to grow to 52.5 MT by 1980, an increase of 24 percent over 1973. An EEA analysis of demand for coal in 1980 in the

¹According to TBS, USRA's consultant, in 1973 ConRail originated 42.6 million tons and received 52.9 million tons.

United States served by ConRail (New England, New York, New Jersey, Pennsylvania, Ohio, Indiana and Illinois) indicates a growth of 107 MT or 46 percent by 1980.²

If ConRail keeps its share of total terminations, and its originations do not increase dramatically (as described above), its coal received must grow by 46 percent from 43 MT to 62 MT (vs. 52 forecast by USRA). Assuming the sale of the Erie-Lackawanna and other properties to Chessie and N&W does not materially increase their access to major coal using markets, this seems a reasonable assumption.

The net coal traffic could, adding new originations and terminations together, be in the range of 110 million tons versus the 95 million tons in 1980 projected by USRA. If all mining plans were known, the coal originated could be higher. In the FSP, USRA discusses the possibility that its coal projections may be too low (p. 78). The USRA financial sensitivity analysis assumes in a calculation that by 1985 there is a 33 million ton increase in the ConRail coal tonnage transported. The estimated financial effect of such an increase is to increase total coal revenues by \$371 million and cash by \$150 million over the 1976-1985 period. Since the analysis reviewed above finds a coal traffic increase of at least 15 million tons by 1980, the 1985 impact of this adjustment is even more profound.

In short, the upside financial possibility is that by 1985 ConRail's cash position could be as much as \$300 million stronger than is assumed in the base case USRA forecast.

Two other positive factors in the coal revenue outlook for ConRail are the possibility that rate changes approved by the ICC will increase the per ton profit on coal and that improved unit train operations will reduce per ton mile coal transportation costs to ConRail. The FSP noted the first possibility (p. 180-181). The USRA estimates that a 50¢ per ton increase in coal rates would yield a \$34 million increase in annual ConRail revenue. Of course, this benefit could be higher if USRA's coal forecast proves too low. As far as the feasibility of unit train operations, the following table shows that for the key coal producing states served by ConRail a significant portion of 1973 coal traffic did not move on unit trains. If rate reforms by the ICC are coupled with greater reliance on low cost unit trains, ConRail's financial situation would be enhanced.

²Based on individual plant data on existing and new utilities, estimates of metallurgical exports, and industrial use. Total estimated demand in 1980 is 897 million tons.

TABLE 4 - 1973 COAL SHIPMENTS VERSUS UNIT TRAIN SHIPMENTS FOR SELECTED STATES

	Tons by Unit Train	Total Tons	% by Unit Train
Illinois	22,155	41,138	54
Indiana	5,493	15,172	36
Pennsylvania	22,262	30,628	73
Ohio	18,266	20,607	89

The foregoing discussion of coal and ConRail's financial prospects suggests that USRA'S revenue forecasts for this commodity are too low. However, the subject deserves more thorough treatment than this report is able to give. A more complete analysis of coal and ConRail is needed. It should identify the new and converted power plants in ConRail's markets that will burn coal, the share of European and Canadian exports ConRail can ship, industrial conversions to coal in ConRail's area, and growth in base period coal consumption by ConRail served coal consumers. Such an analysis must reflect possible EPA actions limiting the burning of high sulfur coal, probable ICC coal rate actions, and the cost savings possible from increased ConRail reliance on unit trains. This analysis should also examine the implications for ConRail profitability of giving up to Chessie the Penn-Central line into Charleston and the contemplated cooperative agreements giving the Louisville and Nashville (L&N) access to southern Illinois and Indiana Penn-Central coal markets.³

TRAILER ON FLAT CAR (TOFC)

Another major growth area in the USRA forecast is TOFC (Trailer on Flat Car) traffic, commonly known as piggyback. TOFC commodities tend to be higher rated goods which often are shipped by truck. Penn-Central significantly expanded traffic in this area although profitability of this traffic is disputed. Between 1973 and 1985, TOFC tonnage and revenue (in constant dollars) are projected to increase 36 percent (2.65 annually). In the PSP, growth was

³In the FSP (Vol. II P. 6), USRA recommended that a "fossil-fuel rail bank" be established by the Department of Interior or other Federal agency to administer rail trackage serving potential coal reserves which are not presently developed to a point that justifies ConRail service. Another possible entity for administering such rail assets could be the Appalachian Regional Commission which has jurisdiction over and knowledge of much of the Appalachian coal reserves and economic development potential in 12 Eastern states from Georgia to New York and Maryland to Ohio.

projected at 5.16 percent annually. The reduced growth is due to the fact that:

- TOFC oriented commodities are most affected by recessions
- USRA is recommending rate increases which will improve TOFC profitability but lower demand
- recently increased truck size and weight limitations will divert potential TOFC traffic from the railroads.

TOFC growth accounts for 14.7 percent of the \$284 million in real freight revenue growth projected by USRA. The FSP predicts that this growth will occur as ConRail continues to penetrate the market for small shipments. The mechanisms for penetration include expanding rail operated motor carrier operations to provide control over pick-up and delivery, modification of the rate structures to make TOFC more competitive with trucking for smaller shipments, and improved reliability through rehabilitation and operating improvement since shippers of high tariff goods seem more sensitive to service and reliability than price. Additional inter-modal traffic will probably be generated as light density lines are eliminated and shippers are forced to use truck and rail combinations for delivering goods.

The two principal arguments against TOFC expansion are that it is unprofitable and that railroads have historically failed to compete successfully with trucks for small shipments. According to the ICC, Penn-Central in 1973 lost \$30 million handling \$170 million of TOFC traffic, or about 18¢ for each dollar of traffic handled. TOFC has been traditionally unprofitable traffic due to extensive competition for small traffic volumes, too many small terminals which do not cover fixed costs, the high capital cost of tying up flat cars and trailers, and rate structures which allow empty trailers to travel at below cost rates.

Because 85 percent of highway freight shipments are less than truck load size, ConRail will have to assemble shipments into profitable truckload quantities. Freight forwarders historically have served the function of assembling small shipments into carload lots, yet between 1950 and 1970, the tonnage assembled by freight forwarders has not increased. During the same period, the less than carload tonnage shipped by railroads declined 95 percent.

In summary, shippers have concluded through the market system that trucks haul small shipments over all distances better than railroads. Making TOFC a worthwhile market for ConRail will require a change in the rate structure so that railroads can make a profit on TOFC traffic, and better service on the part of railroads including control over the pick-up and delivery (through trucking subsidiaries) of shipments. ConRail may have considerable difficulty succeeding in this highly competitive market while solving more pressing startup problems.

INFLATION - BACKGROUND

Between 1976 and 1985, USRA predicts that inflation will account for 84 percent of the growth in revenue. Since rate increases must be approved by the ICC, regulatory response will be a critical element in system profitability. If costs go up because of escalation of labor or material prices and rate increases lag behind, revenues and profitability suffer. The ability of ConRail to recover inflationary cost increases will depend on the speed with which ConRail documents cost increases and requests rate changes, the adequacy of the rate increases granted by the ICC to cover increased costs, and the speed with which the ICC responds.

In the Final System Plan (FSP), USRA assumed that rate increases necessary to accommodate inflation hikes would lag cost increases by 6 to 8 months. Normally, the ICC approves rate increases in 2 to 3 months after a request. The industry, however, takes 5 to 6 months to define the needs. The speed with which increases are granted is especially critical to ConRail profitability because inflation rates are expected to average over 6 percent annually between 1976 and 1985. First National City Bank of New York (Citibank) tested the sensitivity of income projections using data from the PSP which assumed no lag. Assuming a 3-month and a 6-month delay in rate increases, the impact on profitability is shown in Table 5.

TABLE 5 - IMPACT OF RATE DELAY ON NET INCOME

	<u>Net Income</u>	
	1976	1985
PSP (no delay)	-\$ 96 million	\$ 171 million
3-month delay	- 180 million	6 million
6-month delay	- 265 million	- 157 million

SOURCE: A Financial Analysis of the Preliminary System Plan as proposed by the USRA, First National City Bank, May 15, 1975.

The FSP assumes that by 1981 the lag in pass-through will drop to 6 months. This implies a faster response time on the part of industry than has been demonstrated in the past. Table 6 indicates historical rate increases and increases in the major component costs. Obviously, in the Eastern district, increases in revenue per ton mile have historically lagged increasing costs. As the inflation rate accelerates from historically low levels to the projected 1975-1980 average of 6.3 percent, the impact of a lag will be more severe. For identical expenditures, profits are increased by the amount of the rate increase with losses occurring only if traffic is diverted to another mode. Consequently, the impact of rate increases on profitability is tremendous.

TABLE 6 - EASTERN DISTRICT COMPONENTS
(Normalized: 1967 value = 100.0)

	Fuel ^a	Wages ^a	Average of all factors ^a	Revenue Per Ton Mile ^b
1967	100.0	100.0	100.0	100.0
1968	103.3	105.9	106.4	105.2
1969	106.0	113.2	113.3	108.6
1970	109.2	122.9	123.6	116.3
1971	115*3	136.6	134.3	137.0
1972	117.7	150.0	147.4	138.8
1973	137.3	165.5	165.7	140.7
1974	271.4	175.2	188.6	159.8

^a AAR Series Q-MPW-88, July 22, 1975

^b Railroad Facts, p. 33

The extent to which ConRail as an individual carrier can recover cost increases through rate increases is questionable. The ICC historically grants rate increases on an average cost basis. Thus, those carriers which are more efficient than the average will benefit more than less efficient carriers. Consider the operating ratio (operating expense as a percentage of operating revenue) as a measure of efficiency. The N&W, Chessie and Penn-Central are the three largest carriers in the Eastern district (76 percent of all revenue).

TABLE 7 - RAILROAD OPERATING RATIO (1973)

Norfolk & Western	72.5%
Chessie	74.8%
Penn-Central	82.7%
Average of all Class I Carriers	79.4%

SOURCE: PSP, p. 24.

Assume that inflation averages 6.3 percent annually and that rate increases are granted which will allow the average Class I carrier to recover additional costs in higher revenues. Table 8 illustrates the impact on the least efficient, most efficient and average carriers.

TABLE8 - RATE INCREASE IMPACT ON RAILROADS
OF VARYING Efficiency
(Normalized: 1973 operating revenue = 100.0)

	N&W		Class I Ave.		Penn-Cen.	ConRail
	1973	1980	1973	1980	1973	1980
Operating Revenue	100.0	142.3	100.0	142.3	100.0	142.3
Operating Expenses	72.5	111.2	79.4	121.7	82.7	126.8
Contribution to Profit	27.5	31.1	20.6	20.6	17.3	15.5

^a Carrier costs increase 6.3 percent annually but revenues increase only enough to maintain average industry 'profits

The impact is striking. While in 1973 Penn-Central's contribution to profit would have been 84 percent of the industry average, by 1980 it was only 75 percent. Until ConRail achieves parity with average industry operating efficiency which is not projected until 1981 under the FSP, rate increases will be insufficient to cover added costs. In addition, very efficient carriers may "hold down" or prevent tariff increases for all railroads in a district if the efficient carriers do not need them.

The final impact of inflation concerns the relative shift it may cause in rail-truck-barge rates. If inflation hits railroads harder, there would be a diversion of traffic away from ConRail. An analysis for USRA by Chase Econometric Associates showed that the future impact of inflation on truck and rail would be comparable so that no net diversion of traffic should occur.

"Diversion would occur if:

1. the increase in prices for input factors (labor, material, fuel) were more expensive for one mode than for another;
2. interest costs were higher for one mode; or
3. rate increases were not passed along with equal speed.

On balance, therefore, the assumed regulatory lag for ConRail is slightly optimistic when judged by historical performance. Quick documentation by ConRail and improved reaction times at the ICC could reduce the lag to be consistent with USRA'S assumption. More serious is ConRail's disadvantage in obtaining rate increases due to its comparative inefficiency. Most probably, until ConRail efficiency approaches industry average performance (in 1981 at the earliest), inflation will not be passed through completely and ConRail's profitability will suffer.