

Evaluation of the Viability of a Regional Railroad System in the Palouse Region of Washington and Idaho

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Changing economic conditions in the nation are causing significant rail line abandonment, a phenomenon that is quite apparent in the Palouse region of southeast Washington and north central Idaho. This regional study was conducted to develop a procedure for evaluating the economics of the existing rail system in a region and identify alternatives that have the potential to retain essential rail service before piecemeal abandonment. The study included an estimate of existing carrier costs (using Rail Form A costs and the 49 CFR 1152 abandonment costing process) and revenue estimates. Alternative configurations, ownership, and marketing approaches were also considered. The procedure worked well in evaluating the viability of rail systems that are operated by existing rail carriers. The results showed ratios of expenses to revenues considerably over 100 for the majority of the existing or restructured lines. It did appear that most lines were candidates for abandonment. Short-line operations and possibly public assistance could have a positive influence on the economics of the region's rail service. Local interest and support should be identified before either option is attempted. Road impacts resulting from rail line investment decisions by shippers and governmental actions should be part of the discussion when planning for the future railroad structure.

The condition of the U.S. general economy and the status of the transportation network in the United States have been interdependent since the formation of the country. Access to resources for growth, expansion, and consolidation depended heavily on transportation linkages. Railroads have been a major factor in the development of the nation's dominant industries: agriculture, forest products, mining, and industrial products. Today, changing conditions have resulted in the abandonment of rail branch lines. The major contributing factors are economic conditions in the agricultural and forest products industries, changes in transportation technology, railroad deregulation (Staggers Rail Act of 1980), the Interstate system, and competition from truck-barge service.

Nowhere is this activity more readily apparent than in the Palouse region of southeast Washington and north central

Idaho. In 1970 this area had 825 mi of rail line trackage. Since then 285 mi or 35 percent has been lost through abandonment. As they do throughout the United States, such abandonments raise concerns about the availability of transportation services and the ability to move bulk commodities efficiently in the future. Many more abandonments are possible. With the loss of rail service, shippers often face increased handling and transportation costs. In addition, there can be impacts on the road system because some state highways and many local roads were not built to carry the weight of the cargo shifted from rail to trucks. This situation results in substantial roadway deterioration and leads to additional demands for funds to maintain these roadways. These concerns led to the study reported in this paper.

The purpose of the study was to evaluate the economics of the existing railroad system in the Palouse region and identify alternatives that have the potential to retain essential rail service before piecemeal abandonment. The study included an estimate of the existing carriers' costs (using Rail Form A costs and the 49 CFR 1152 abandonment costing process) and revenue estimates. In addition, an evaluation of more efficient alternative configurations of the existing system was made to test for financial viability. Other options such as contract rates, short-line operations, and public agency ownership were also considered.

STUDY AREA

The Palouse region includes southeastern Washington and north central Idaho. Although the lines of the Camas Prairie Railroad east of Lewiston are not in the Palouse region, they were included in this study because they provide an alternate connecting outlet for the Palouse lines and, therefore, must be considered in any analysis of a Palouse regional rail system. The region's rail system and the rail lines analyzed are shown in Figure 1. A comparison between 1970 and present rail service in the area is shown in Figure 2. This study focuses on rail service in seven counties: Whitman County and the southern portion of Spokane County in Washington and Clearwater, Idaho, Latah, Lewis, and Nez Perce counties in Idaho.

BACKGROUND

Agriculture is the main economic activity and generates the principal transportation demand in the Washington portion of

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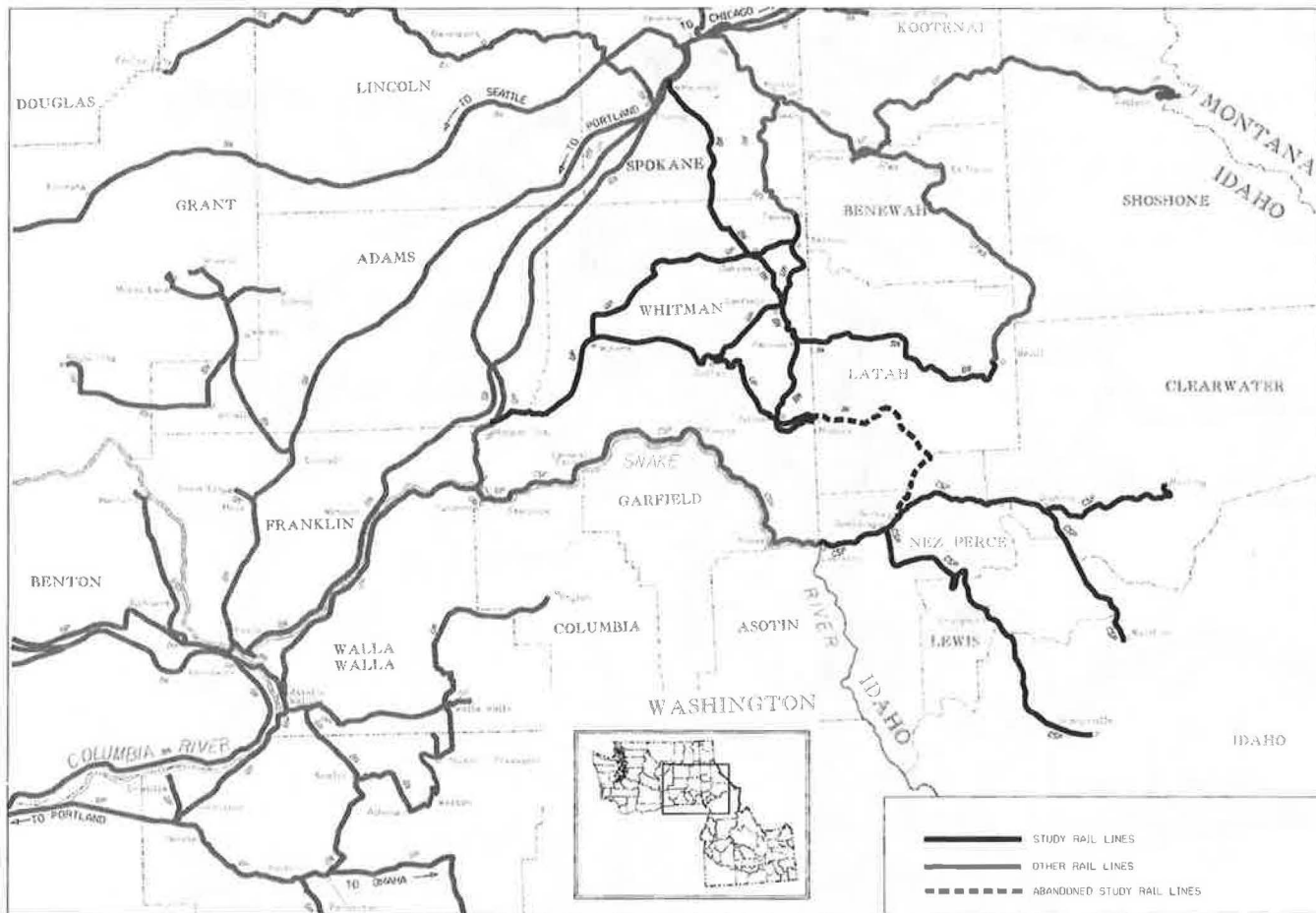


FIGURE 1 Palouse Empire regional rail study: present.

the study area. In the Idaho portion, forest products industries are dominant, although agriculture is significant.

Both the agricultural and forest products industries have rebounded somewhat from the economic slump of the early 1980s. Grain production (wheat and barley) in the Washington portion was 224 million bushels in 1984 and a relatively low 185 million in 1985 because of an extended drought. In the Idaho portion, 170 million bushels and 144 million bushels were produced, respectively. In recent years, the Idaho study area counties' timber harvest has been in the range of 600 million to 800 million board feet.

Industry experts do not foresee significant increases in production in either industry within the study area. Local conditions and overall market conditions constrain production by both industries. The number of housing starts is the major influence on forest products. For grain, nearly all of the tillable land is now in production, leaving little room for expansion. Therefore the commodities available for shipment in the future are estimated to be at or slightly above current levels.

RAIL LINES—USE AND COMPETITION

The 540 mi of rail lines still in operation in the study area include lines operated separately by the Burlington Northern Railroad (BN), the Union Pacific Railroad (UP), and the Camas Prairie Railroad (CSP), a regional short line jointly

owned by BN and UP. Approximately 25 percent of the mileage is operated by BN, 31 percent by UP, and 44 percent by CSP. All of the eight branch lines evaluated are capable of accommodating the weight of fully loaded 100-ton hopper cars, but five branch-line operations have speed restrictions, some as low as 10 mph. The rail lines studied are shown in Figure 1.

The BN lines averaged 3,297 carloads per year during the 1983–1985 period, and the UP lines averaged 3,282 carloads, generating estimated annual revenues of \$6.1 million (including abandoned Moscow to Arrow line in estimate) and \$3.9 million, respectively. The disparity in revenues is primarily attributable to the principal type of commodity originating on each carrier. The UP lines carry mostly grain whereas BN carries grain and some wood products, and the CSP mostly wood products and primary forest products. The 1983–1985 average revenue per carload for the study area traffic was \$800 for grain; \$3,500 for lumber and other wood products; and \$200 for logs, chips, and other primary forest products (Table 1). The low revenue attributed to the latter is due to the nature of the movement of high volumes of raw materials moving short distances with associated low expenses. The annual average traffic volumes and revenues generated by the existing lines are summarized in Table 2.

Several factors interact to cause the significant rate difference between the area's two major commodities—grain and

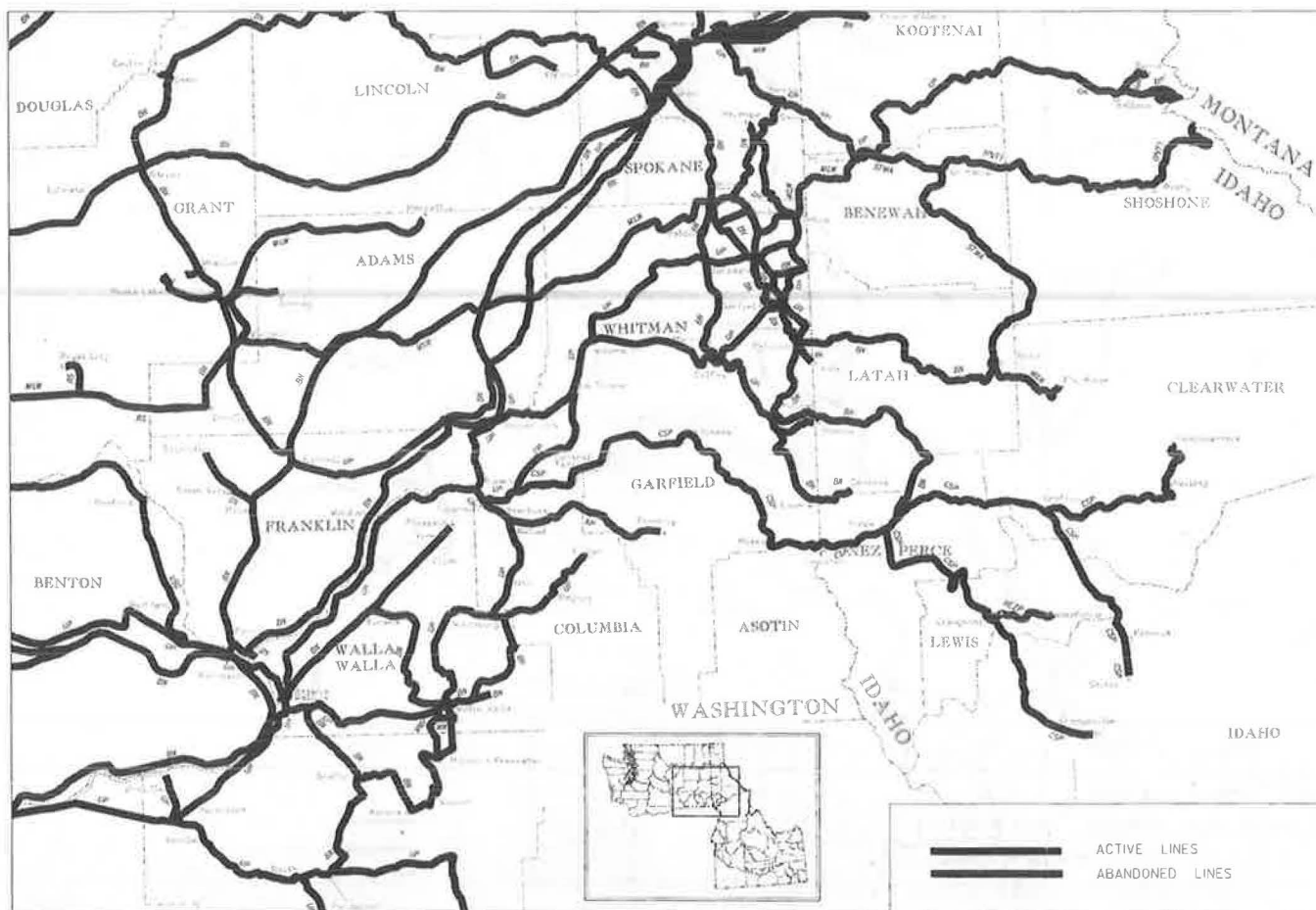


FIGURE 2 Palouse Empire regional rail study: comparison of 1970 and present.

**TABLE 1 ANNUAL AVERAGE TRAFFIC VOLUMES AND REVENUES:
STUDY AREA RAIL LINES BY COMMODITY GROUP (1983–1985)**

Commodity Group	Number	Percent	Average Revenue
			Per Carload
Grain	4,079	22	\$ 800
Other Agricultural Products (Peas and Lentils)	439	2	\$3,300
Wood Products (Lumber, Plywood, etc.)	6,653	36	\$3,500
Primary Forest Products (Poles, Chips, Logs, etc.)	6,203	34	\$ 200
All Others	1,088	6	\$2,100
TOTALS	18,462	100	

NOTE: Annual average based on approximately 3 years of data (1983–1985).

TABLE 2 ANNUAL AVERAGE TRAFFIC VOLUMES AND REVENUES BY STUDY AREA RAIL LINE SEGMENT (1983-1985)

Line Segment	Segment		
	Length (miles)	Traffic (carloads)	Revenues (\$000)
Marshall through Oakesdale	37.8	1,072	\$ 866
Oakesdale through Fallon	28.3	506	510
Fallon through Moscow	20.9	102	241
Moscow to Arrow	36.7	234	499
(abandoned 9/84)			
Palouse through Bovill	46.7	1,383	3,977
BNRR Total	170.4	3,297	\$ 6,093
Hooper Junction through			
Willada	37.5	929	\$ 779
Willada to Seltice	36.5	374	396
Winona through Colfax	25.6	646	637
Colfax to Tekoa	38.4	266	391
Colfax through Moscow	28.1	1,067	1,650
UPRR Total	166.1	3,282	\$ 3,853
Lewiston through Kooskia	71.5	*	\$ *
Spalding through Grangeville	66.5	*	*
Orofino through Revling	31.1	*	*
	169.1	*	\$20,529

NOTE: Annual average based on 1983-1985 data for all lines except the Moscow through Arrow segment that was abandoned in September 1984. Traffic statistics for the CSP segments are confidential because of the competitive relationship between the parent companies, BN and UP.

wood products. Grain traffic rates from the Palouse region are kept down by intermodal competition and a relatively short haul to deep-water ports on the lower Columbia River. Nationally, grain is the lowest commodity group in terms of revenue per ton-mile carried. Rates have decreased in this area in part because of competition with Columbia and Snake River barge rates. Lumber and wood products, on the other hand, can command higher rates, as a result of less intermodal competition, and typically have longer hauls to market, which result in higher revenues.

Proximity to the Columbia or the Snake River is an important determinant of whether grain is shipped by truck to river barges or by rail. The average distance to the river from grain elevators using truck-barge is 40 mi. The development of rail multiple-car loading facilities (MCLFs) in recent years has enabled railroads to compete more effectively with water car-

riers. This new technology allows the rapid loading of 25- or 26-car multiple trains and has lowered rail operating costs, resulting in rate reductions for wheat of more than \$2/ton between 1981 and 1984.

LINE EVALUATIONS

A significant change resulting from the 1980 Staggers Rail Act (railroad deregulation) is increased emphasis on ensuring that rail carriers earn an adequate rate of return on investment. Thus the revenue/cost relationship has become more important, if not the primary factor, in identifying viable rail lines and those that will possibly become candidates for abandonment. The analyses for this study are based on estimates of existing carrier costs and revenues generated from the area's traffic. Operating expenses included maintenance of way, crew

cost, locomotive and freight car costs, and return on net liquidation value. These costs and revenues for the branch lines under study were developed using standard industry methods.

The analyses of these rail lines were done with a computer network simulation model. This model represented active stations as nodes and track mileage between stations as links. Estimated BN or UP revenue at each station was calculated by commodity group on the basis of tariffs, shipper interviews, and waybill samples. Total revenues for line segments were available for the BN portions, and estimated station totals were calibrated to these totals for BN lines. Estimated Rail Form A system haul variable expense for each group was deducted from this revenue, leaving a "branch available" revenue total attributable to each station. This was matched against two classes of on-branch expenses. Expenses that vary with the number of cars handled at a station (freight car costs and switching costs) were attributed to each node. Expenses that vary with branch mileage operated (maintenance of way, line-haul operating costs, ownership and tax expenses) were assigned to each link. A unit cost for node (volume variable) and link (distance variable) costs was assigned to each line reflecting differing track conditions, crew requirements, and so forth. With this information, the program computed branch expenses based on summations of the traffic at each node and the mileage of each link. Existing base operating results were the result of the addition of the relevant segments. Additional costing details are contained in the Appendix.

Alternative 1: Existing Base System

This alternative assumes that the existing system will continue to be operated by the existing major carriers without significant changes in operation. The results of the financial analysis are summarized in the top part of Table 3. Overall, the BN lines lost an estimated \$0.9 million on revenues of \$5.6 million (–15 percent), UP lines lost \$1.9 million on revenues of \$3.9 million (–50 percent), and CSP lines had a surplus of \$1.2 million on revenues of \$20.5 million (+6 percent). On a line-by-line basis, the Operating Surplus/Loss column indicates whether revenues are sufficient to offset expenses and reveals that only two lines, the Lewiston-Kooskia (CSP) and Orofino-Revling (CSP), have significant operating surpluses.

Alternative 2: Restructure Base System

Because the base system reflected a large operating loss, an analysis of various options for restructuring existing lines was undertaken. Again, existing BN and UP estimated costs and revenues were assumed.

The node-by-node (station-by-station) cost and revenue approach revealed a picture of the weak and strong components under existing ownership of the system and permitted the selection of segments that appeared to have the best prospects of viability after restructuring. The process began by selecting and linking the points with the largest traffic generation potential (e.g., lumber mills, MCLFs, and other major rail users). The restructured alternatives included both single- and

multiple-railroad combinations, as shown in Figures 3 and 4. Adjustments were made in the unit costs to reflect changed conditions, such as lengths of runs and required service frequency, necessary for the restructured alternatives. The major restructuring alternatives are shown in Figure 4.

A summary of the costs and revenues associated with the restructured alternatives is presented in the bottom part of Table 4. Under these cost and revenue assumptions, the restructuring failed to identify an economically viable rail system that included a return on net liquidation value under existing ownership. In certain circumstances, on the basis of assumptions concerning traffic and connections not fully investigated in the study, it appears that two segment combinations have the potential to operate with a surplus. However, the majority of the lines failed to support the costs associated with their ownership and operation. In essence, the analysis revealed that neither the existing system nor a restructured system based on existing conditions can be operated profitably by a major railroad company. Even with restructuring, most of the lines meet the qualifications for abandonment under existing statutes on a revenue-cost basis when operations are provided by the existing major carriers.

Other Rail Alternatives

Because a viable system could not be identified within the existing system or by restructuring, other alternatives were suggested in an attempt to retain essential rail service in the region. The alternatives that assume continued carrier ownership and operation use either contract rates between the railroad and shipper or rate level increases. Other alternatives involve short-line operation and public agency ownership or participation.

Contract Rates

Contract rates, brought into wide use by the Staggers Act of 1980, allow railroads to negotiate confidential contracts with individual shippers for specific services, prices, and other conditions. This mechanism could result in an agreement between shipper and carrier on the level of traffic or subsidy and other conditions needed to ensure control of costs and revenues to allow continuation of rail service. Approximately one-third of the shippers in the study area have used or are using contract rates.

Rate Increases

One way to increase revenues may be to increase rates. However, in most cases, the lines with the largest operating deficits are those that face substantial competition from truck-barge. This competitive environment has not only kept rate levels down, it has actually caused them to drop. Still, there are areas in which current rail rates might be increased without loss of traffic to other competitive modes. Whether a rate increase sufficient to retain service can be implemented to create a profitable operation in a specific market would have to be evaluated by separate analyses on a case-by-case basis. It is possible that the construction of MCLFs has made elevators

TABLE 3 RAIL SEGMENT OPERATING SUMMARY, ESTIMATED AVERAGE ANNUAL OPERATING REVENUES AND EXPENSES (1983-1985) UNDER CURRENT OWNERSHIP

	Total System Revenue	Total System Expenses	Operating Surplus/ (Loss)	Expenses as % of Revenue
Summary: Existing Railroad Totals				
Burlington Northern Lines	\$ 5,594,000	\$ 6,459,000	\$ (865,000)	115
Union Pacific Lines	3,853,000	5,769,000	(1,916,000)	150
Camas Prairie Lines	20,529,000	19,295,000	1,234,000	94
 Total Study Area	 \$29,976,000	 \$31,523,000	 \$(1,514,000)	 105
Existing Base System Line Segments				
BN Marshall-Moscow	\$ 1,617,000	\$ 2,817,000	\$(1,200,000)	174
BN WI&M Palouse-Bovill	3,977,000	3,642,000 ^a	335,000 ^a	92
BN WI&M Marshall-Palouse-Bovill	5,353,000	5,895,000 ^a	(542,000) ^a	110
UP Tekoa, Pleasant Valley, Colfax Bridge	3,853,000	5,769,000	(1,916,000)	150
CSP Revling-Orofino-Lewiston and Kooskia-Orofino- Lewiston	16,442,000	14,523,000	1,919,000	88
CSP Spalding-Grangeville	4,087,000	4,772,000	(685,000)	117
Restructured Alternates				
(1) UP Hooper Junction-Winona- Willada/Endicott	\$ 1,039,000	\$ 1,468,000 ^b	\$(429,000) ^b	141
(2) BN Marshall-Oakesdale	1,031,000	1,426,000	(395,000)	138
(3) BN Marshall Plaza	367,000	607,000	(240,000)	165
(4) UP Tekoa-Oakesdale	545,000	676,000 ^c	(131,000) ^c	124
(5) BN&UP Tekoa-Willson/Princeton	5,011,000	4,923,000 ^d	88,000 ^d	98
(6) BN Bovill-Lewiston	9,821,000	9,253,000 ^e	568,000 ^e	94
(7) BN Oakesdale-Palouse	869,000	1,054,000	(185,000)	121

^aDoes not include R.O.I. on rehabilitation costs necessary to retain service. The annual R.O.I. on rehabilitation costs are estimated to be \$618,400 which would result in an operating loss of \$283,000 for Palouse-Bovill and \$1,483,000 for the BN WI&M Marshall-Palouse-Bovill option.

^bDoes not include R.O.I. on rehabilitation costs necessary to retain service, which are estimated to be \$170,000 per year, leaving a loss of \$599,000.

^cDoes not include R.O.I. on rehabilitation costs necessary to retain service, which are estimated to be \$148,000 per year, leaving a loss of \$279,000.

^dDoes not include R.O.I. on rehabilitation costs necessary to retain service, which are estimated to be \$189,000 per year, leaving a loss of \$101,000.

^eIncludes R.O.I. on rehabilitation cost necessary to retain service.

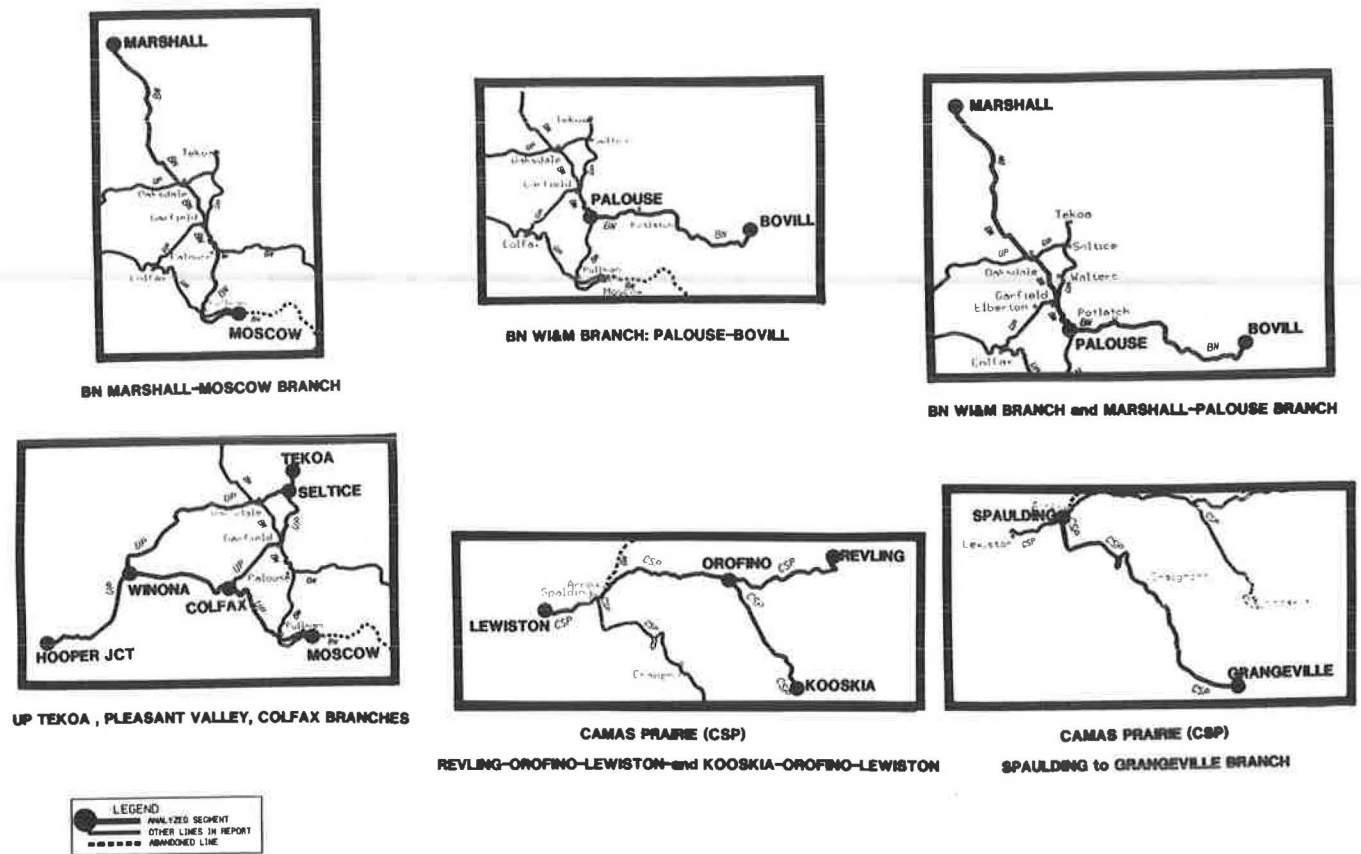


FIGURE 3 Route map: existing base system line segments.

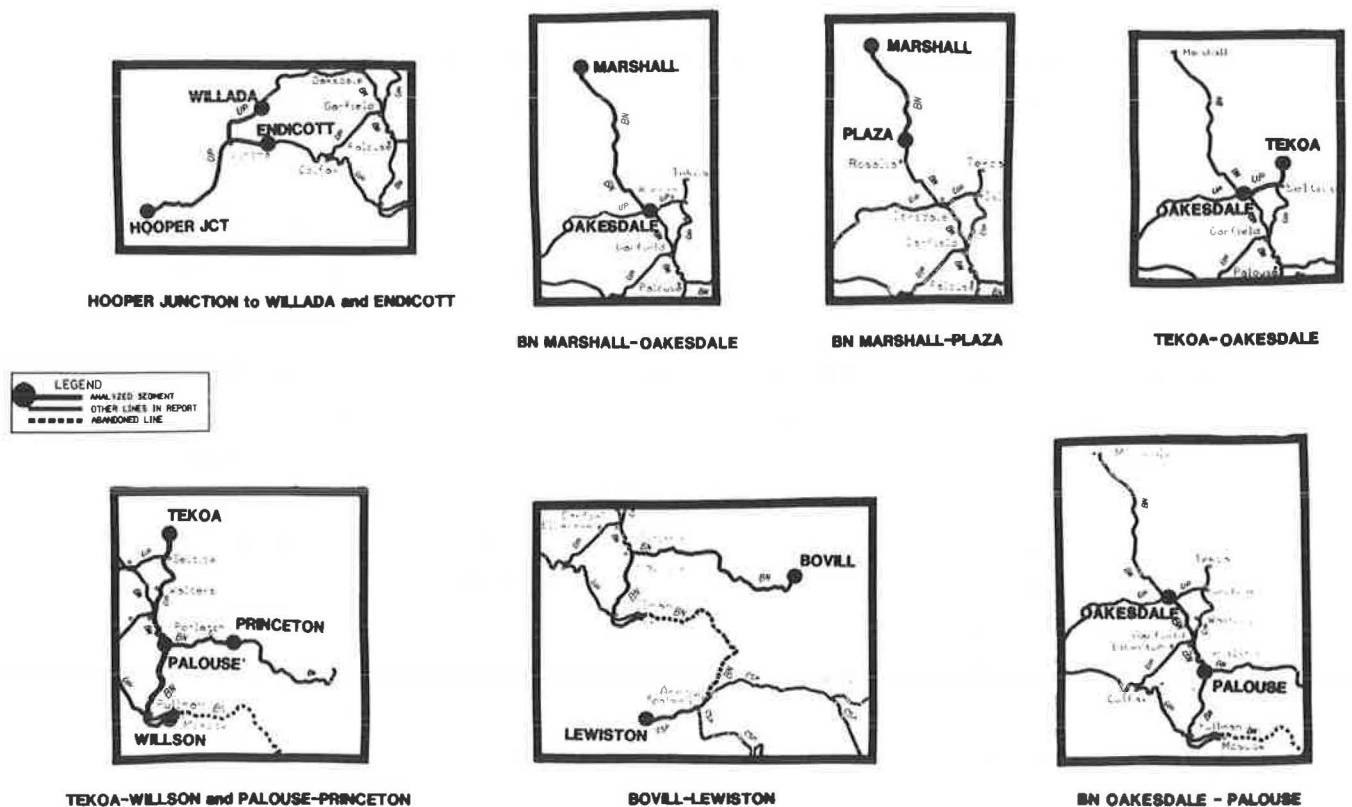


FIGURE 4 Route map: restructured alternatives.

TABLE 4 EFFECT OF PUBLIC OWNERSHIP OF LINES ON OPERATING DEFICITS

Option	Operating	10% Savings		30% Savings	Revised
	Loss	in Train	R.O.V.	in	Operating
	(Current	Operating	& Prop.	Normalized	Surplus/
	Ownership	Expense	Taxes	M/W&S	(Loss)
1 UP Hooper-Willada/ Endicott	\$(429,000)	\$22,000	\$192,000	\$105,000	\$(110,000)
2 BN Marshall-Oakesdale	(395,000)	12,000	276,000	95,000	(12,000)
3 BN Marshall-Plaza	(240,000)	5,000	155,000	53,000	(27,000)
4 UP Tekoa-Oakesdale	(131,000)	7,000	86,000	40,000	2,000
5 BN Oakesdale-Palouse	(185,000)	10,000	113,000	59,000	(3,000)

more rail dependent and, therefore, less likely to select another transportation mode if rates increase moderately.

Private Short-Line Operation

This alternative would involve the purchase of lines by a private individual or firm. Short lines usually have the advantages of a lower wage structure and more flexible work rules, which decrease both operating and maintenance costs. These and other cost saving factors, plus a greater ability to generate new traffic through tailored personal service to shippers, have allowed a growing number of short lines to successfully operate lines that were not profitable for the major railroads. Much of the area's rail mileage and traffic must be examined in greater depth on a line-by-line basis to determine whether a short-line operation under private ownership could survive economically.

Nationwide, 173 short lines have begun operation since 1980 (about half are 25 mi or less in length). Examples of private short-line operations in or near the study area are the St. Maries River Railroad (STMA) in Idaho and the Washington Central Railroad Company (WCRC). The STMA was formed in 1980 as a subsidiary of the Potlatch Corporation, purchased 71 mi of railroad being abandoned by the Milwaukee Road, and now operates as a common carrier. The purchase and subsequent rehabilitative work have ensured continued service, which is vital to Potlatch's logging and mill operations as well as to other shippers on the line. The WCRC began operations over its main and branch lines between Pasco and Cle Elum in 1986 and in 1987 added operation of the Connell to Moses Lake branch. At present, WCRC lines total approximately 300 mi and carry fruit, vegetables, grain, and other commodities.

Public Agency Ownership or Participation

Some short-line railroads operate under public ownership and have additional advantages. Such lines are not subject to state and property taxes and, most important, do not require a profit or a return on salvage value. These financial considerations

often enable publicly owned rail lines to operate where private ownership is no longer economical.

To illustrate the impact of public ownership on finances, the five restructuring options resulting in operating losses (Table 3) were recomputed and the results are shown in Table 4. Adjustments made in these analyses include a 10 percent reduction in train operating expenses; removal of the return on value (ROV), which is the liquidation purchase value of track and land; removal of property taxes; and a 30 percent reduction in the normalized maintenance of way and structures expense (MW&S). These items are some of the savings that might be expected under public short-line operation. These financial reductions bring the deficits down to levels that could be offset by some minor revenue increases such as emergence of new shippers, a return to rail use by existing industries now using other modes, rate surcharges, or other operating efficiencies. This modification of the major carrier estimates gives some insight into what could be expected from public short-line operations, but more precise analyses should be made if specific operations are contemplated.

Washington State law permits public ownership of railroads, but Idaho law makes no provision for this. Washington statutes allow for the formation of county rail districts (RCW 36.60) and ownership and operation of a railroad. The same allowances are extended to port districts (RCW 53).

Two examples of public agency ownership or participation in Washington State are the 61-mi Pend Oreille Valley Railroad between Newport and Metaline Falls and the 25.6-mi Royal Slope Railroad between Othello and Royal City. Both lines were being abandoned by the Milwaukee Road. The former was purchased by the Pend Oreille Port District, which was established by voter approval in 1978 when it became apparent that there was no other realistic alternative for continuing rail service. The port was formed, and it acquired, rehabilitated, and now operates the railroad. The Othello-Royal City operation was added to the Port of Royal Slope activities in 1982 to provide essential transportation for a variety of agricultural commodities. The BN operated the service under an agreement with the port, and the Washington Central Railroad has recently replaced BN.

Financial Assistance

Limited federal and state financial assistance is available to railroads in both Washington and Idaho. Federal assistance is available through the Local Rail Service Assistance (LRSA) program, which was established by Congress in 1976 but is scheduled to expire in 1988. These funds are available on a 70/30 percent federal/local sponsor matching basis as documented in Rail Plan Updates in both states, and can be used for rehabilitation, acquisition, new construction, or substitute service. The use of available public funds would have a beneficial impact on all of the alternatives investigated.

In Washington State, assistance is also available to publicly owned railroads through RCW 47.76, the state's Essential Rail Assistance Account (ERAA). These funds are provided on a matching basis, with the state providing 80 percent and the local sponsor 20 percent. Although the 1983 legislature authorized this activity, the program has yet to be funded.

CONCLUSIONS AND RECOMMENDATIONS

This study was not expanded to project expected operating results under short-line operations. The scope of the investigation was to provide a timely snapshot that would provide interested parties with information to assist in future transportation planning, disclose any existing problems or successes, and reflect the probable time constraints for action. The estimated operating surpluses or losses under current ownership for the rail lines studied are summarized in Table 3. These figures reveal ratios of expenses to revenues considerably over 100 for the majority of the existing lines and the restructured options, using BN or UP average costs. The implication is that major carrier operation of the existing system or a restructured system is unprofitable and most lines will, in the long term, become candidates for abandonment.

In the analysis, the lines performing most favorably were those operating in Idaho and carrying forest and related wood products. Wood products receive a longer haul and can command a higher rate. This indicates that the major problem for lines in the study area may be lack of revenues as a result of the low rate structure that is forced by competitive pressures. Without doubt, higher rates and, to some extent, increased rail traffic would cause an important improvement in the rail service outlook for the area studied in Washington and Idaho.

In summary, rail service under current ownership in the Palouse region is in jeopardy. A goal of this study was to identify and evaluate alternatives that would retain as much of the essential rail service in the region as possible. No simple solutions such as system rationalization or restructuring were found adequate. The study reveals that the future of the existing rail system appears dubious, and immediate attention and community action are required to preserve a minimum core of essential and viable lines in the area.

Short-line operations and possibly public assistance may have a positive influence on the economics of the region's rail service. However, this should be reviewed on a case-specific basis, and there must be local interest and financial support before either consideration is implemented. If the demand for future rail service exists, a strategic planning and management process must be undertaken in a cooperative participatory

framework that includes the state departments of transportation, local agencies, communities, and affected rail service users. The following recommendations should facilitate the initiation of this process:

- Identify and form a coalition of local shippers, communities, elected officials, government representatives, and others interested in retaining rail service. This group would consider the feasibility of rail service alternatives where sufficient local interest, support, and financial commitment exist or can be generated. Implementation of a specific type of operation and configuration of lines could then successfully occur.
- Continue efforts to concentrate and develop traffic to reduce costs and increase revenues.
- Monitor rail line sales and abandonment plans that may affect the Palouse region.
- Identify road and highway impacts resulting from rail abandonments, including the costs to and impacts on shippers and state and local governments. The Washington Transportation Research Center (TRAC) is currently studying these road impacts in Washington State and the results will be available in late 1988.
- Review legislative actions at both the state and federal level that may assist in rail transportation retention and support them accordingly.

APPENDIX: Methodology for Estimating System Revenues and Costs

The methods used to make the cost and revenue estimates are outlined in this appendix. Although use of certain system average costs was necessary, an attempt was made to quantify costs of the specific operation or operations being evaluated to the extent possible. Existing carrier costs were always used.

SYSTEM SEGMENTATION

The study area rail system was segmented into links and nodes. The nodes were represented by stations, and the links were the trackage connecting the stations. Revenues and costs of cars and switching were attributed to each station on the basis of the traffic generated, and track maintenance, line-haul operation, and ownership costs were assigned to each link. The first group of expenses is variable with traffic variations whereas the second group is variable with distance between stations.

REVENUE

Revenues were estimated for each station, by branch line, and by entire railroad company system on the basis of carrier traffic, waybill samples, shipper interviews, and published freight rates for 1984–1985.

COST COMPONENTS

Costs comprised both on- and off-branch elements. Off-branch variable costs were computed using 1983 Rail Form A costs for the carriers involved, updated to 1986 levels using the Association of American Railroads (AAR) Railroad Cost Recovery Index. Off-branch costs were computed from the junction of study system lines with connecting main tracks as appropriate for the options being investigated. They cover the balance of the carrier's haul to or from, or both, the off-branch destination, origin, or interchange point. In the case of the BN, this was from Marshall to the BN origin/destination or interchange junction with another railroad. For the UP, the off-branch haul was generally Hooper Junction to the UP origin/destination or interchange junction with another railroad. For the CSP, Lewiston was the junction from which the branch move was calculated, and all off-branch movement beyond Lewiston was considered either BN or UP depending on which parent carrier's traffic was involved.

On-branch costs, for the most part, were computed according to Interstate Commerce Commission (ICC) procedures as defined in 49 CFR Part 1152. On-branch cost elements cover train operations over the study line segments, as well as maintenance and ownership costs. More specifically, on-branch costs include

- Maintenance of way and structures (normalized);
- Maintenance of equipment;
- Transportation;
- Deadheading, taxi, and hotel;
- Freight car costs;
- Return on investment in locomotives; and
- Property taxes.

In addition to these prescribed on-branch elements, an on-branch opportunity cost element or return on salvage value invested (at 14 percent) is also considered. This was an average current rate that would be expected by an investor purchasing the line. (The ICC is now allowing 16.25 percent.)

With the exception of maintenance of way and structures, property taxes, and return on value, the cost elements are largely a function of the level of service required to handle the traffic volume generated by the study lines.

On-branch track expenses were also estimated for the analysis by using accepted ICC and industry methods. The major items included are discussed in the following subsections.

Normalized Maintenance

Maintenance of way and expenses associated with structures were estimated on a "normalized" basis or the average annual expenditure required to keep the track at a desired level of operation specified by the carrier. This is the average expenditure required to prevent deferring maintenance, which results in the downgrading of track safety classification. The characteristics (rail weights, curvature, gradients, road crossings, bridges, tonnage, etc.) of each segment of the system were considered in preparing the expense estimates. Estimates include annual expenses for such items as spot maintenance, track inspection, weed control, and snow removal, plus an allowance for those items that are worked on a longer cyclic basis. This longer cyclic work includes such items as cross tie renewals, surfacing and lining, road crossing repair, ditching, and bridge maintenance (sometimes referred to as programmed work).

The estimated average annual normalized maintenance expense for the study track segments, after rehabilitation, is estimated to range between \$7,465 and \$16,300 per mile.

Net Liquidation Value

The net liquidation value (NLV) or salvage value of the line segments is the value of all property and assets less the cost of removal and sale. The real estate value was generally assumed to average \$7,525 per mile of right-of-way. The value of track materials was determined by using unit values obtained from various industry sources, from experience with similar work, and from scrap prices effective September 1986.

Rehabilitation

The rehabilitation cost required to upgrade track for continued future operation was calculated for three lines: the abandoned Moscow-Arrow branch; the Palouse-Bovill line (W&IM) because of its current 12-mph speed limitation; and the portions of the Pleasant Valley Branch in Option 1, between Winona and Willada, and Option 4, between Oakesdale and Seltice, because of lightweight rail. Because this would require an additional capital investment, an additional expense item of interest at 14 percent as return on investment was added to the operating expenses for these three lines.

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