South Otter: Economic Effects Analysis

Prepared by: Colin Sorenson, Economist
For: Ashland Ranger District, Custer Gallatin National Forest
Date: 9/20/2022

Summary

Forest management activities within the project area have the potential to impact the economic conditions of local communities and counties. A financial efficiency analysis showed that the proposed activities would result in viable timber sale(s) that would provide about 220,000 hundred cubic feet (CCF) with a present net value of about -$2.6 million. When accounting for all project activities both related to the timber sale and other restoration activities, the present net value of the project is $-9.7 million. The project (all activities) would also create or maintain an estimated 139 jobs per year during the life of the project.

Introduction

The management of the natural resources on the Custer Gallatin National Forest has the potential to affect local economies. People and economies are an important part of the ecosystem. Use of resources and recreational visitation to the national forests generates employment and income in the surrounding communities and counties. They also generate revenues returned to the Federal treasury or used to fund additional on-the-ground activities to accomplish resource management objectives. Resource indicators and measures for the analysis are included in Table 1.

Table 1. Resource indicators and measures for assessing economic effects.

Resource Indicator	Measure
Project feasibility	Anticipated costs and revenues
Financial efficiency	Present net value
Economic impact	Estimated jobs and labor income

The South Otter Project is located on the Ashland Ranger District of the Custer Gallatin National Forest. The combination of small towns and rural settings, along with people from a wide variety of backgrounds, provides a diverse social environment for the geographical region around the Custer Gallatin National Forest, including the Ashland Ranger District. Residents pursue a wide variety of lifestyles, but many share a common theme—an orientation to the outdoors and natural resources.

Public lands and natural resources are important to the economy of local areas. Despite the common concern for, and dependence on, natural resources within the local communities, social attitudes vary widely with respect to their management. Residents hold a broad spectrum of perspectives and preferences regarding development and utilization of natural resources.

Timber management activities within the project area have the potential to impact the economic conditions of local communities and counties.

Regulatory Environment

The preparation of NEPA documents is guided by CEQ regulations for implementing NEPA [40 CFR 1500-1508]. NEPA requires that consequences to the human environment be analyzed and disclosed. The extent to which these environmental factors are analyzed and discussed is related to the nature of public comments received during scoping. 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].

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 and prescribes "present net value" as the criterion for the 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.

Many of the costs and benefits associated with a project are not quantifiable in financial terms. For example, the benefit to wildlife from habitat improvement from a project. These costs and benefits are described qualitatively in the indicated resource sections of the Environmental Assessment. 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.*

Executive Order 12898, issued in 1994, orders Federal Agencies to identify and address any adverse human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. The Order also directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife.

The Civil Rights Act of 1964 provides for nondiscrimination in voting, public accommodations, public facilities, public education, federally assisted programs, and equal employment opportunity. Title VI of the Act, Nondiscrimination in Federally Assisted Programs, as amended (42 U.S.C. 2000d through 2000d-6) prohibits discrimination based on race, color, or national origin.

Additionally, the Custer Gallatin Forest Plan includes the following forest-wide goals and desired conditions pertinent to economics:

"Lands identified as suitable for timber production support a regularly scheduled timber harvest program that provides for jobs and income while also sustaining ecological integrity."

"Lands suitable for timber production are resistant to natural disturbances, thereby minimizing the economic loss of the timber resource compared to lands designated as unsuitable for timber production."

"Timber production and harvest contribute to ecological sustainability and ecological integrity while contributing to economic sustainability, providing jobs, and income to local economies."

"Timber harvest supports maintaining regional timber harvesting and processing infrastructure."

Affected Environment

The study area for this analysis consists of Rosebud and Powder River Counties in Montana, and Crook County in Wyoming. Most economic activity associated with the project are expected to occur in these three counties. About 74 percent of the land area in the 3-county economic impact area is private, while 17 percent of the 7.2 million acres is federal, split almost evenly between Forest Service and BLM (https://headwaterseconomics.org/apps/economic-profile-system/). By comparison, Federal lands make up 28 percent of the land area of the United States.

In the most recent available data from the Department of Commerce (https://headwaterseconomics.org/apps/economic-profile-system/), Agriculture is the largest component of commodity sector employment in the impact area, accounting for 13 percent of total employment, while mining accounts for 6.3% and timber accounts for 0.6 percent of total employment. In comparison, agriculture accounted for 1.3 percent of the United States' jobs, timber accounted for 0.6 percent and mining accounted for 0.5 percent.

Environmental Consequences - Direct and Indirect Effects

Project Feasibility and Financial Efficiency

Project feasibility is used to determine if a project is feasible—that is, will it sell, given current market conditions. The determination of project feasibility relies on a residual value (stumpage = revenues - costs) feasibility analysis, which considers logging system, timber species and quality, volume removed per acre, lumber market trends, costs for slash treatment, and the cost of specified roads, temporary roads and road maintenance. The appraised stumpage rates are compared to the base rates (revenues considered essential to cover regeneration plus minimum return to the federal treasury). The project is considered feasible if the appraised stumpage rate exceeds the base rate. If the feasibility analysis indicates that the project is not feasible, the project may need to be modified. Infeasibility indicates an increased risk that the project may not attract bids and may not be implemented.

Table 2 summarizes the project feasibility and financial efficiency for the Proposed Action, including the base rate, appraised stumpage rate, predicted high bid, total revenue, and Present Net Value (PNV). For the proposed action, the appraised stumpage rate is greater than the base rate, indicating that it is feasible.

Because there are often financial project costs that are not related to the timber sale, two PNVs are calculated for the Proposed Action. One PNV indicates the financial efficiency of the timber sale, including all costs and revenues associated with the timber harvest and required design criteria. A second PNV includes all activity costs and revenues, including other management activities analyzed under the project. As indicated by negative PNV values, the Proposed Action is financially inefficient for the timber harvest and required design features, with an expected PNV of negative $2.6 million. This means the project costs more than the revenue that it brings in. The PNV is reduced to negative $9.7 million for timber harvest and all other project activities. The negative PNV measure is essentially a lower bound for the financial efficiency of the project and represents the net financial cost of the conducting all project activities. If other funding becomes available for the non-required activities (for example via timber sale bid premium or from partners), or if some of the activities are not undertaken, the "all activities" financial efficiency (PNV) would increase.

Table 2. Project Feasibility and Financial Efficiency Summary (2019 dollars)

Category	Measure	Proposed Action
Timber Harvest Information	Acres Harvested	26,141

Category	Measure	Proposed Action
Timber Harvest Information	Sawtimber Volume Harvested (CCF)	219,984
Timber Harvest Information	Base Rates ($/CCF)	3.00
Timber Harvest Information	Appraised Stumpage Rate ($/CCF)	3.00
Timber Harvest Information	Predicted High Bid ($/CCF)	8.65
Timber Harvest Information	Total Revenue (Thousands of $)	1,904
Timber Harvest & Required Design Features	Present net value ($Thousands)	-2,578
Timber Harvest & All Other Planned Non-Timber Activities	Present net value ($Thousands)	-9,653

Economic Impacts (Jobs and Labor Income)

Economic impacts are used to evaluate potential direct, indirect, and cumulative effects on the economy. These impacts are estimated using input-output analysis. Input-output analysis is a means of examining relationships within an economy, both business to business and business to final consumer relationships.

The economic impact effects are measured by estimating the direct jobs and labor income generated from: 1) processing timber volume from the project; and 2) Forest Service expenditures for contracted restoration activities included as part of the proposed treatments. The direct employment and labor income benefit employees and their families, and therefore, directly affect the local economy. Additional indirect and induced, or 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. Indirect effects are felt by the producers of materials used by the directly affected industries. Induced effects occur when employees of the directly and indirectly affected industries spend the wages they receive.

The analysis estimated the economic impacts (jobs and labor income) associated with processing the timber products harvested and conducting the associated mandatory and optional activities. Timber products harvested from the proposed project and the non-timber activities would have direct, indirect, and induced effects on local jobs and labor income.

To estimate jobs and labor income associated with timber harvest, timber harvest levels are proportionally broken out by timber processing sector. In this case, it was determined that 100 percent of the timber would go to the sawmill sector. To estimate jobs and labor income associated with reforestation and restoration activities, expenditures for these activities were developed by the resource specialists on the interdisciplinary team. Only the expenditures associated with the contracted activities are included in the impact analysis, rather than work to be completed by Forest Service personnel. An input-output model (IMPLAN) was used to estimate the multiplier (or “ripple”) effects on the local economy when dollars flow to a given industry sector (for example, sawmills). Economic impacts were then calculated using those multipliers in conjunction with the direct income and employment effects identified for Montana and Idaho in (Sorenson et al., 2016).

A job (as defined in IMPLAN) is an annual average of monthly jobs. This is a standard convention and consistent with methods used by the U.S. Bureau of Labor Statistics. When jobs are counted this way, one cannot tell from the data the number of hours worked or the proportion that are full or part-time or anything about seasonality; only that they are yearlong. These jobs are different than full time equivalent (FTE) jobs.

Table 3 displays the direct, indirect and induced, and total estimates for employment (part- and full-time) and labor income that may be attributed to the Proposed Action. It is important to note that these may not be new jobs or income, but rather existing jobs and income in the regional economy that are supported or sustained by this project. It is anticipated that the timber harvest and majority of the restoration activities would occur over an 8- to 10-year period. If the actual implementation period is shorter than this, more jobs would be supported over a shorter period. Conversely, if the implementation period is expanded, fewer jobs would be supported annually, but for a longer period.

Table 3. Average Annual Employment and Labor Income Contributions from all Project Activities.

Analysis Item	Proposed Action
Direct Employment	86
Indirect and Induced Employment	53
Total Employment	139
Direct Labor Income (Thousands of 2019 $s)	4,045
Indirect and Induced Labor Income (Thousands of 2019 $s)	2,974
Total Labor Income (Thousands of 2019 $s)	7,019

The Proposed Action was estimated to contribute a total of 139 jobs and $7.0 million in total labor income on an annual average basis. IMPLANs method of reporting employment as annual averages means that one cannot discern the number of hours worked or the proportion that is full time vs. part time. This method of accounting means that one job lasting 12 months = two jobs lasting six months each = three jobs lasting four months each. In other words, ‘one job’ as reported in IMPLAN may be a collection of different jobs (for example, a full-time equipment operator working 3 months + a full-time driver working 3 months + 2 half time accountants working 6 months each). Each of those examples would appear as one job in IMPLAN.

This analysis assumes the timber volume generated would be processed within the Custer Gallatin National Forest zone of influence. However, if some of the timber were processed outside the zone, “leakage” would occur, and a portion of the jobs and income would be lost by this regional economy.

Environmental Justice

Executive Order 12898 requires that all federal actions consider the potential of disproportionate and adverse effects to minority and low-income populations. The principles of environmental justice require agencies to address the equity implications of federal land management actions. The Council on Environmental Quality (CEQ) provides the following definitions to provide guidance on compliance with environmental justice requirements:

- “Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis...”
- “Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect” (CEQ 1997).

Most people in the three counties and the state self-identify as white – white residents account for about 76 percent of residents in the analysis area (EPS 2021). Minority residents account for approximately 14 percent of the population in in the three-county area, compared to 11.1 percent of the population in Montana. The poverty rate in the analysis area is approximately 13.4 percent in the impact area, compared to 13.1 percent in Montana and 13.4 percent in the nation (EPS 2021).

Based on the minority status and poverty data presented above, environmental justice communities were not identified in the project area. The minority population in the analysis area does not exceed 50 percent nor is it meaningfully greater than the percentage in the general population. In addition, the poverty rates in the analysis area are on par with those in Montana and the nation.

Cumulative Effects – Proposed Action

The financial efficiency of the project would not be affected by the past, present, or reasonably foreseeable future actions in the project area. Other projects occurring in the economic impact area have the potential to contribute cumulatively to jobs and labor income provided by implementing this project.

Conclusion

The economic effects analysis was conducted using established methodologies, accepted assumptions, and applicable research. Based on the findings of the analysis, there is no indication the Proposed Action would have significant effects on the quality of the human environment.

References Cited

Sorenson, C. B., Keegan, C. E., Morgan, T. A., McIver, C. P., & Niccolucci, M. J. (2016). Employment and wage impacts of timber harvesting and processing in the United States. *Journal of Forestry*, *114*(4), 474-482. https://doi.org/10.5849/jof.14-082