XV. ECONOMICS

Introduction

The management of the Flathead National Forest (FNF) has the potential to affect local economies. People are an important part of the ecosystem. Use of resources and recreational visitation to the FNF generates employment and income in the surrounding communities and counties and generates revenues that are returned to the federal treasury.

This section presents concepts used to delineate an affected area and methods used to analyze the economic effects of the project, including the project feasibility, financial efficiency, and economic impacts.

NEPA requires that consequences to the human environment be analyzed and disclosed, based on issues. NEPA does not require a monetary benefit-cost analysis. If an agency prepares an economic efficiency analysis, then one must be prepared and displayed for all alternatives [40 CFR 1502.23]. The preparation of NEPA documents is also guided by CEQ regulations for implementing NEPA [40 CFR 1500-1508].

OMB Circular A-94 promotes efficient resource use through well-informed decision-making by the Federal Government. It suggests agencies prepare an efficiency analysis as part of project decision-making. It prescribes present net value as the criterion for an efficiency analysis.

The development of timber sale programs and individual timber sales is guided by agency direction found in Forest Service Manual (FSM) 2430. Forest Service Handbook (FSH) 2409.18 guides the financial and, if applicable, economic efficiency analysis for timber sales.

Information Sources

Methodology

Four measures are appropriate for the economic analysis: project feasibility, financial efficiency, economic efficiency (if needed), and economic impacts. These measures are described below, including methodologies.

Project Feasibility

Project feasibility relies on the Region 1 Transaction Evidence Appraisal (TEA) System. The TEA uses regression analysis of recently sold timber sales to predict bid prices. The most recent appraisal model for the area of interest was used to estimate the stumpage value (expected high bid resulting from the timber sale auction) for the timber project. The estimated stumpage value for each alternative was compared to the base rates (revenues considered essential to cover regeneration plus minimum return to the federal treasury) for that alternative. The project is considered to be feasible if the estimated stumpage value exceeds the base rates. If the feasibility analysis indicates that the project is not feasible (estimated stumpage value is less than the base

rates), the project may need to be supplemented with contributed funds if actual bids do not exceed base rates. There would also be an increased risk that the project would not attract bids.

Financial Efficiency

Financial efficiency considers anticipated costs and revenues that are part of Forest Service monetary transactions. Present net value (PNV) is used as an indicator of financial efficiency and presents one tool to be used in conjunction with many other factors in the decision-making process. PNV combines benefits and costs that occur at different times and discounts them into an amount that is equivalent to all economic activity in a single year. A positive PNV indicates that the alternative is financially efficient.

Economic Efficiency

Economic efficiency uses the cost and revenue estimates included in the financial analysis and adds other economic costs and benefits that are not part of Forest Service monetary transactions. This analysis considers the quantifiable market and non-market benefits and costs associated with implementing each alternative. As with financial efficiency, a PNV is calculated to determine efficiency. An example of a non-market benefit or cost is an increase or decrease in recreation. A value for recreation visitor use would be derived from local or regional studies. An economic efficiency analysis is not required (FSH 2409.18, 30), and would only be included in this analysis if it was a public issue and there are predicted changes to quantifiable non-market benefits or costs from the project.

Many of the costs and benefits associated with a project are not quantifiable. For example, the benefit to wildlife from habitat improvement or the cost associated with the degradation of visual quality from a project is not quantifiable. Title 40, Code of Federal Regulations for NEPA (40 CFR 1502.23) indicates “For the purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are qualitative considerations.”

Management of the FNF is expected to yield positive benefits, but not necessarily financial benefits. Costs for various vegetation, recreation, wildlife, road and burning activities are based on recent experienced costs and professional estimates. Non-harvest related costs are included in the PNV analysis, but they are not included in appraised timber value.

Economic Impacts

Economic impacts are used to evaluate potential direct, indirect, and cumulative effects on the economy. Economic impacts are estimated using input-output analysis. Input-output analysis is a means of examining relationships within an economy, both between businesses and between businesses and final consumers. It captures all monetary market transactions for consumption in a given time period. The resulting mathematical representation allows one to examine the effect of a change in one or several economic activities on an entire economy, all else being constant. This examination is called impact analysis. IMPLAN translates changes in final demand for goods and services into resulting changes in economic effects, such as labor income and

employment of the affected area's economy. The IMPLAN modeling system allows the user to build regional economic models of one or more counties for a particular year. The regional model for this analysis used the 2006 IMPLAN data.

The economic impact effects are measured by estimating the direct jobs and labor income generated by the 1) processing of the timber volume from the project, and 2) dollars resulting from any restoration activities of the project into the local economy affected by the treatments proposed. The direct employment and labor income benefit employees and their families and therefore directly affect the local economy. Additional indirect and induced, multiplier effects (ripple effects), are generated by the direct activities. Together the direct and multiplier effects comprise the total economic impacts to the local economy. The data used to estimate the direct effects from timber harvest is information provided by University of Montana's Bureau of Business and Economic Research. The economic effects tied to restoration activities and the multiplier effects (of both timber harvest and restoration activities) were estimated using IMPLAN.

Potential limitations of these estimates are the time lag in IMPLAN data and the data intensive nature of the input-output model. Significant changes in economic sectors since the latest data for IMPLAN have been adjusted using information from the University of Montana's Bureau of Business and Economic Research.

Analysis Area Description

The analysis area for the efficiency analysis is the project area. All costs and revenues associated with the project decision were included.

Management activities within the project area have the potential to impact the economic conditions of local communities and counties. To estimate the potential effect on jobs and income, a zone of influence (or impact area) was delineated. Counties were selected based on commuting data suggesting a functioning economy and where commercial products are likely to be processed (log flows). Recent data on log flows from the Flathead National Forest was provided by the University of Montana's Bureau of Business and Economic Research. The zone of influence for this project is comprised of Lincoln, Sanders, and Flathead counties in Montana. The time frames for this analysis are from the beginning of implementation of activities to the completion of the project.

Affected Environment/Existing Condition

The Economic Community

The Flathead National Forest includes parts of six Montana counties: Flathead, Lincoln, Lake, Missoula, Powell, and Lewis and Clark. About three-fourths of the area of the FNF and most of the economic effects of FNF programs and projects occur in Flathead County. The FNF has lesser effects in Lake County and only minimal effects in the other four counties.

The Flathead National Forest is an important part of the Northern Continental Divide Ecosystem, which covers most of northwest Montana. This area has substantial economic value on a regional, national, and international scale when recreation and tourism, wildlife, and aesthetic values are considered along with a substantial timber management program. However, it is beyond the scope of this analysis to evaluate markets for all these resources because they have not been identified as substantial economic issues in respect to the proposed action. The emphasis is on the economic effects that the proposed action and the alternatives would have on the timber industry and economic communities that would be primarily affected.

Timber Industry Trends

Historical Production and Capacity

Historically, annual timber harvest from National Forest System (NFS) land in Montana peaked at greater than 800 million board feet at the end of the 1960s. In the period of 2000 to 2004 the timber harvest dropped to the general vicinity of 100 million board feet per year or slightly greater than 10 percent of the past peak level (USDA Forest Service 2004).

In 1998, of the 293 million board feet of timber delivered to processing facilities in Flathead County, approximately 38 million board feet, or less than 13 percent, came from National Forest System land (Keegan et al. 2001).

Since 1980, Flathead County has had the largest wood products manufacturing industry of any county in Montana. Since 1976, the county's capacity to process saw timber has varied from a low of 265 million board feet (Scribner rule) at the present to a high of 395 million board feet in 1983. Actual saw timber processed since 1976 has varied from a low of 185 million board feet in 1982 to a high of 332 million board feet in 1988. Processing facilities utilization capacity has varied from a low of 51 percent in 1982 to a high of 97 percent in 1999. The year 2000, the last year for which there are data, was at 94 percent of capacity. The plywood industry in Montana is presently at 93 percent of plant capacity. County level information on the plywood industry is generally not available because of data disclosure constraints (Keegan et al. 2001).

The percentage of milling capacity that is actually used or remains available for use affects the demand for logs and is a variable effecting log prices, which in turn, affects the quantity of logs supplied to mills.

Timber Industry Outlook

After low levels during the first six months of 2003, wood products prices increased substantially through the summer of 2004 and have remained steady through the end of 2005 (Exhibit N-1). The upward surge in prices was attributable to a number of factors including, high domestic lumber consumption, a weaker U.S. dollar with less imports, and increased foreign demand.

A survey of primary wood producers point to moderately good demand and prices well into 2006 (see project file, section S). Factors contributing to maintaining demand include interest rates remaining low, domestic wood products consumption is expected to remain high, increased

foreign demand, and a further decline in the value of the dollar against most major currencies. An agreement with Canada setting quotas on softwood lumber imports could positively impact lumber prices. On the negative side, uncertainty over log supply remains a major and perhaps growing issue.

The estimated total sales value of the state's primary wood and paper products in 2004 was $1.2 billion, substantially more than in 2003. Despite the high prices in the second half of the year, mill closures, raw log availability, as well as other production cut backs led to reduced production, employment and wages for the year (see project file, section S).

At the end of 2004 estimated total employment in the wood products industry was about 9,100 workers, down about 100 from the previous year, and worker earnings adjusted for inflation were slightly higher. Lumber production in the state in 2004 was estimated at one billion board feet, down slightly from 1.07 billion board feet in 2003. Mirroring conditions in the housing industry, the log home industry experienced increased sales, reversing a downward trend.

Because of a decade-long decrease in federal timber harvest, timber availability remains a major issue for Montana's forest products industry even as wood products markets improve in the longer-term. Recent work done by the University of Montana researchers indicates that millions of acres of timberlands in the state are in need of ecosystem and fire hazard treatment and could provide – as a profitable by-product – a sustainable flow of timber considerably above current harvest levels (Keegan and Morgan 2005).

Environmental Consequences

No key issues associated directly to economics were identified, although issues involving the amount of commercial products harvested are closely related. Other issues such as motorized access and quality of the environment are somewhat related.

The following effects indicators were used to focus the economic analysis and disclose relevant environmental or social effects:

- Effects on Employment
- Effects on Labor Income
- Effects on Financial Efficiency

Direct and Indirect Effects of All Alternatives

Financial and Economic Efficiency

The financial efficiency analysis is specific to the commercial harvest and other activities associated with the alternatives (as directed in Forest Service Manual 2400-Timber Management and guidance found in the Forest Service Handbook 2409.18). Costs for fuels reduction, sale preparation, sale administration, regeneration, prescribed burning, culvert up-sizing/removal, weed spraying, etc. are included. All costs, timing and amounts were developed by the specialists on the project's interdisciplinary team. The expected revenue for each alternative is the corresponding predicted high bid from the transaction evidence appraisal equation. The PNV

was calculated using Quicksilver, a program for economic analysis of long-term, on-the-ground resource management projects. A four percent discount rate is used over the six-year project lifespan (2008-2014). For more information on the values or costs, see project file, section S.

This analysis is not intended to be a comprehensive benefit-cost or PNV analysis that incorporates a monetary expression of all known market and non-market benefits and costs that are generally used when economic efficiency is the sole or primary criterion upon which a decision is made. Many of the values associated with natural resource management are best handled apart from, but in conjunction with, a more limited benefit-cost framework. These values are discussed throughout this document, for each resource area.

Changes to resources like fisheries and wildlife habitat have been measured using changes to habitat conditions and will not be described in financial or economic terms for this project. See the fisheries and wildlife sections of this document. Recreation changes are also apparent in the alternatives through varying levels of decreased motorized recreation opportunities. The recreation section displays these changes and effects. Planning costs were not included in any of the alternatives since they are sunk costs at the point of alternatives selection. The NEPA costs for this project are about $40 per CCF.

Table 3-83 summarizes the project feasibility and financial efficiency, including the base rates, predicted high bid (or estimated stumpage value), total revenue and PNV for each alternative. Because all costs of the project are not related to the commercial component of the fuel reduction work, two PNVs were calculated. One PNV indicates the financial efficiency of the commercial harvest, including all costs and revenues associated with the harvest and required design criteria. A second PNV includes all costs for each alternative, including other activities that are non-commercial harvest related (e.g. prescribed burning, sapling thinning, fuels removal, culvert removal/up-sizing, etc).

Table 3-83 indicates all action alternatives are financially efficient for the commercial component of the project, but financially inefficient when all activities are considered. Alternative 1 (No Action) has no costs or revenues associated with it. Of the action alternatives, Alternative 4 has the highest PNV at $73,389 when only commercial treatments and related costs are included. All alternatives have a negative PNV when all activities are considered. Alternative 4 also has the most negative PNV of all action alternatives when considering all other costs; this is because one of the highest costs is related to fuels being removed in the sapling thinning and other thinned areas.

Table 3-83. Financial Efficiency Summary (2007 dollars).

Category	Measure	Alternative 2	Alternative 3	Alternative 4
Commercial Harvest Information	Acres Harvested	1546	833	2169
	Volume Harvested			
	Sawlog (CCF)	5642.7	2783.3	7935.4
	Nonsaw (CCF)	1662.9	1106.1	1662.9
	Total Volume (MBF)	3652.8	1106.1	4866.5
	Predicted High Bid ($/CCF)	$39.95	$38.31	$44.04
	Total Revenue (Thousands of $)	$216,866.80	$102,583.40	$406,451.92
Commercial Harvest & Required Design Criteria	PNV (Thousands of $)	$-8,049.54	$-9,141.52	$73,389.71
Commercial Harvest/Design Criteria & Other Planned Activities	PNV (Thousands of $)	$-693,625.55	$-372,347.70	$-1,242,075.11

When evaluating trade-offs, the use of financial efficiency measures is one tool used by the decision maker in making the decision. Many things cannot be quantified, such as effects on wildlife, impacts on local communities and restoration of watersheds and vegetation. The decision maker takes many factors into account in making the decision.

One of the factors that should come into account is the relationship of fuels reduction activities and how much this costs and the relationship or benefits this has on lowering the risk of a severe and intense wildfire, improving the ability to initial attack and control fires, helping to protect human life by providing a safer environment for firefighters and the public should a fire occur, and protecting identified human and natural resource values in the event of a future wildfire. While costs of fuels reduction activities have been identified and included in the PNV analysis above, the benefits have not been quantitatively described (other than revenues that may be realized from the sale of commercial products). This is because of difficulties in calculating values related to land and property, both on private, state, and federal government ownerships; values related to human life; and values related to recreation, tourism, wildlife, timber, etc.

However, economic benefits from fuels reduction activities can be described qualitatively in several ways. Reducing the potential of a severe and intense wildfire, in general, could reduce potential wildfire suppression costs. There is a considerable range for suppression costs depending on the variety of conditions in which the fire exists, but generally fires found within the wildland-urban interface (WUI) that become of sufficient size can become more complex and costly.

During the 2001 and 2003 fire seasons, recreational opportunities and tourism were significantly affected within the North Fork and Glacier National Park because of the large fires (Moose, Robert, and Wedge Canyon) that were occurring within the WUI.

A few public comments have been received on this project that indicated it is not clear as to why public money is being invested to protect private property. There are many residents in the North Fork that have undertaken fuels reduction efforts on their own properties. The large fires in 2001 and 2003 probably caused much of the impetus for these activities. Through collaborative efforts, some of them have come to the Forest Service and have asked that fuels reduction work on NFS lands be done to help complement their activities. Through offset agreements, fire protection responsibility throughout Montana has been exchanged. This has resulted in several areas where state, county, and federal fire organizations protect lands of mixed ownerships include state, federal, and private lands. In the western portion of the North Fork Valley (which includes the Glacier View Ranger District), the Forest Service has fire protection responsibilities over federal, state, and private land. Since the Forest Service is responsible for fire protection in the project area, it would be beneficial to implement fuels reduction projects on federal ownerships that may lower the risk of a severe and intense wildfire.

In general, Alternative 4 would realize more economic benefits in the factors discussed above because it treats more acres within the WUI than Alternative 2 or 3. All action alternatives would provide more economic benefits than the no action alternative.

Economic Impact Effects (jobs and labor income)

Commercial products from this proposed Flathead National Forest project would have direct and indirect effects on local jobs and labor income. The FNF used an input-output model, IMPLAN (Impact Analysis for Planning) to estimate effects on employment and labor income within a defined geographical area (called an impact area or zone of influence).

For timber harvest, the direct employment and labor income response coefficients (e.g., jobs and labor income per million cubic feet) were derived by the University of Montana's Bureau of Business and Economic Research. The indirect and induced multiplier effects were estimated using the IMPLAN model for the economic impact area.

For restoration and reforestation activities, the direct, indirect and induced effects were derived using IMPLAN. The resulting direct, indirect and induced employment and labor income coefficients have been incorporated into a spreadsheet developed by the Regional Economist for the USFS, Northern Region.

The analysis calculated the jobs and labor income associated with commercial products harvest, reforestation, and restoration activities. In order to estimate jobs and labor income associated with timber harvest, the timber harvest levels were proportionally broken out by product type for each alternative (see Table 3-84). In order to estimate jobs and labor income associated with reforestation and restoration activities, expenditures for these activities were developed for each alternative (see Table 3-85).

Table 3-84. Proportion Commercial Harvest by Product Type by Alternative.

Product Type	Alternative 2	Alternative 3	Alternative 4
Sawmills	11.8	5.8	16.7
Logging Camps	16.8	8.9	22.1
Log Homes	0	0	0
Post & Poles	0	0	0
Pulp	0	0	0

Table 3-85. Reforestation and Other Restoration Activity Expenditures by Alternative Over a Five-year Period (2007 dollars).

Reforestation/Restoration Activity	Alternative 2	Alternative 3	Alternative 4
Precommercial Thinning	$266,000	$47,000	$707,000
Tree Planting	$75,600	$30,450	$142,100
Weed Spraying	$16,800	$12,600	$19,950
Fuels Reduction	$386,500	$208,250	$542,250
Culvert Work	$29,000	$65,000	$29,000
Total	$773,900	$363,300	$1,440,300

Table 3-86 displays both direct and total estimates for employment (part and full-time) and labor income that may be attributed to each alternative. Since the expenditures occur over a five-year period, the estimated impacts of jobs and labor income would be spread out over the life of the project. Most of the commercial harvest and wood processing jobs would occur over the first three years of the project. These are not new jobs or income, but rather jobs and income that can be attributed to this project.

Table 3-86. Total Employment and Income (2007 dollars) Over the Life of the Project.

Analysis Item	Alternative 2	Alternative 3	Alternative 4
Direct Employment	59.4	29.3	96.0
Total Employment	97.1	48.4	150.5
Direct Labor Income (Thousands of $)	$1,577.4	$783.7	$2452.0
Total Labor Income (Thousands of $)	$2,385.9	$1,194.4	$3,624.8

Definitions:

1. Employment is the total full- and part-time wage, salaried, and self-employed jobs in the region.
2. Labor income includes the wages, salaries and benefits of workers who are paid by employers and income paid to proprietors.

Estimates in Table 3-86 indicate that Alternative 4 would maintain the highest number of jobs and labor income. Alternative 3 maintains significantly fewer jobs and labor income. Alternative 1 maintains no jobs or income because there are no activities associated with this alternative.

The analysis assumes the timber volume processed would occur within the Flathead zone of influence. However, if some of the timber were processed outside the region, then a portion of the jobs and income would be lost by this regional economy.

Cumulative Effects Common to All Action Alternatives

Management of the Flathead National Forest has an impact on the economies of local counties. However, there are many additional factors that influence and affect the local economies, including changes to industry technologies, management of adjacent National Forests and private lands, economic growth, and international trade.

Ongoing and reasonably foreseeable projects that may affect local economies include the following: Belton Fuels Reduction Project, Trail Fuels Reduction Project, Blankenship Fuels Reduction Project, Porter-Mount Project, Cooney McKay, East Shore, Meadow Smith, Pierce, Condon, Sixmile, Beaver Lake, Corduroy, Sharp-Tail, Gregg-Plume, Valley Face, Reid Creek, Cyclone Products, West Logan, Johnson Peak, and Ashley-Herrig projects. These are projects that are related to commercial harvest activities on the Flathead National Forest.

The jobs and labor income associated with timber harvest, restoration and reforestation activities in the action alternatives, would contribute to the stability of the local economy during the life of the project.

Regulatory Framework and Consistency

FNF Forest Plan direction is to provide a sustained yield of timber products that is cost effective and responsive to the needs of the local economy (USDA Forest Service, 1985). Alternative 1 would not be consistent with this FNF Forest Plan direction. The action alternatives offer varying levels of commercial harvest and are consistent with being responsive to the needs of the local economy.

Civil Rights and Environmental Justice

None of the action alternatives are expected to negatively affect the civil rights of consumers, minority groups, low-income groups, women, or Indian tribes. Subsistence activities would not be disproportionately reduced for any of the identified groups. The Flathead Indian Reservation is 50 miles from the project area. The effect of the action alternatives on wildlife that may be used for subsistence is discussed in the wildlife section of this chapter. No environmental health hazards are expected to result from implementation of any alternative. Income levels in Flathead County are slightly higher than average for the state of Montana but 87 percent of the national average (U.S. Department of Commerce 2006), and this project should not disproportionately affect one income group over another (see project file, section S).

This project is in compliance with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Environmental Justice issues were considered in all steps of the NEPA process including public participation, alternative development, determining the affected environment, project design and analysis of environmental consequences. At no step were minority, low-income, or tribal populations negatively affected by any of the proposed actions in any of the alternatives.

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