VI. RAIL INVESTMENT EVALUATION PROCEDURES

As stated in Section V, it is recommended that Alaska adopt analytical methodologies that are suitable for evaluating rail line extension proposals and for evaluating other public sector investments relative to the rail mode. This Report Section describes these recommended methodologies.

A. Economic Evaluation Principles

It is recommended that Alaska utilize cost/benefit analysis when making its decision concerning the appropriateness of a major public investment relative to the rail mode. Such an approach, based on sound economic principles, provides a proper framework by which rational decisions can be made.

The economic principles and techniques described herein, however, are designed as quidelines only. There are some project types that lend themselves to such analysis; in other instances, the project types are not suitable for such analysis or time and data limitations might prevent these quidelines from being precisely applied. Since most major investments lend themselves to such analysis, such analysis is strongly recommended for major projects.

1. Economic Evaluation Concept

The suggested approach is to quantify the costs of implementing the project, to quantify the benefits expected to accrue from the project, and to compare the costs and benefits using standard economic evaluation procedures.

a. Frame of Reference

The principal thrust of rail line evaluation is to determine the extent of the impacts of various transportation options on all parties involved in a rail line issue. This includes the owning railroad, the users (shippers/receivers) of rail service, the communities through which the rail line passes, and the total State and its residents. In this sense the frame of reference is the total State, and all of its residents and entities.

b. Benefits and Costs

The costs are the economic costs (resource consumption) of building the rail project. Costs include land and equipment acquisition, labor and material, but do not include railroad operating costs since such costs are included in the benefit calculations (as either positive or negative benefits depending on whether the net costs are positive or negative). The costs are expressed in economic resource terms and are tabulated by expected year of outlay.

The rail project benefits comprise quantifiable economic gains due to project operation, including cost savings (operating cost savings), induced payroll, local expenditures on material and equipment, and, others. The benefits are also estimated by year of occurence, typically over a 20 to 50 year time period.

c. Benefit and Cost Comparisons

The cost and benefit streams are expressed, by year, over the project's anticipated operational lifespan. All are expressed at constant price levels (exclusive of future inflation). The costs and benefits are then compared using any of three indicators of economic feasibility, as follows:

* Discounted Benefit/Cost Ratio -- All future benefits and costs are discounted utilizing an appropriate discount rate. The total discounted benefits are then divided by the total discounted costs, and the resulting ratio is used to judge feasibility, e.g., if the ratio is greater than 1.0, the venture is deemed economically feasible.

* Net Present Value -- Using this indicator of feasibility, the future benefits and costs are discounted, and the total discounted costs are subtracted from the total discounted benefits. If the difference is a positive value, the venture is deemed economically feasible.

* Internal Rate of Return -- This indicator of feasibility compares the costs and benefits and finds that discount rate at which total discounted benefits equal total discounted costs. If the resultant discount rate exceeds the opportunity cost of capital, the venture is deemed economically feasible.

Typically any or all of the above indicators of feasibility can be used, with similar results. These indicators of economic feasibility can and should be used for any of the evaluations of major State investments in the rail mode -- as long as the project's economic benefits and costs can be properly quantified.

2. Economic Principles

To utilize the above methods, a variety of analysis principles must be adopted. Examples include the following.

a. Price Levels

All costs and benefits should be expressed at a common year's price levels, e.g., the current year. This means that future inflation is not included in the calculations.

b. Opportunity Cost

The opportunity cost concept should be used in any economic evaluation of possible State investment. It can be defined as

the value of an alternative foregone in order to achieve a particular objective. In other words, the value of a resource used in a rail line project is the maximum contribution that the resource would have made if it had been employed in the production of some other good or service. As an example, labor which would otherwise be unemployed might be used on a rehabilitation project. Since no projects or services have to be foregone to put this labor to work on the project, the opportunity cost of labor, in this particular situation, would be zero. This is an extremely important concept in the overall economic evaluation process.

c. Shadow Prices

"Shadow prices" are defined as the value of the contribution to the State's basic socioeconomic objectives made by any marginal change in the availability of commodities or factors of production. Shadow prices, rather than market prices, should be used anywhere in which distortions may be expected to persist; they are not the equilibrium prices that would prevail in a distortion-free economy. Where possible, shadow prices should be applied to cover the worth of social benefits or losses that are either unpriced by the market or are artificially priced. For example, the use of a shadow price for crew wages is important for evaluating the labor-savings impact of a rail line improvement. The applicable monetary wage may be associated with the process of collective bargaining and, therefore, not represent the true opportunity cost of the resource. Consequently, an adjustment to prevailing market prices may be required in some circumstances.

d. Discount Rate

One interpretation of an appropriate discount rate is an estimate of the average rate of return that is expected on private investments before taxes and excluding inflation. This interpretation is based on the concept that the alternative to the capital investment by government is to leave the capital in the private sector. Alternatively, if the alternative use for the funds is a different government project, then the discount rate should be the cost of State government borrowing.

In recognizing that nominal discount rates reflect both the effects of inflation and the true opportunity cost of money, and since all costs and benefits will be expressed in constant dollars (exclusive of inflation), it follows that only the real discount rate reflecting only opportunity cost will be used. A nominal discount rate equals real return e.g., 4%, plus inflation expectation, e.g., 7%, plus risk, e.g., 2% for a total of, e.g., 13%. When using constant price levels, the real (as opposed to the nominal) discount rate in this example is 6%. In Alaska, a real discount rate of 4% to 6% is suggested, given today's economic climate.

e. Project Life

Both the expected physical life and the possibility of technological obsolescence serve as upper limit parameters in estimating the life of a project. The critical determinant is the useful life of the project. Alternatively, some project analysis periods should be defined as the period over which demand for service and service provision are assured.

f. Salvage Value

Salvage value of materials and/or other items used in the assistance project remaining at the end of the project period becomes a benefit of having implemented the project. These values are estimated by computing the life of the project component for the conditions under which it will be utilized and determining the life remaining at the end of the project term.

g. Intangible Benefits and Costs

Project alternatives will sometimes have identifiable impacts that cannot be quantified but are still relevant to public investment decisions. Many projects may also have significant environmental or energy impacts that can be quantified, but cannot be incorporated in a standard measurement of economic feasibility. The general economic conditions which prevail in a community may also be an important consideration, e.g., if the project would change the lifestyle of the community's residents, this must be evaluated. State or local plans, goals, or policies that reflect the significance of intangible benefits and costs may also be relevant. Those factors which can be quantified, along with those which cannot, should be incorporated into a general discussion but not included in the formal benefit/cost assessment.

h. Distribution of Benefits

Finally, the distribution of benefits or disbenefits could also be considered. While benefits may accrue to the local community, (to the disbenefit of another Alaska community), they are not measures of economic efficiency from a State viewpoint and are not quantified in the analysis. Thus the distribution of benefits and disbenefits, who wins and who loses, is not

tabulated in a rigorous accounting approach, but are specified and listed by the groups of impacted parties.

3. Evaluation Methods by Project Type

The State of Alaska could invest in any of a variety of railroad ventures or projects. Some project types lend themselves quite well to the types of economic analysis described herein; others do not.

a. Project Types Suitable for Economic Evaluation

Three example project types that are well suited to economic evaluation are:

* Rail Line Extensions -- Any significant new rail line constuction should be subjected to a rigorous economic evaluation (see this Report Section C).
* Rail Efficiency Projects -- Any significant project that is intended to help railroad operations and reduce costs for the benefit of rail users and the State economy can be subjected to the economic evaluation process, but in a slightly different manner than the typical rail line extension project.
* Rail Line Abandonments -- The abandonment of a rail line or rail service has an economic evaluation methodology which has come to be a standard FRA-approved approach.

The principles used to assess each of the above project types are similar, although the details vary. A method for each is presented herein.

b. Project Types Not Suitable for Economic Evaluation

While economic evaluation methods are completely appropriate for some projects, there are some projects wherein the processes are less suitable. These include:

* Small projects wherein such detailed analysis is not warranted
* Safety-oriented projects
* Pure public policy projects
* Others wherein economic benefits cannot legitimately be quantified.

B. Rail Line Extension Evaluation Methodology

If the State were to seriously consider extending the railroad to presently unserved regions, it presumably will be doing so for one or both of the following reasons:

* Develop a natural resource area, and carry the commodity out on the new rail extension.
* Use rail to access new regions of Alaska, for developmental and possibly other purposes.

In each case the rationale would be economic development (of some type) and consequently the extension(s) are well suited to the application of economic evaluation, as long as the economic evaluation method is based on economic development principles.

1. Circumstances Involving State Investment in Extensions

Construction of a rail line in the United States by State government is a most unusual occurrence, since such funding and construction is perceived to be a proper function of the private sector. In Alaska, however, the Alaska Railroad is not private, and the private sector has not built such line extensions for a long time in Alaska.

a. When State Should Not Build an Extension

It is suggested herein that there are instances wherein the State should not fund and build a rail line extension. Situations where such a "no build" decision is proper include:

* Sometimes if a proposed rail line were to serve the interests of only one user, e.g., a natural resource developer, a state might not offer to build a rail line to serve that single user since, to do so, might give the appearance that the state would provide a "subsidy" to that single private firm. However, the State should consider such events on a case-by-case basis, since the State's residents might gain appreciably by a single user line, e.g., the "Red Dog" example, since the overall project might be of great economic advantage to the State.

* If the total development (mine, processing, transport, etc.) is capable of being financially feasible, it would appear that the private developer would build the rail line as part of the venture, without State assistance.

* If the products to be carried are of sufficient value and volume to pay rail rates sufficient to cover the railroad operating costs and debt recovery, the rail element is therefore feasible and the Alaska Railroad could undertake the extension project without State funding.

* If the overall project is not economically feasible.

b. When State Might Consider Building an Extension

If the above are perceived as valid practices, it then follows that the State of Alaska should become involved in funding and building rail line extensions when a series of other circumstances are present, including:

* There will be more than one rail user, so that the benefits are spread over numerous participating entities, and
* The rail line (construction and operation) will not be a self-liquidating venture and therefore needs outside capital assistance, and
* The total development will not occur unless outside (State) assistance is made available, and
* It is in the best interests of the State and its residents to make the necessary funding commitment to enable the project to be undertaken.

The last element is the crux of the issue -- "When is it in the State's best interest to commit resources to rail line extension development of this type?"

2. State Evaluation Perspective and Evaluation Concept

If State of Alaska funds are to be used to build a rail line extension, it should be because the State will be better off with the extension (and the expenditure) than without it. In this sense, the rail extension must satisfy the interests and objectives of the State.

a. The State Perspective

The evaluation process should take the perspective of the total State; effectively, the State should be viewed as an entity, (e.g., a company), and the project should be done only if the entity is better off with than without the project. When one project is undertaken using State funds, that means that another project is not undertaken or that money is taken from the individual residents and transferred to the project. This choice of what to do with public funds has consequences for employment, output, consumption, savings, earnings, income distribution, equity and a wealth of other factors.

b. Rail Extension Profitability

If the State were a private company, it could express its goal as profit maximization and then evaluate the project in terms of total profits. While the State is not a private company, it is suggested that the extensions should still be evaluated according to the profit criterion -- but that State profits should be defined to include all things that have benefit, rather than merely bottom line money. In this sense, State benefits could include, among others:

* Aggregate consumption (standard of living)
* Income distribution (equity)
* Employment (reduction of unemployment and under employment)

* Self-reliance (reduce State trade deficit)
* Increase in tax base
* Others

If any of these are improved, the State is perceived to "benefit." If these aggregate economic benefits equal or exceed the project's economic cost, the project is said to be feasible, from the State's perspective.

3. Social Benefit/Cost Analysis

If the State has already decided to penetrate an inaccessible area but the only decision is how (highway or rail), the evaluation is done on a least total cost basis. The total costs of building and operating the road are compared with the total costs of building and operating the railroad. If the decision is whether it is feasible to build a rail line only, and the purpose is to develop an area or a resource that otherwise could not be developed, then the economic development principles apply rather than the transport efficiency principles.

a. Cost and Benefit Perspective

Almost any rail extension project will include both public and private funds. For example, while public funds might be used to construct a rail line, private funds will likely be used to construct the coal mine, to provide the infrastructure necessary to mine the coal (electricity, housing, etc.), and to build other developments such as associated agricultural development.

For purposes of cost/benefit analysis, does the analyst include only the public costs, e.g., rail line construction, or all costs, e.g., the railroad, the mine, all infrastructure, etc? Either position is technically acceptable, as long as the

benefit calculations are tailored to the cost perspective definition. For example, if only the public railroad costs are included, it is then not acceptable to include the coal mine development as benefits. Therefore, to avoid having to distinquish between benefits attributable to the public sector investment and those attributable to the private sector, it is suggested that the analysis be as broad as possible -- to include all costs and all benefits (public and private). In this way, the analysis determines whether the total project (not just the railroad) is economically feasible, from the overall State perspective.

b. Economic Costs of Implementation

The costs include only the capital investment items, inclusive of land, labor and material. The cost side of the B/C equation does not include any type of operating costs or cost savings, since such items are included on the benefit side of the equation (as positive or negative benefits).

The capital costs are not simply the market prices paid. Instead, since it is an economic evaluation, the costs are calculated using three economic principles:

* Transfer Payments - The costs should only include those items that involve resource consumption. Costs of merely transferring monies from one place to another are not to be included, e.g., tax payments are merely a transfer from the private sector to the public sector and are therefore not included as a capital cost.

* Opportunity Costs - The cost is equal to the opportunity foregone, rather than the actual payment, e.g., the employment of a previously unemployed person has no economic cost.

* Shadow Prices - If any factors of implementation are artificially priced, the estimated shadow price should be used (the shadow price could be higher or lower than the market price).

All capital costs are depicted by the estimated year of occurrence, over the lifespan of the project.

c. Economic Benefits of Implementation

The economic benefits are equal to the value of goods and services produced, less the exported from Alaska costs of producing them. In the case of a rail extension that penetrates a new area thereby enabling development of a major coal mine and an agricultural area, the benefits equal the value of the coal and the agricultural products less their costs plus resultant Alaska tax receipts and Alaska resident income. Like the capital costs, the benefits side of the equation also reflects the opportunity cost and shadow price principles.

The economic benefits depict money that will exist in Alaska that would not exist if the project were not undertaken. For example, Alaskan corporations would have profits not otherwise available, the project will generate taxes for the State and its local jurisdictions, the project will provide jobs and generate personal income that otherwise would not exist, and so on.

d. Cost and Benefit Comparison

Once the costs and benefits are calculated, it is a simple process to compare them. An example B/C comparison is depicted on Table 6-1. This table depicts a hypothetical rail line extension that would serve a hypothetical new coal mine and agriculture area. The economic costs of building the hypothetical rail line are seen to be $460 million, spread over 4 years, and the mine's costs and the agricultural investment are similarly spread over their period of implementation. Recurring major investment costs (major rehabilitation) are also shown

TABLE 6-1
EXAMPLE RAILROAD EXTENSION
ECONOMIC FEASIBILITY CALCULATION
($ MILLIONS)
DISCOUNT 4.0%

	COSTS					BENEFITS					
YEAR	RR	MINE	AGR.	OTHER	TOTAL COST	PROFITS	TAXES	INCOME	OTHER	TOTAL BENEFIT	NET
1985	0.0	0.0	0.0	10.0	10.0	0.0	1.0	3.0	1.0	5.0	-5.0
1986	10.0	20.0	4.0	15.0	49.0	0.0	1.0	4.0	2.0	7.0	-42.0
1987	50.0	40.0	8.0	10.0	108.0	0.0	1.0	4.0	2.0	7.0	-101.0
1988	200.0	60.0	10.0	10.0	280.0	1.0	3.0	6.0	3.0	13.0	-267.0
1989	200.0	60.0	10.0	10.0	280.0	1.0	3.0	6.0	3.0	13.0	-267.0
1990	0.0	0.0	0.0	0.0	0.0	5.0	5.0	15.0	5.0	30.0	30.0
1991	0.0	0.0	0.0	0.0	0.0	5.0	5.0	15.0	5.0	30.0	30.0
1992	0.0	0.0	0.0	0.0	0.0	6.0	5.0	15.0	5.0	31.0	31.0
1993	0.0	0.0	0.0	0.0	0.0	6.0	5.0	15.0	5.0	31.0	31.0
1994	0.0	0.0	0.0	0.0	0.0	7.0	6.0	16.0	5.0	34.0	34.0
1995	0.0	0.0	0.0	0.0	0.0	7.0	6.0	16.0	5.0	34.0	34.0
1996	10.0	5.0	2.0	2.0	19.0	8.0	6.0	16.0	5.0	35.0	16.0
1997	0.0	0.0	0.0	0.0	0.0	8.0	6.0	16.0	5.0	35.0	35.0
1998	0.0	0.0	0.0	0.0	0.0	9.0	6.0	17.0	5.0	37.0	37.0
1999	0.0	0.0	0.0	0.0	0.0	9.0	7.0	17.0	5.0	38.0	38.0
2000	0.0	0.0	0.0	0.0	0.0	10.0	7.0	17.0	5.0	39.0	39.0
2001	0.0	0.0	0.0	0.0	0.0	10.0	7.0	17.0	5.0	39.0	39.0
2002	0.0	0.0	0.0	0.0	0.0	10.0	7.0	18.0	5.0	40.0	40.0
2003	10.0	5.0	2.0	2.0	19.0	11.0	7.0	18.0	5.0	41.0	22.0
2004	0.0	0.0	0.0	0.0	0.0	11.0	7.0	19.0	5.0	42.0	42.0
2005	0.0	0.0	0.0	0.0	0.0	11.0	8.0	19.0	5.0	43.0	43.0
2006	0.0	0.0	0.0	0.0	0.0	12.0	8.0	19.0	5.0	44.0	44.0
2007	0.0	0.0	0.0	0.0	0.0	12.0	8.0	19.0	5.0	44.0	44.0
2008	0.0	0.0	0.0	0.0	0.0	12.0	8.0	20.0	5.0	45.0	45.0
2009	0.0	0.0	0.0	0.0	0.0	13.0	8.0	20.0	5.0	46.0	46.0
2010	10.0	5.0	2.0	2.0	19.0	13.0	8.0	20.0	5.0	46.0	27.0
2011	0.0	0.0	0.0	0.0	0.0	14.0	8.0	20.0	5.0	47.0	47.0
2012	0.0	0.0	0.0	0.0	0.0	14.0	8.0	20.0	5.0	47.0	47.0
2013	0.0	0.0	0.0	0.0	0.0	14.0	8.0	20.0	5.0	47.0	47.0
2014	0.0	0.0	0.0	0.0	0.0	15.0	8.0	20.0	5.0	48.0	48.0
2015	-230.0	-90.0	-16.0	-27.0	-363.0	15.0	8.0	20.0	5.0	48.0	411.0
TOTAL	260.0	105.0	22.0	34.0	421.0	269.0	189.0	487.0	141.0	1086.0	665.0
PRESENT VALUE	348.9	140.7	26.8	45.8	562.2	130.0	98.5	257.5	78.3	564.3	2.2
BENEFIT/COST RATIO											1.00
INTERNAL RATE											4.02%

every 7 years. The project is shown to operate through the year 2015, with suitable salvage values taken in that year for remaining assets.

According to this hypothetical example, the total project has a B/C ratio of 1.0, a Net Present Value of $2.2 million, and a rate of return of 4.02%. According to these economic feasibility indicators, the project is just barely feasible.

e. Test of Financial Feasibility

While the overall project is deemed feasibile, one other major hurdle must be addressed. That is, the commercial viability of the various component parts. For example, is it certain that the coal can be sold at the assumed price? What risk is involved? Can the railroad cover its operating costs?

These issues are financial in nature rather than economic, but they are of equal importance since the economic benefits cannot occur unless the project operates. Therefore, a complete financial analysis is also required and, in fact, is included in the economic analysis in order to calculate the hypothetical example's "profit" benefits.

C. Transport Cost and Efficiency Evaluation Methodology

A second situation within which the State of Alaska might consider making a railroad investment (in addition to what the Alaska Railroad Corporation is investing) is if such an investment would reduce the railroad's costs and those cost savings would be passed on to the railroad's users who in turn would ship more, or employ more people, or stay in business. In this instance the null option (the "do nothing") is less efficient service and thus higher total costs.

A methodology which Alaska could use to evaluate such a prospective investment is as follows.

1. Efficiency Evaluation Methodology

The efficiency methodology will be used on projects in which rail service will exist in both the "project" case and the "null" or do nothing case. However, the costs of providing the rail service in the null are higher and therefore so are the rail rates charged. It is conceivable that the State might make an investment based on such an efficiency argument.

The methodology to be used recognizes three types of impacts which, when summed, equal total impact:

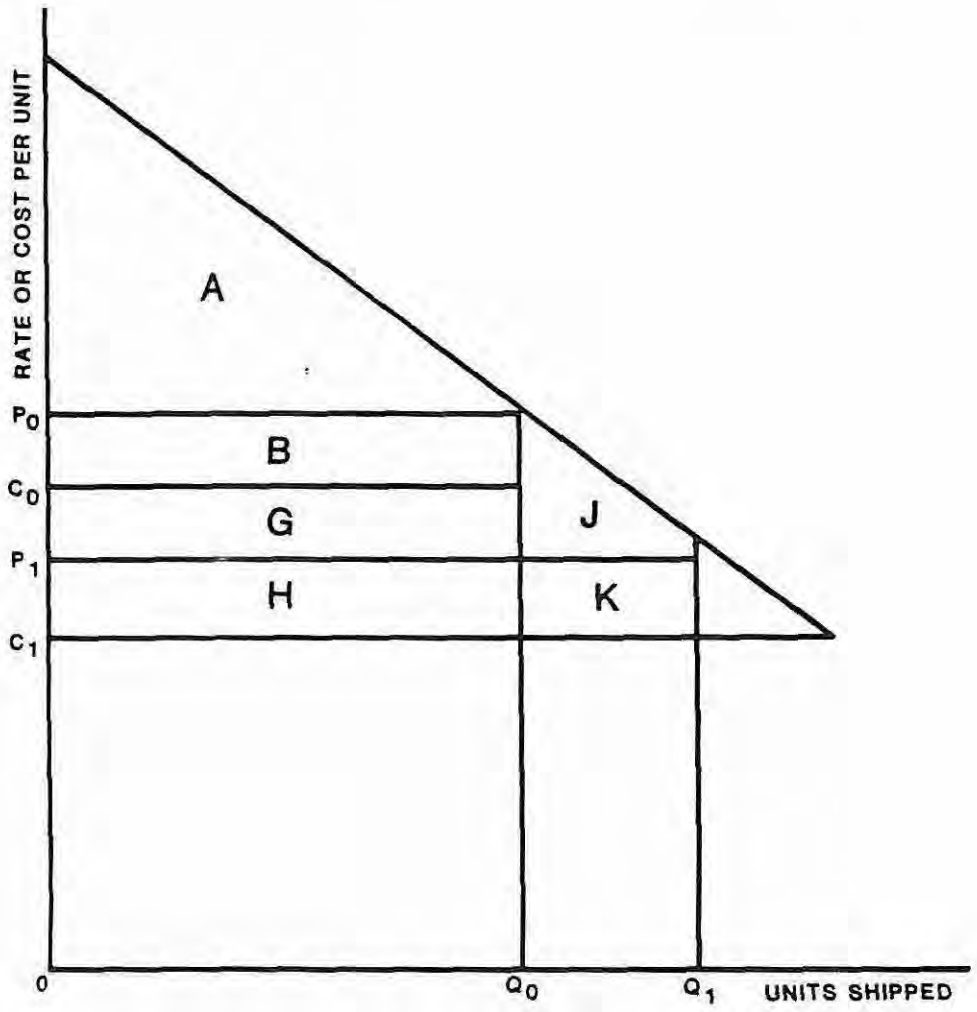
* Benefits from transport rate and cost changes
* Benefits from income gains
* Benefits from indirect income gains

a. Benefits from Transport Rate and Cost Changes

The economic benefit from a cost reduction on existing traffic equals the per ton cost relative to tons affected. The benefit from new traffic that is induced by the project to travel by rail equals the consumer surplus and producer surplus value.

The economic benefit calculation is best illustrated with the help of Figure 6-1 which depicts the transport cost formula and how that formula is calculated.

In some instances it may not be possible to determine whether a rail project will generate new traffic. In such instances both consumer and producer surplus will be zero, and the State likely should not invest in this circumstance. Since the bene-



$$(B_1 - B_0)_t = Q_0 (C_0 - C_1) + 1/2 (P_0 - P_1) (Q_1 - Q_0) + P_1 - C_1) (Q_1 - Q_0)$$

Where:

P = unit rate

C = unit cost

Q = units shipped

$(B_1 - B_0)_t$ = The gain in benefits from changed transport rates and costs of alternative 1 over alternative 0.

$Q_0 (C_0 - C_1)$ = Cost reduction on existing traffic (areas G + H). If data is available, cost reductions may be calculated for each shipper and commodity. However, in many instances only the total cost reduction on existing traffic will be available.

$1/2 (P_0 - P_1) (Q_1 - Q_0)$ = Consumer surplus on new traffic (area j)

$(P_1 - C_1) (Q_1 - Q_0)$ = Producer surplus on new traffic (area k)

SOURCE: Benefit-Cost guidelines, Rail Branch line continuation Assistance Program, U.S. Department of Transportation

METHOD OF CALCULATING TRANSPORT EFFICIENCY SAVINGS

FIGURE 6-1

fits of changed rates and costs will occur at different times during the planning horizon, an appropriate discount rate is used to convert all such benefits to a single present value.

b. Benefits from Direct Income Gains

If the rail investment (efficiency gain) is such that it enables or causes increased production and shipment, it also likely will cause increased employment. Employment in the methodology is measured as total income less opportunity cost. Total income comprises wages and fringe benefits on the part of the employee, profits on the part of the business, and local expenditures made by the business to the local businesses.

Such income gains are estimated for each relevant year at constant price levels.

c. Benefits from Indirect Income Gains

The direct income gains (local payroll, local expenditures, local profits) then induce additional employment and payroll and local expenditures in service and service-related industries that the community is able to support. This effect is known as the "multiplier," and should be assessed using Alaska-specific multipliers from the RIMS-II input/output model as developed by the U.S. Department of Commerce, Bureau of Economic Analysis.(4) The multiplier coefficients are applied by industry type, to the direct income gains.

d. Economic Analysis

The annual economic benefits (transport plus direct income gains plus indirect income gains) are then compared with the

capital costs and expressed in terms of the standard feasibility indicators -- NPV, B/C and IRR.

D. Abandonment Evaluation Methodology

Under the conventional Local Rail Service Assistance program rail planning process, most state projects deal with branchline abandonments. While ARR abandonments in Alaska could conceivably occur sometime in the future, there are currently no impending abandonments and abandonment of trackage is not currently envisaged on the ARR. On the other hand, the White Pass and Yukon Railway is no longer operating, and abandonment could occur on that railroad..

A methodology for evaluating abandonments is set forth as follows, to ensure FRA approval of the 1985 Rail Plan and to ensure that the State has an approved methodology for use if the need ever arises -- on the WP&Y and/or the ARR.

1. Abandonment Analytical Methodology

If the State of Alaska were to assess an abandonment issue, it would do so in an impartial manner in order to compare the relative economic benefits of line assistance with the relative cost of such assistance. The basic analytical tool would be benefit-cost analysis. However, other analyses would also include economic growth potential, environment, and energy implications. Benefits are either increases in the value of output or real reductions in economic cost. Costs are either program outlays or economic disbenefits associated with an assistance project.

Alaska's benefit-cost methodology is based on the methodologies developed in other State Rail Plans and as approved by the Federal Railroad Administration.

a. General Analytical Methods

A branchline abandonment would be evaluated in terms of benefits, costs, and other factors.

Benefits - If a line is abandoned, then the former rail users and the surrounding community can experience higher costs in order to move their product or to receive goods from elsewhere. Additionally, they can also experience employment, tax, personal income, and other effects. As used in this methodology, benefits are defined as those incremental impacts which could occur after abandonment but which could be prevented by the continuation of rail service. For lines in the 0-3 MGTM per mile group (0-5 MGTM at the discretion of the U.S. Secretary of Transportation) that could be considered for rehabilitation assistance, benefits are defined in terms of the improved service levels that would likely follow after rehabilitation as well as railroad operating savings and the benefits of abandonment avoidance (for those lines which would likely otherwise have been eventually abandoned).

It is especially important to define the perspective from which the analysis is made. For example, it might be argued that the abandonment of an unprofitable branch line could cause a shipper or receiver to close with a resultant loss of employment and personal income and increased driving distance for the shipper's customers or suppliers. From a local viewpoint, this closure has a large impact because the user might have been the only similar business for miles. From the state or national perspective, however, the loss in one community might be offset by increased railroad efficiency which could benefit many communities, or might cause the business to reopen in another community. The possible benefit to other communities is, of course, of little comfort to the town that has lost a business

because of a rail abandonment. Nevertheless, the viewpoint adopted for use in this analysis is that of the State. Where a transfer cost or cost-savings is made, e.g., between one community or another, the transfer is noted but is not included as a statewide cost or benefit unless there is a net difference.

Costs - Because rail lines in Alaska will not be abandoned unless they are unprofitable or otherwise in need of assistance, the cost utilized is the total amount of public or other funds necessary to preserve rail service or to mitigate the effects of rail abandonment. Such assistance could be applied to the lines in several ways:

* Annual Operating Subsidy - Direct funds could be offered to the railroad to keep the line open. These funds would likely equal an amount necessary to offset the difference between the revenues attributable to the line and the costs attributable to the line. The subsidy amount would include "normalized maintenance" (defined later), as well as necessary capital contributions. Operating subsidy, however, is short term in nature, does not represent a long term solution, and is an unlikely prospect in Alaska. Furthermore, operating subsidies are no longer eligible for FRA-administered LRSA funds.

* Rehabilitation - If the railroad is seeking abandonment because of the poor condition of the rail line, funds could be offered in an amount required to place the line into a stable physical condition so that long term operating efficiencies can be obtained. As discussed later, rehabilitation is considered to be a one-time major effort which is different from routine annual maintenance.

* New Construction - Sometimes service can be retained by constructing a connection track to another rail line, or impacts can be reduced by construction of a team track at a nearby location where one does not now exist. The assistance would be an amount required to build new rail facilities such as sidings or connection tracks.

* Substitute Service - To alleviate the adverse impacts of an abandonment, assistance could be offered to provide alternative means of transport in a manner less expensive than continuing rail service.

* Acquisition - Some states might find that the only solution is to acquire the rail line. This is not currently applicable to the ARR, however, since the Alaska Railroad is already state-owned, but could be applicable to the WP&Y.

Each of the above assistance types would be evaluated for the subject rail line(s) if an initial analysis indicated that such assistance might be appropriate or at least have a conceivable chance of success. Acquisition assistance would be evaluated based on approximate values of right-of-way and the net salvage value of the track and other facilities. This value would be considered as the starting point for negotiations if an outside party wanted to buy the line for operation by another carrier or for preservation for future use. To operate such a line by another carrier in most cases may also necessitate rehabilitation. Where operation by another carrier is contemplated, a preliminary estimate of that operator's profit and loss on the line would be made.

Benefit/Cost Ratio - The benefits and public costs of continued, restored, or improved rail service would be evaluated by dividing the present value of the benefits by the present value of the public costs. Benefits and costs utilized for this calculation would be the present value of the items discounted at 4 percent for a 15-year period or the service life of the alternative, whichever is less. The discount rate of 4 percent is deemed consistent with calculating benefits and costs in terms of constant dollars(1). This discount rate reflects the uninflated real cost of capital. Benefit/cost ratios that exceed 1.0 indicate that, from a public policy viewpoint, expenditure of public funds is justified because benefits exceed costs. Furthermore, the benefit/cost analysis allows for the comparison of alternative investments.

Other Analysis Criteria - A strict dependence upon benefit/cost analysis can sometimes overlook other important evaluation criteria. For example, a benefit/cost analysis based on historic traffic levels which have been distorted due to external factors such as weather or unusually low or high demand could lead to inappropriate conclusions. Environmental and energy factors are generally not included in the benefit/cost analysis. Likewise, the potential for area growth and the level of local interest in service preservation are issues which should be addressed. These other considerations would also be evaluated to the extent possible for the line.

Economic Growth and Traffic Potential - It is possible that the demand for rail service could grow as an area grows economically. This could take the form of increased traffic from existing users or the attraction of new users. Even though the demand for increased rail transportation on these branch lines is speculative, it nevertheless would be identified to the extent possible and evaluated accordingly. It would not be an analysis factor, however, unless there is clear evidence to warrant a prediction.

Environment - Since the railroad system has been in place for many years, it is likely that the environment has long since adapted to the presence of a rail line right-of-way. Consequently, the loss of rail service could have two environmental effects. First, the removal of the right-of-way could affect the plants and animals living along the line where typically the undergrowth and trees provide good cover. Second, the substitution of truck traffic for rail traffic could cause net decreases (usually marginal) in air quality along surrounding roads.

Energy - Another factor that would be considered is the total energy consumption changes that can occur after branch

line abandonment. Rail transportation is generally considered to be more energy efficient than trucks. For long distance movements by long trains carrying thousands of tons, this is true. Typical branch line operations, however, consist usually of just a few cars being carried at a time. Under these circumstances, train operations are generally not very fuel efficient. When a line is abandoned and trucks take over the transport function, the net change in fuel consumption can be positive or negative depending upon the differences in routing patterns and distances for track movements before and after abandonment.

Local Level of Interest - A final consideration in the evaluation of possible assistance to prevent abandonment, or to mitigate the adverse impacts of abandonment, would be the amount of interest that affected communities exhibit in service continuation. This interest would be ascertained via public involvement and through discussions with rail users and others and in the extensiveness of local willingness to make a financial commitment in the rail line.

6. Specific Analytical Techniques

The specific evaluation and analysis methodologies that would be applied to possible branch line abandonments are described as follows.

Location Characteristics - Each rail line would be located and identified on individual maps so that the relationships between the branch line and other transportation alternatives could be understood.

Status - Any rail lines considered for abandonment (currently there are none) would be described in terms of current status.

Issues - The issues concerning the line would be analyzed from three different viewpoints. First the railroad viewpoint would be analyzed. This information would come from written and oral information provided by the carrier, as well as this study's analysis. For example, a reason for potential abandonment might be that the line generates inadequate revenues to cover operating expenses. Other reasons might have to do with the physical condition of the line, which precludes profitable operations. Second, from the viewpoint of railroad shippers and receivers, the loss of rail service means that they lose direct access to an important mode of transportation. It can also mean that a business can close. Another viewpoint commonly expressed (elsewhere) is that poor rail service has led to a shift to greater truck use. These and other opinions of the rail users would be obtained from interviews and discussions with the rail users located along the subject rail line. Third, the viewpoint of the community would be expressed in terms of the potential effects of abandonment on growth and development.

Rail Line Inventory and Condition - One of the common reasons that branch lines are potentially subject to abandonment is that freight revenues have historically been inadequate to allow a level of annual maintenance sufficient to keep the lines operating efficiently or to allow for the replacement of obsolete rail which cannot handle modern loads. That is, reduced revenue can lead to deferred maintenance which in turn can cause revenues to be depressed even more as service efficiency deteriorates.

In keeping with Alaska's Rail Planning goals and objectives, the State will focus its possible assistance on long term solutions rather than courses of action that alleviate a problem situation for just a few years. Accordingly, inspections of the lines would be carried out in the field. In addition to the inspections, information would be obtained from railroad-

provided track charts and other data sources. The purpose of these inspections would be to inventory the line and to provide a basis for the estimate of costs necessary to rehabilitate the line to suitable standards which then could be sustained in the long term through normal annual maintenance procedures.

Information that would be obtained from the physical inventory and from technical documents would include:

* Rail - Weights in terms of pounds per yard; miles of each weight; rolling dates; physical condition.
* Ballast - Type and condition.
* Ties - Condition.
* Other Track Material - Type and condition of joints, tie plates, and anchors.
* Side Tracks - Location, length, type, and condition.
* Bridges/Drainage - Number, length, type, and condition.
* Road Crossings - Number, surface, type of protection, and condition.
* Railroad Buildings and Other Facilities - Number and type.
* Limitations on Operations - Timetable speed, maximum allowable gross weight, and special operating rules.

Transportation Service - Existing rail and highway facilities in the area of each line would also be documented. Railroad operating schedules would be described, and the location and road distance to alternative rail service (team track locations and loading/unloading facilities) to the extent that they might exist in Alaska, would be presented. Alternative truck service would be analyzed with respect to the type of freight traffic currently being carried by rail.

Rail Line Use - Detailed traffic statistics for the line would be provided by the railroad. These statistics would then be verified via discussions with the various users. These statistics would be summarized and discussed in terms of:

* Carloads - Number of origins and terminations by year and station.

* Tons - Total weight of origins and terminations, by year and station.
* Commodities - Type and number of carloads and tons by year and station.
* Freight Revenue - Amount by year and station.

From the above data certain comparative statistics would be calculated including ton-miles, carloads per week, carloads per mile, and revenue per mile.

Impacts of Abandonment - The impacts of abandonment in this proposed methodology would analyze the impacts of a possible abandonment or service elimination on three groups: the railroads, the shippers and receivers, and the surrounding community.

c. Railroad Impacts

From the railroad's viewpoint, the revenue and costs associated with the line are the line's most important characteristics. Because any line abandonment candidate would be generally unprofitable or marginal, the railroad can prevent additional losses by abandonment or service reduction. The railroad's profit or loss from operations would be calculated. Similarly, the railroad's "opportunity cost", as represented by the line's return on value, would be calculated. The calculation format is as depicted in Table 6-2. Following is a brief description of the cost and revenue data items contained in the table.

Revenues Attributable For:

1. Freight Originated and/or Terminated on Branch:
   The reported amount of gross freight revenue that the owning railroad derived from originating and terminating traffic. (Does not include revenue derived by other carriers participating in the haul such as barge lines or trucking companies).

2. Freight Traffic Interchanged:
The amount of revenue attributed to traffic which passes over the line but does not originate or terminate on the line (originates and terminates via another mode).

3. All Other Revenues and Income:
Demurrange revenue obtained by charging shippers and receivers for holding freight cars longer than allowed by tariff and miscellaneous revenues such as for switching, rents and leases, etc.

4. Total Revenues Attributable:
The sum of lines 1 through 3.

<u>Avoidable Costs For</u>:

5. On-Branch Costs:
The total costs attributable to operations on-branch. This is the sum of lines 5a through 5j.

5a. Maintenance of Way and Structures:
The annual costs necessary to keep a line at a particular operating standard. The railroad's provided actual expenditures for a single year is used if acceptable. While the actual expenditure as reported by the railroad is shown (if available), it should be realized that a cost of $5,000 to $6,500 per mile, depending on the traffic the line is subjected to and the number of structures on the line, is more representative of a normalized value. This cost provides insight into the deferral of maintenance on the line.

5b. Maintenance of Equipment:
The cost of equipment repair and depreciation.

5c. Transportation:
The cost of crews, fuel, supplies, crossing protection, derailment, and other.

5d. General Administrative:
Cost of general administration related to the line.

5e. Deadheading, Taxi, and Hotel:
The cost of train crew out-of-pocket costs.

5f. Overhead Movement:
On-branch costs attributable to traffic that is neither originating or terminating on the branch.

5g. Freight Car Costs:
Payment to other railroads for car use, and cost of owning railroad equipment utilization.

5h. Return of Investment - Locomotives:
The opportunity costs of using locomotives on the branch line.

5i. Revenue Taxes:
The tax payments due to revenue received from the line's traffic.

Table 6-2

CALCULATION OF OPERATING REVENUES AND COSTS
Station 1 to Station 2

		YEAR 1985
REVENUES ATTRIBUTABLE		
1. Freight Originated and/or Terminated on Branch		XXX
2. Freight Traffic Interchanged		XXX
3. All Other Revenues and Income		XXX
4. Total Revenues Attributable (Lines 1 through 3)		XXX
AVOIDABLE COSTS		
5. On-Branch Costs (Lines 5a through 5j)		XXX
a. Maintenance of Way and Structures	XXX	
b. Maintenance of Equipment - Locomotives	XXX	
c. Transportation	XXX	
d. General Administrative	XXX	
e. Deadheading, Taxi and Hotel	XXX	
f. Overhead Movement	XXX	
g. Freight Car Costs	XXX	
h. Return on Investment - Locomotives	XXX	
i. Revenue Taxes	XXX	
j. Property Taxes	XXX	
6. Off-Branch Costs		XXX
7. Total Avoidable Costs		XXX
8. Opportunity Costs (Line 8a times 8b)		XXX
a. Net Liquidation Value	XXX	
Land	XXX	
Materials	XXX	
b. Rate of Return	XX.X%	
9. Avoidable Loss From Operations (Line 7 Minus Line 4)		XXX
10. Total Economic Loss from Continued Operations (Lines 7 and 8 Minus Line 4)		XXX

5j. Property Taxes:
Local taxes on right-of-way and other properties (if any).

6. Off-Branch Costs:
The costs attributable to branch line traffic but which are incurred at a location not on the branch line. These costs include terminal, freight car mile, freight ton mile, and loss and damage costs.

7. Total Avoidable Costs:
The sum of lines 5 and 6.

8. Opportunity Costs:
The value of fixed assets on the line which would be used for other purposes if the line were abandoned. The product of lines 8a and 8b.

8a. Net Liquidation Value:
The value of the railroad property less the cost of removal. The amount includes net salvage value and the value of the right-of-way (owned in fee simple only).

8b. Rate of Return:
The value representing the carrier's cost of capital. This value varies yearly.

9. Avoidable Loss from Operations:
Line 7 minus Line 4.

10. Total Economic Loss From Continued Operations:
Lines 7 and 8 Minus Line 4.

Rail Line Rehabilitation Costs - In addition to the profit/loss and opportunity cost estimates, the cost of rehabilitating the line would be estimated where appropriate. Rehabilitation would be estimated in cases where the railroad indicates it is desirable for continuation of service or where an upgrading of the line could possibly produce savings in railroad operations that would contribute to the profitability of the line. Unit costs for materials and labor would be determined based upon information furnished by railroad and by suppliers.

d. Railroad User Impacts

In addition to the analysis of the line from the railroad's perspective, the line would be analyzed from the viewpoint of the rail shippers and/or receivers which utilize it. Available information regarding rail users would be obtained from the railroad company. This railroad-provided information would

include the names of stations utilized by all rail customers for at least the past three years. These customer lists would be verified, and later an interview would be held, either in person or by telephone. To aid in this analysis, certain information concerning each shipper/ receiver would be compiled on a standard interview form. Included on this form would be questions relating to:

* Nature and size of business;
* Rail facilities utilized;
* Commodities shipped and/or received by rail;
* Quantities of shipments;
* Origins and/or destinations;
* Proportion of rail usage to total transportation;
* Dependency upon rail transport;
* Alternatives to present rail service;
* Reaction to improved rail service; and
* Impacts should line be abandoned.

Through use of these standard questions, insights would be obtained regarding the potential effects on shippers and receivers of a possible loss of direct rail service and the relative need for improved service.

The situation of each identified rail user would be analyzed to determine the possible effects of a loss of rail service or the reaction to improved service caused by rehabilitation. Of primary concern would be the manner in which each rail user would adjust his operation to accommodate a change in rail service. Potential business closures or relocations would be identified as well as less drastic means of adjustment.

Rail Dependency - In some cases, the rail users would be found to be relatively dependent upon rail service because of the bulk nature of the commodities involved, distances to origins/ destinations or volume of the movements. For these reasons these commodities could not be hauled practically or

economically by another mode. Other rail users might be found to be less dependent upon rail because of smaller volumes, short distances to origins/destinations, or commodities that would lend themselves to transport by other modes. Impacts of rail abandonment on such users thus would tend to be less severe. Each business which uses rail would be assessed according to these criteria, and shippers with extreme rail dependency would be identified.

Employment Impacts - Of special interest in the shipper/receiver interviews is the determination of whether or not employment levels would be directly affected should rail service be withdrawn. In a study it is impossible to predict exactly what each shipper/receiver would do when faced with loss of rail service. Some observations, however, would be made. The most extreme case of direct employment impact would be if a business were forced to close. Less severe would be the case of a business which was forced to scale down operations or forego planned expansions. In other cases, it would be possible for direct employment levels to increase because of the necessity of adding extra personnel such as truck drivers. Possible impacts in this area would be obtained in the interviews, and a total impact would be determined for each line.

Transportation Costs - The principal assessment criterion of shipper/receiver impact is the cost change brought about by a change in service. For businesses which do not close or relocate, this cost change is generally related to transport and handling costs. Businesses that lose rail service in Alaska would have to use track or barge or conceivably air, all at considerably higher cost.

These costs would be totalled for each rail user and compared against an estimate of present railroad line transport costs. The cost of alternative transportation will naturally

vary according to the specific characteristics of the rail line traffic and the available alternatives.

e. Community Impact

A final viewpoint considered would be that of the area through which the line passes. Such impacts would include implications on job, payroll, fuel, economic development and the environment.

Employment - As discussed above, abandonments sometimes have direct employment consequences. That is, loss of rail service can result in employment changes directly to the rail users. Since these impacts also have direct impacts on the communities, the total loss or gain in employment would be reported for each branch line. Just as line abandonment affects employment, it also affects the total payroll of workers in a community. Through the rail user survey, potential job losses or gains would be identified along with the wage levels of the impacted jobs.

Fuel Usage - The final quantified impact is the change of fuel usage resulting from branch line abandonment. These impacts are quantitatively addressed in the above cost analysis, but are isolated here to explain the concerns of individuals and communities concerned with energy issues. These energy impacts are two-fold: a savings of rail fuel due to the cessation of train operations and an increase in truck fuel consumption due to additional truck trip requirements. Fuel changes would be estimated utilizing energy consumption factors such as those shown in Table 6-3.

Table 6-3

ENERGY CONSUMPTION FACTORS

TRANSPORTATION	CONSUMPTION RATE (Ton-Miles Per Gallon)
Rail - On-Branch	55
Rail - Off-Branch	270
Truck - Short Haul	65
Truck - Long Haul	55

SOURCE: Assessment of Environmental Impacts Associated with Railroad Abandonment Proposals, Interstate Commerce Commission, Office of Proceedings, October, 1976.

Environmental Impacts - Finally, observations would be made to determine whether or not the loss of rail service would have significant effects on the environment. Truck traffic, of course, would increase with rail abandonment but when compared with the average daily traffic the quantity is normally insignificant. Emission levels would thus change only marginally. Other effects would be associated with line dismantling operations, and it is doubtful that any long term environmental effects would ensure.

Economic Development - The potential for community economic development in terms of suitability of the area for industrial development would also be noted.

f. Benefit/Cost Analysis

The previously discussed factors would be quantified where possible and noted and described where not. Benefits and costs

are then calculated and tabulated. For analysis purposes, alternatives for preservation of rail service are developed and compared to a base case. The base case is the null or "do nothing" alternative. It would be assumed that the null alternative would result in the eventual abandonment of the rail line under scrutiny. Consideration of substitute service assistance is assessed and compared with other user alternatives for receipt or shipment of traffic.

Potential Alternatives - After the impacts of abandonment (or service reductions due to deferred maintenance) are assessed from the three viewpoints, public courses of action would be postulated. As listed earlier, alternatives might include individually or in combination: rehabilitation, new construction, substitute service, and acquisition (by or for a new operator).

Discount Rate - As previously stated, all costs and benefits would be discounted at a rate deemed representative of the opportunity cost of funds as opposed to current interest rates where a large portion of that rate reflects inflation. A rate of 3 to 5 percent would typically be utilized.

Project Life - The life of alternative projects would be established at 15 years. This term is deemed as a desireable goal from a State viewpoint in order to consider the project as a long term benefit. The State realizes that actual project life may, subject to negotiations, be of shorter duration and project life adjustments will be made accordingly at such time as negotiations have sufficiently progressed to indicate a change in terms.

g. Project Costs

The total cost of each alternative would be estimated. This cost represents the cost to construct and/or implement the pro-

ject. Where project investment, such as rehabilitation or new construction, may have value remaining at the end of the project life, this would be taken into account by consideration of the discounted salvage value of the investment at the end of the analysis period as a project benefit.

h. Benefits

Benefits or disbenefits arising from the continuation of rail service depend on the perspective taken in the analysis. The analysis from a State perspective requires the examination of total costs avoided or gains achieved in the process. This requires consideration of the impacts of the proposed action on all parties involved. The analysis is approached from a cost standpoint as a measure of the resources devoted to the alternatives under consideration. Resource allocation is determined on an economic cost basis rather than a rate paid basis, since transport rates charged do not always reflect true or actual costs.

Transportation Benefits - Changes in transportation required due to the elimination of rail service require a reallocation of resources from one mode to another. Also resources are used in the transfer between modes. For example, commodities that previously moved on the rail line will now either be moved completely by another mode or conceivably could move to a team track at another rail station and be transloaded and then moved by truck. These methods of transportation service are the most commonly anticipated results of rail abandonment. Where users are not sure of their alternative course of action, the use of an alternate rail point and transfer by truck would be the assumed course of action.

The cost of transloading and trucking will be determined from rail user surveys; or, if the user had not done an analysis, estimated by using commodity specific unit costs derived in An Economic Analysis of Upgrading Rail Branch Lines - A Study of 71 Lines in Iowa(2). The costs would be updated utilizing the Consumer Price Index for the appropriate periods of time, and would be tailored to represent Alaska-specific costs.

From the user's viewpoint, the continuation of rail service prevents these cost occurrances; but from the railroad's viewpoint the continuation of rail service results in a cost to them of providing the service on the line which is recorded as a disbenefit. To estimate these costs, unit costs will be developed for the line based on specific costs attributable to that line. Where traffic is anticipated to be retained at another point, the costs are reduced by the anticipated costs of providing service at the alternate point. For example, traffic delivered to an alternate team track still requires switching for set out and pick up and car costs are still incurred (although they could be less if the alternate team track receives more frequent service than the branch line).

For analysis purposes, the two transportation costs are compared and the net cost is used, i.e., the difference in the two costs are considered the cost impact. The costs incurred by the users is considered a benefit and the cost incurred by the railroad as a disbenefit.

Relocation Benefits - Users dependent on rail service may be required to either relocate their entire business or some portion of it in order to avail themselves of rail service where such service continues to exist in Alaska. These cases, expected to be rare in Alaska, would be ascertained in the rail user interviews and the costs of such actions are considered a benefit of rail service retention. In the case of substitute

service assistance, those costs considered as benefits of rail service continuation then become project costs. Another type of relocation benefit occurs if a business closes and the consumer has to travel to more distant points to make purchases. When this occurs, the expense of the additional travel is considered a benefit of rail service retention.

Employment Benefits - Unemployment resulting from a business closure is effective only until such time as the former employee(s) has obtained other employment. The average length of unemployment in Alaska for those workers receiving unemployment compensation would be determined. It is also assumed that the former employee is rehired within the State of Alaska (unless information is obtained to the contrary). The measure of the benefit then becomes the employment wages for the period. Unemployment compensation is considered a transfer cost from the State perspective and as such is not a benefit or disbenefit. From a local viewpoint however, the employment loss is reduced by unemployment compensation as the compensation results in a gain or reduction of loss in the local area.

Impacts on the retail sector also occur as a result of employment changes. These impacts, however, are only measured to the extent they influence profits. An estimate of this loss(3) is adopted as 60 percent of the wages due to unemployment (a measure of the percentage of wages that would have been spent in the retail sector times an assumed profit margin of 25 percent). These impacts are only considered from a local perspective.

i. Distribution of Benefits

In order to provide a clearer picture of the alternative actions, the distribution of benefits or disbenefits would be

shown for each analysis. This permits an overview of the impacts on each group involved in the potential action. It also provides another means of evaluating the proposed action without strict reliance on the benefit/cost analysis and as such may provide insights into alternative actions where one party may be disproportionately impacted as compared to others. In this manner, for example, local impacts not taken into account by the statewide accounting stance are revealed.

This analysis would comprise a table listing the affected groups and the resulting impacts on each. As such it is illustrative for comparison purposes only and not to be summed or arithmetically manipulated in any fashion. Impacts that cannot be quantified would also be shown in the distribution.

j. State Conclusions

At the end of the line's analysis, the State will present a statement concerning the State's conclusions of the appropriateness of each alternative considered in line analysis. These conclusions will be based on the benefit/cost and distribution analysis and on a comparison with State goals, policies and roles.

2. Application of the Abandonment Analytical Methodology

The above methodology is advanced for FRA review and approval. With FRA approval, Alaska will have an approved methodology to be able to use LRSA funds for rail abandonment prevention purposes, if it so desires.

However, as stated earlier, the Alaska Railroad currently has no planned rail line abandonments. Therefore, the above methodology has not been applied to any line in this Rail Plan.

It is set forth only to gain approval, for future use if needed. One potential use of the methodology, however, would be the White Pass and Yukon if formal abandonment proceedings are filed on that railroad in the future.

REFERENCES

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(3) Benefit-Cost Guidelines -- Rail Branch Line Continuation Assistance Program, Federal Railroad Administration, Washington, D.C., February, 1980.

(4) Regional Input-Output Modeling System, Regional Economic Analysis Division, Bureau of Economic Analysis, U. S. Department of Commerce, 1984.

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