
Chapter 8

**Economics in National
Forest Planning**

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Economics in National Forest Planning

Economic considerations enter into the strategic planning process for national forest management in two ways: in evaluating the tradeoffs among the values generated by the forests; and in identifying the economic impacts of national forest management. This chapter briefly describes the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) and the National Forest Management Act of 1976 (NFMA) requirements for economic analysis, and then assesses the use of economics in determining the management balance and in identifying the economic impacts. The chapter concludes by analyzing the relation of the Forest Service budget process to strategic national forest planning.

LEGAL REQUIREMENTS

RPA and NFMA substantially expanded the role of economic analysis in Forest Service planning and management (246). RPA requires: an Assessment that analyzes resource supplies and demands and evaluates investment opportunities; a Program to identify investment needs and to compare outputs, results, and benefits with costs; a Statement of Policy to guide the formulation of budgets; and an Annual Report to provide accountability for expenditures and activities, with appropriate measures of relevant costs and benefits and with representative samples of below-cost timber sales.

National forest planning must also include economic analysis. NFMA requires that economics be integrated with physical, biological, and other sciences by the interdisciplinary team (section 6(b)). Economic and environmental aspects of management are to be considered in planning for the multiple uses (section 6(g)(3)(A)). Economic impacts, along with environmental, biological, esthetic, and engineering impacts, are to be reviewed on each advertised timber sale using even-aged silvicultural techniques (section 6(g)(3) (F)(ii)). Economic, physical, and other pertinent factors are to be considered in identifying areas not suited for timber production (section 6(k)). Road needs are to be met on an economical and environmentally sound basis, and road standards are to be appropriate considering safety, transportation costs, and land and resource impacts (section IO(a) and (c)).

This guidance in NFMA strongly suggests congressional interest in efficient Forest Service management. However, as discussed in chapter 3, Congress is also concerned about fairness and balance. NFMA clearly directs management in accordance with the Multiple-Use Sustained-Yield Act of 1960 (MUSYA), which requires the Forest Service to “best meet the needs of the American people.” MUSYA also prohibits maximizing returns or outputs as the sole criterion for management, and NFMA adds that the timber harvesting system is not to be chosen primarily to maximize returns or outputs. Nonetheless, MUSYA also requires management “with consideration being given to the relative values of the various resources.” Finally, although there is no explicit direction in law to consider community stability in forest planning, Congress has on numerous occasions clearly expressed concerns about the impacts of national forest management on local communities.

THE BALANCE AMONG RESOURCES

In MUSYA, Congress explicitly directed the Forest Service to consider the relative values of the various resources. This implicitly requires an economic evaluation, because the science and art of economics focus on tradeoffs in values. Economics generally concentrates on two issues: *efficiency* and *equity*. Economic efficiency aims at minimizing waste, generally by reducing the cost to produce a given level of output or by increasing the outputs from a fixed budget. Efficiency is no less important for government agencies than for private firms, but it is more difficult to achieve because the outputs are generally less precisely measured.

Equity considerations center on questions about the fairness and balance of activities, and about the distribution of income and benefits. Historically, the field of economics has emphasized efficiency. For example, in their recent book on the economics of multiple-use management, Bowes and Krutilla (31) dismiss the distributional equity consequences of public land management in one paragraph, and then spend 300-plus pages on economic efficiency. Efficiency has traditionally been emphasized because it can be measured and evaluated, while

unbiased measures of fairness and balance do not exist. Nonetheless, equity—the fair distribution of income and benefits—is one of the principal concerns of government.

As discussed in chapter 3 and noted above, Congress did not accept efficiency as the principal consideration for managing the national forests in enacting MUSYA. Nonetheless, economic efficiency is not irrelevant. In the debate over NFMA, Senator Dale Bumpers (Arkansas) expressed concern over “the problem of wasteful investment in timber production.” More recent debates over below-cost timber sales also suggest concerns about the efficiency of Forest Service timber activities. The Office of Management and Budget (OMB) is particularly concerned about the efficiency of government spending (217). The magnitude and persistence of the Federal budget deficit will make the efficiency of government activities, including national forest planning and management, a continuing concern.

Many economists, inside and outside the Forest Service, believe that determining the balance among resource uses, outputs, and protection is essentially a question of economic efficiency—if uses and outputs can be valued correctly and the interrelationships can be quantified accurately, the proper balance can be determined by a simple economic efficiency decision rule. Some have even argued that economic efficiency should be the *primary* criterion for forest plans:

If properly done, NFMA planning should be nothing more than a series of cost-benefit analyses that lead to economically optimal forest plans (309).

Economic Efficiency in National Forest Planning

Efficiency is measured by examining costs and benefits. Efficiency increases as costs to produce the same benefits decline or as greater benefits are generated at the same cost. In practice, improving efficiency typically focuses on the cost side—the appropriate budget level and proper mix among activities. Neoclassical economic theory dictates that the “correct” budget level and mix are defined by the relation of costs and returns, with expenditures increasing as long as the returns are greater

than the costs; ultimately, the last dollar spent should yield a return of exactly one dollar. (If the return is greater than a dollar, more expenditures are warranted, but if the return is less than a dollar, too much has been spent.) In technical parlance, the efficient budget level is the level where the marginal benefits equal the marginal cost for each activity; this defines both the total budget and the efficient balance.

In the private sector, benefits are typically revenues, but a government agency often generates social benefits from goods and services provided rather than revenues. As noted earlier, many of the uses and outputs of the national forests do not have market prices. However, numerous techniques have been developed to estimate the value of unpriced or subsidized uses and outputs. (See box 8-A.) Calculated values can, in theory, be used as proxies for social benefits. Thus, the neoclassical theory of economic efficiency can still be used, if the value of the goods and services (including nonuse values) can be determined.

Investments complicate the comparison of expenditures and returns, because expenditures and returns occur at different points in time, and the value of a dollar today is greater than the value of a dollar tomorrow. (The difference in value is interest, usually presented as an annual rate.) However, expenditures and returns can be compared, if they are adjusted for timing at the relevant interest rate. (This rate is also known as the discount rate, and the procedure is called discounting future costs and returns to the present.) There are numerous methods for comparing discounted expenditures and returns. A common one, and the one used by the Forest Service, is to subtract the present (discounted) costs from the present (discounted) value of the returns to determine the *present net value* of the investment. The marginal approach of neoclassical economics is not as useful, since investments are generally not small changes. Nonetheless, a similar decision rule exists: if the present net value is positive (if the discounted returns exceed the discounted costs), the investment is desirable.¹

The Forest Service uses an economic efficiency approach in its forest planning model—FORPLAN—to assess the balance of uses, outputs, and protection

¹The decision rule for ranking investments is somewhat more complicated, since alternative investments are likely to have different costs. The ratio of discounted returns to discounted costs (the infamous benefit/cost ratio) is more useful to rank alternative investments, although a number of other techniques (e.g., the internal rate of return) are also feasible for ranking investment options.

Box 8-A—Valuing Nonpriced Goods and Services

Economic value of nonpriced resources results from both value in use and certain nonuse values. Use values include not only today's use, but the value of having the option to use the resource in the future (commonly known as option value). Nonuse values include the value of knowing the resources exist as well as the value of preserving the resources for the future; these values are often referred to as existence and bequest values, respectively.

There are two basic approaches to measuring economic value of nonpriced uses and outputs. One is based on the financial impacts of current use, usually by measuring either total expenditures or the value added because of those expenditures. Except for evaluating local community impacts, this approach is rarely used, because it does not measure the value of the resource. It would be like measuring the value of timber by tabulating how much timber purchasers spent on labor, equipment, gasoline, etc.

The second approach is based on estimated demand for the resources. This approach is generally preferred for its sound theoretical basis, but is more difficult to apply, because it requires demand curves. Methods have been developed for calculating demand curves for recreation and other nonpriced uses and outputs, typically relying on travel costs (the *travel cost method*) (210), on site attributes (the *hedonic pricing method*) (31), or on an artificially structured bidding market (the *contingent valuation method*) (58). All such methods develop a demand curve relating quantity demanded to various prices. Demand curves can also be developed for nonuse values using the latter two methods.

Demand curves for nonpriced resources are usually used to calculate *consumers' surplus*. Consumers' surplus is the total additional amount that the beneficiaries are willing to pay for the good or service, in excess of their current expenditures. It is also described as the possible revenues of a perfectly discriminating monopolist (i.e., one who could charge a different price to each customer). This is a useful measure, but may not be directly comparable to market prices for commodities, since the market price is how much the buyers do pay, not how much they would be willing to pay.

The Forest Service modified the traditional consumers' surplus in the 1990 RPA Program (281) by estimating the *market-clearing price*, the price that would balance demand and supply if the uses and outputs were marketed. Theoretically, supply curves would be developed, and the market-clearing price would be the price at which supply and demand are in balance. The 1990 RPA Program discusses developing supply curves from production cost data, but presents no evidence of such with its estimates of market-clearing prices; the market-clearing prices in the report suggest that a single supply curve was used in all regions for many different activities. This approach is conceptually strong, but additional information on supply curves is needed.

in national forest planning (246). FORPLAN is a computer model that maximizes the value of uses and outputs while meeting specified constraints. (See ch. 7.) The goal (technically, the objective function) is to maximize present net value of resource uses and outputs; thus FORPLAN fits the neoclassical economic theory of economic efficiency.

Limitations of FORPLAN in Achieving Efficiency

Resource Values

One difficulty with economic efficiency in forest planning arises from the questionable comparability of values for marketed and unpriced uses and outputs. Substantial research efforts over the past 30 years have developed various techniques for valuing unpriced resource uses and outputs. (See box 8-A.) Researchers have defended various methods as the best or most appropriate (31, 58, 210), and some

suggest that the proper technique depends on the nature of the resource (242). Furthermore, the comparability of market prices for commodities to the calculated values for unmarketed or subsidized resources has long been debated (154, 262). The extent of the polemic over this issue indicates substantial uncertainty over the comparability of market prices for resource commodities with the calculated values for unpriced resources. This limits FORPLAN's usefulness in examining the economic efficiency of forest planning and management.

Another problem with using FORPLAN to assess efficiency is that some values are not included in the objective function. As discussed in chapter 7, *the* objective function in FORPLAN only contains values for uses and outputs. However, people also value just having natural areas, protecting the opportunity to use them in the future, and preserving a legacy for future generations—values generally known as option values, existence values, and

bequest values. These values are not included in the FORPLAN objective function, and cannot be readily assessed relative to use and output values. Instead, nonuse values are expressed as constraints on the objective function. This approach provides only the selected level of protection for nonuse values; less protection is not allowed, and additional protection yields no additional benefits. Assessing the tradeoffs between outputs and nonuse values is very difficult, at best. Furthermore, considering nonuse values as constraints, and uses and outputs as objectives, suggests unequal treatment; uses and outputs are benefits, but nonuse values are limitations on national forest management.

Finally, even supposedly concrete values are subject to considerable uncertainty. Off-budget funds (see below) are often excluded from economic analyses, and cost data used in RPA and in forest planning may be inaccurate (217, 259). Timber values are also subject to debate. One analyst has noted that forest plans assume unrealistic future timber prices (187); these prices are based on projections using the Timber Assessment Market Model, which is quite sensitive to assumptions about future U.S. economic performance, wood use technology, and the like (259). The imprecision of cost data and timber values limit the usefulness of the efficiency analysis in FORPLAN.

Resource and Site Interactions

Another limitation to using FORPLAN to assess the efficiency of forest management alternatives is that current knowledge about physical, biological, social, and economic interactions among the resources is rather limited. For example, efficiency is the essence of the debate over below-cost timber sales. The Forest Service asserts that timber sales can generate nontimber benefits, and that modifications to generate such benefits often increase costs and/or decrease receipts, but that the sales are the most efficient means to achieve the benefits (222). Critics charge that the Forest Service not only loses money on below-cost sales, but that timber sales often damage, not benefit, the other resources (153, 187, 327). However, the cost to generate the desired nontimber benefits without removing the timber (e.g., cutting the trees and letting them decay) has rarely been examined. Similarly, the possibility of greater efficiency in the timber sale process has not been analyzed. Thus, the below-cost timber sale debate is being conducted with incomplete informa-

tion on all sides. Such fragmentary understanding of the effects of activities on resources and ecosystems limits FORPLAN's capability to analyze the efficiency of alternatives.

A related difficulty is the meager data on the uses and outputs of noncommodity resources. While timber harvests are measured, to charge for the timber removed, recreation and other noncommodity uses and outputs are often estimated.

Annual recreation use figures are notorious among field officials for being based on "a horseback estimate" of increase or decrease from the previous year's level, a figure which itself was based more on a manager's rough sense of use than on any direct quantitative measurement (217).

Thus, imprecision in the existing data, as well as the lack of understanding of resource interactions, restrict the capacity of FORPLAN for efficiency analysis.

The analysis of economic efficiency is further complicated by site interactions, because the management of one site may affect the efficiency of activities on other sites (138). For example, constructing a road might be an efficient means of providing access to two adjoining stands of timber if both areas are managed to produce timber, but might not be an efficient use of resources if only one area is producing timber. Management efficiency of various sites is most likely to be interdependent when access (principally road construction) is a significant portion of the management costs. However, the shortcomings of FORPLAN for addressing site-specific issues also limit its capability to assess the efficiency of interdependent management decisions.

Inefficient Prescriptions

Many critical decisions about balance and efficiency are decided before FORPLAN is used (30). In particular:

Decisions about suitable timberlands, the allowable sale quantity of timber, wilderness, unpriced outputs such as scenic and wildlife resources, silvicultural systems and land allocations are strategic elements of a forest plan that are generally decided outside a FORPLAN analysis, using subjective evaluations that reflect considerations other than economic efficiency (246).

Among the principal inputs to FORPLAN are the management prescriptions—the general manage-

ment practices that are proposed for an area over time. If timber is to be harvested, the prescription would specify the rotation (harvest) age and the silvicultural system to be used, the reforestation practices, and any intermediate stand treatments, before the harvest and/or after successful reforestation. Prescriptions would also identify other activities expected in the area, such as wildlife habitat improvements, recreation developments, range improvements, and erosion control.

The timber industry has argued that the Forest Service's timber management prescriptions are inefficient, that different systems could yield greater timber benefits and still protect the other values (308). However, while research has examined the costs and benefits of specific activities, very little has been written about management prescriptions and economic efficiency (123).

Forest Service research has shown that many timber sales are modified to mitigate or enhance other resources, often increasing costs or reducing revenues (19, 182, 223). Comparing the efficiency of various management prescriptions can be done under a patchwork dominant-use management framework (as described in ch. 3), because the outputs of the dominant resource can be compared to the management costs (assuming that the environmental quality and resource conditions standards are still maintained). However, assessing efficient prescriptions under integrated resource management is difficult because it requires an accurate understanding of the quantity and quality changes in all resources that result from a management activity (31, 221). Such knowledge, as well as measures of quantity and quality for all resources, is currently lacking.

Investment Commitments

Government agencies generally do not distinguish between capital and operating expenditures. Annual budgets and appropriations generally contain no special provisions for addressing capital investment needs. However, separating these costs from operations and maintenance is necessary for efficient investment, especially "if future expenditures [such as timber stand improvements] are tied to present investment decisions [such as reforestation]" (31). Mixing capital and operating expenses can contribute to inefficiency; future investments might be poorly timed, if they are made at all. However, Congress is reluctant to commit itself to

fund future investments, regardless of the efficiency of such investments. Political realities thus inhibit the management efficiency that FORPLAN shows to be feasible.

Determining the Balance: An Equity Issue

The technical limitations of FORPLAN are not the only reason why economic efficiency is not used to determine the proper management balance for the national forests. Observers have noted the public's general lack of interest in economic efficiency for Federal land management (138), and even a philosophical opposition to efficiency standards:

Even supposing that the measurement problems could be miraculously overcome, it would not change the fact that the benefit-cost analysis is a direct descendent of utilitarian principles and thus philosophically unacceptable to a growing segment of the American public (164).

Using efficiency to determine management is also problematic in that the beneficiaries of government activities often do not pay the costs (44). Hunters, hikers, off-road vehicle users, and arguably even ranchers and loggers often do not pay the full cost for the benefits they receive. This is the essence of the argument set forth by those who advocate market solutions for management problems. However, Congress rejected this approach in national forest management. Determining the mix of uses, outputs, and protection is more a question of balance and fairness-equity-than one of efficiency.

The Forest Service has implicitly recognized that efficiency alone cannot determine the acceptable management direction for the national forests. Although FORPLAN compares alternatives for a national forest, the preferred alternative (and the final forest plan) is rarely the one that maximizes efficiency, as defined by present net value. Nonmaximum selections by Forest Service line managers essentially acknowledge that computer models probably cannot choose a balance among resource uses, outputs, and protection that is acceptable to the public.

How, then, can balanced management be established in forest planning? As discussed in chapter 5, Congress intended the Forest Service to determine the proper balance by listening to the public. This does not imply public decisionmaking, but that the agency discuss goals, opportunities, and limitations with affected and interested individuals and groups.

Through such interaction and deliberation, the agency can learn about the public's desires and values, about new possibilities and practices for efficient and effective production and protection, and about the use and output levels the public finds acceptable. Members of the public can listen and learn about their own and each other's desires and values, fostering cooperation, rather than enmity. This is not to suggest that such discussions can lead to agreement on all issues. At times, the Forest Service must make hard choices. However, balance can only be achieved through meaningful interactions among the agency and various public interests.

IMPACTS OF NATIONAL FOREST MANAGEMENT

Decisions about national forest management affect not only direct users, but also local communities. Congress has also shown concern for community stability and the effects on counties of the tax exempt status of national forest lands. These concerns, and efforts to address them, affect strategic planning for the national forests. The policy of sustained yield for stable timber harvests is based on providing stability for communities. Much of the debate over the economic impacts of national forest management has focused on the effects on the timber industry. The following discussion follows this emphasis, but it is not intended to suggest that the effect on other sections of local economies are unimportant. The difficulty of assessing such effects is also discussed.

Community Stability

Concern and Approach

Congressional concerns about the impacts of Federal land management on communities date back at least to the 1897 Forest Service Organic Act. The floor debate over the purposes for which forest reserves could be established strongly indicates the congressional interest in making timber available to citizens (233, 326). Some have argued that Congress has clearly directed national forest management to consider community stability (185). Others assert that the congressional commitment to community stability is far less clear (218), that while local planning under NFMA includes community stability, national planning under RPA virtually precludes considering it (219).

Regardless of the clarity of congressional commitment to community stability, the concern is real. However, the legislative direction for the Forest Service to consider community stability is ambiguous, at best (193). Nonetheless, as a strategic planning process, NFMA planning is to address issues and concerns, and community stability is often raised as a local concern (225). Thus, community stability must be considered as an issue in the forest planning process.

Impacts on communities are typically assessed in forest planning using IMPLAN--a multicounty input-output model adapted to each national forest. (See ch. 7.) Input-output analysis relies on a general equilibrium model of the economy, with quantitative relationships to describe the interactions among various manufacturing, service, and other sectors. A demand-driven input-output model, such as IMPLAN, estimates the impact of changes in national forest uses and outputs on employment and local income; it has the ability to separate the direct impacts on one sector from the indirect and induced impacts on other sectors. Thus, IMPLAN can display the local economic consequences of various management alternatives for the national forests.

Limitations

Despite congressional and local concern for community stability, the Forest Service has limited ability to assess and to achieve community stability.

Assessing Community Stability--one difficulty in addressing community stability stems from the imprecise definitions of community and stability (157, 218). There is no legal definition of, or requirement to manage for community stability (193). Furthermore, academia has also struggled with these concepts.

The first three speakers [at a 1987 conference on community stability (150)] were an economist, a sociologist, and a lawyer. They said, essentially, we can't measure community stability, we're not sure what it means, and the Forest Service has no legal authority to do anything about it. In response, at lunch, a Forest Service spokesman said yes, that might all be true, but the Forest Service is going to "do community stability anyway" (224).

Economists generally define communities based on their distinctive economic functions (236). Sociological definitions typically include both geographic and cultural elements. "Community" can also be

defined by social relationships and interactions, or by a shared identity (145). This latter aspect is particularly important for some groups, such as loggers (40). Small rural communities are often assumed to fit the definition on all counts, but such is rarely the case (145). Newcomers frequently bring different styles and cultures to these communities (230); however, these do not always conflict with the long-term residents of rural areas (26). What all this means is that there is no simple definition of community that can be used for estimating and reporting the effects of national forest management on ‘‘communities.’’

Stability is equally difficult to define, but typically is measured in economic terms—jobs, income, prices, and the like (157, 169). This is important information, to be sure, but not the full measure of a community’s stability. However, quantitative measures of social stability do not exist. Furthermore, stability is often equated with maintaining the status quo, but most recognize that change is an essential part of long-term stability, that communities are dynamic (218, 236). The difficulty lies in trying to determine the amount and pace of change that affords stability—too much or too fast is unstable, but too little or too slow results in stagnation. The difficulty in measuring the amount and pace of change and the lack of measures of social stability limit our ability to assess the stability of communities.

Input-output analyses have two additional shortcomings for assessing community impacts. First, economic sectors are reported by county, but the resulting data can mask local variations within a county. For example, Montana’s Gallatin County contains both timber-based communities (Gallatin Gateway and Belgrade) and recreation towns (West Yellowstone and Bozeman); similarly, neighboring Park County has one town dominated by a sawmill (Livingston) and another dominated by the tourist trade (Gardiner). Thus, using county data may not provide an accurate picture of the impacts of national forest management on individual communities.

In addition, the economic data used in input-output analyses do not provide comparable details for all resource-based sectors of the economy. The U.S. Department of Commerce defines lumber and wood products as a separate manufacturing industry. In contrast, forestry and livestock production are part of agriculture, while recreation is scattered

among a host of industries generally classified as retail trade or as services. Expenditure profiles can be developed for each type of recreation to get recreation employment and income data comparable to timber employment and income data (191), but the task is costly and time-consuming. Thus, existing data on economic interactions provide a more thorough picture of the impacts of national forest management on the timber industry than on other industries that may also rely on the national forests.

Achieving Community Stability--The forest management policy of sustained yield for a stable timber supply has long been justified on the grounds that it promotes community stability (219). Thus, community stability has often been equated with timber industry stability (8, 236). While there is broad recognition of the importance of other resources to certain communities, much research and concern still concentrates on the stability of communities whose economies depend on producing wood products from national forest timber.

To date, no empirical evidence has shown that stable timber production leads to stable communities (62, 69, 93), and some studies suggest that timber-dependent communities may be less stable than other communities (97, 311). A broad array of factors affect the demand and supply of wood products, and the stability of local wood supplies is but one of these (193).

Researchers have found that the cyclicity of the timber industry has led to a certain community response to distress—a passive expectation that conditions will eventually return to normal (40). This, however, can lead to a loss of local leadership that could help the community adjust to upheavals (15). In addition, a mill closure alters the structure of a community quickly and substantially, further limiting its ability to respond (314).

The Forest Service has recognized the difficulties associated with defining and achieving community stability. Thus, its community-stability goal has been defined as that of preventing sudden, catastrophic instability when possible by gradually phasing in changes, thus minimizing economic and social impacts. According to Associate Chief George Leonard (151), ‘‘community stability means the avoidance of radical, or abrupt, changes in the economic or social structure.’’

This suggests that community evolution may be a more apt goal than stability. Darwinian evolution occurs through the accumulation of small, gradual changes. However, an alternative view of biological evolution (known as punctuated equilibrium) suggests that species may evolve quickly, then remain quite stable for long periods before disappearing quickly (73). This alternative view—long periods of stability interrupted by abrupt changes—may also be more descriptive of community evolution.

Rural communities frequently depend on one or a few industries or firms; economic changes (regional, national, and/or international) may cause severe local distress and upheaval. A sawmill, for example, may be able to adjust production levels, but it cannot close gradually. The national forests accommodate uses and produce outputs, but the Forest Service cannot control the economic factors that determine a firm's ability to stay in business. With limited responsibility and limited means, the agency clearly has limited ability to promote community stability (61). Perhaps the best that can be hoped is to not be the cause of major distress, as the Forest Service has suggested.

At the 1987 conference on community stability (150), a Bureau of Land Management (BLM) employee questioned the extent of the industry's responsibility for community stability (175):

What is the timber industry's role and responsibility in community stability? . . . Specifically, for those companies with a land base, to what extent should their harvest scheduling consider community stability, especially in light of projected future shortfalls? For those companies with no land base, or no merchantable volume of lumber, how should the company consider future investments, especially to expand production capabilities, considering community stability in the long run? Recognizing that many companies are active, positive members of the community (while they are there) who make numerous contributions to the community ..., what is the timber industries [sic] larger role in community stability?

In other words, can the Federal Government be responsible for community stability when the private sector cannot be compelled to ignore market signals in making timber harvesting and mill capacity decisions that affect short- and long-term community welfare? Can, and should, the national forests insulate communities from decisions in the private sector? And, what about communities that

have grown largely in response to Forest Service efforts to develop a timber industry in certain areas (291)?

Implications for National Forest Planning

The impact of national forest management on local communities is an issue that must be addressed in national forest planning. Although the congressional direction for considering community stability is imprecise, the Forest Service is to be responsive to public concerns in the planning process, and the public is often concerned about the very real impacts of national forest management on communities. Thus, as the Forest Service has recognized, the community stability issue cannot be ignored.

Because of the agency's inability to control future economic conditions, it is probably infeasible to assure community stability. Nonetheless, the Forest Service should disclose a full picture of the likely economic and social consequences of alternative actions considered in the planning process. Current plans rarely display all financial information+. e.g., government revenues, expenditures (including those financed from revenues), and receipt-sharing payments—and often do not discuss impacts that occur away from the forest—e.g., on downstream fisheries and municipal and industrial water users (225).

IMPLAN provides a beginning (and will produce a more complete picture as the Forest Service specifies the various resource-related sectors more fully), but is not sufficient to display the full suite of ramifications of national forest management. First, the Forest Service must not view the national forests as the only source of resource uses and outputs; other landowners can also provide the various uses and outputs. In the planning process, the agency must consider the actions of other landowners (including neighboring national forests), and explore the opportunities to support them.

Furthermore, the Forest Service must also consider specific businesses that wholly or substantially depend on the national forests (e.g., ranchers with grazing allotments, certain sawmills, and outfitters and guides who rely on Forest Service backcountry). In particular, the Forest Service must examine the extent to which a management alternative might threaten the dependent business. The agency must be aware of and sensitive to the businesses' minimum operating needs. This requires close cooperation between the agency and dependent businesses, but

the Forest Service must also be careful to avoid making decisions behind closed doors. Such “back-room deals” would harm the agency’s credibility with others interested in national forest management.

Payments to Counties

Since 1908, the Forest Service has returned 25 percent of its receipts to the States for use on the roads and schools in the counties where the national forests are located; these payments are variously called payments to States, payments to counties, and Forest Service receipt or revenue-sharing.² These payments originated in 1907 (at a 10 percent return) to compensate counties for the nontaxable status of Federal lands and to encourage western development. (Other Federal lands were also not taxable, but public domain lands were available for homesteading and other land disposal programs, and thus were expected to become taxable at some point.) The rate was increased to 25 percent in 1908, and the money was permanently appropriated (i.e., the payments would be made unless Congress acted to stop them). However, there is no discussion in the *Congressional Record* as to why 25 percent was deemed the appropriate compensation for counties.

Forest Service 25-percent payments are often very important to counties. They are not the only compensation paid to counties for the local influence of the Federal presence, but they are the only payments affected directly by national forest management. Furthermore, in some heavily timbered counties in the Pacific Northwest, Forest Service payments account for more than 80 percent of county operating budgets (217). Thus, counties are very interested in maintaining or increasing Forest Service receipts (and the resulting 25-percent payments).

Timber receipts account for about nearly 95 percent of total Forest Service receipts in most years (298). The dominance of timber receipts, combined with the importance of Forest Service county payments, often makes the counties proponents of Forest Service timber sales, even at the expense of other resources and industries (217). However, timber receipts also fluctuate widely, often changing by 50 percent or more from one year to the next

(298), and are much more variable than other Forest Service receipts. (See figure 8-1.) Thus, under the current system of compensating counties for the tax exempt status of national forest lands, counties have little certainty about their annual payments (and hence, their budgets). Still, they are more likely to support Forest Service timber sales than other activities in the planning process.

FOREST PLANNING AND THE BUDGET PROCESS

The annual Forest Service budget has a substantial affect on national forest management. Budgets determine implementation of strategic plans, and provide centralized control over planning by an organization’s units. In forest planning, the budget effectively controls plan implementation. The Forest Service budget is also the direct link between **Congress** and national forest management. This section explores the relationship between forest planning and the Forest Service budget by:

1. describing how budgets are considered in forest planning,
2. explaining how planning and the annual budget process are linked, and
3. discussing how funding mechanisms outside the annual budget process affect forest planning and management.

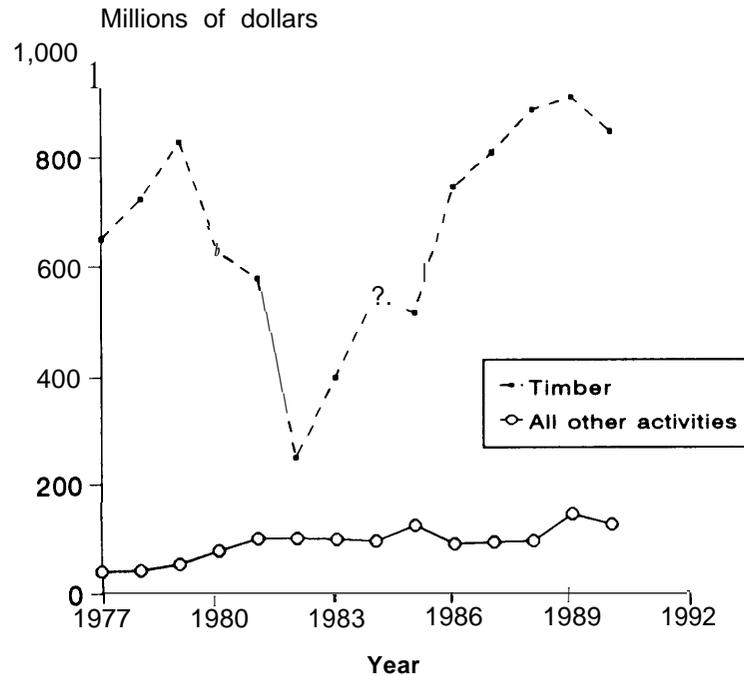
The Budget Level in Forest Plans

Economic efficiency is clearly related **to the** budget level. As described above, neoclassical economic theory provides an approach for determining efficient budgeting if enough information **exists**. However, because of the difficulty of measuring and valuing many government goods and services, such calculations are virtually impossible. Thus, the budget level for each agency and program is determined by political debate and “horse-trading” to achieve **a** budget level and governmentwide balance that meets the needs of the American people.

There has been an ongoing debate about whether budgets should be constrained in developing Forest Service plans (both forest plans and the RPA Program) (51). The Forest Service argues that budget constraints in the planning process limit the

²These payments should not be confused with payments in lieu of taxes (PILT). PILT payments are made by the Bureau of Land Management (Department of the Interior) directly to counties, without restrictions as to their use. They are based on the Federal entitlement acres in the county, but are reduced by other revenue-sharing programs. National forest lands are included in the entitlement acres for PILT payments, and the payments are reduced by Forest Service revenue-sharing, but PILT payments are **in addition to the** Forest Service’s 25-percent payments.

Figure 8-1-Receipts From Activities in the National Forests (in millions of dollars)



SOURCE: U.S. Department of Agriculture, Forest Service, *Report of the Forest Service* (Washington, DC: U.S. Government Printing Office, annual series).

agency's ability to examine all the needs and opportunities for resource management, and that Congress and the public want to know the professionals' estimate of the money needed to do the job right (214).

However, unconstrained budgets typically amount to "wish lists" (215). In the past RPA Programs, the Forest Service has often implied that, with enough money, they can solve all resource conflicts (147). Furthermore, Congress and the public need information on priorities, on what activities should occur if funding is limited (214, 259). Realistic budget levels are particularly important for forest plans. **The public has spent much time and effort contributing to the plans, and some view the goals and targets in the plans as essentially moral commitments or social contracts (136). If funding is substantially lower than was planned, this contract cannot be fulfilled. Furthermore, substantially lower funding may alter implementation of the planned activities enough to require that the plan be revised.**

Both unconstrained and realistic budget information is clearly useful in planning, but the Forest Service Washington Office gave little direction to

the forests on the budget levels to be used in forest planning. One regional office directed the forests to constrain the budget levels used in planning, while others gave no direction. On some forests, planned budgets were constrained by past budgets, but on other forests, the plans were prepared without any budget limitations-whatever money was needed was assumed to be available. Thus, the budgets in forest plans cannot be simply aggregated to a National Forest System budget proposal; the budget assumptions differ too much (215) and may not reflect national fiscal priorities.

Plans and the Budget Process

The Current Budget Process

While NFMA directs that the integrated land and resource management plans be prepared by interdisciplinary teams, the Forest Service's annual budget is not integrated. The House and Senate Committees on Appropriations use more than 50 line items for the Forest Service budget, with each line corresponding to some resource management program. Thus, while planning is integrated, Forest Service

budgeting (at least at the national level) is still done by resource.

Projects under the integrated NFMA plans are aggregated into budget proposals at each national forest, and then the forest budgets are aggregated at the regional offices; integrated resource management is translated into budget line items along the way. The functional budget is modified first by the agency's Washington Office, then by the Office of the Secretary of Agriculture, the Office of Management and Budget, and the House and Senate Committees on Appropriations to meet the political expectations and priorities of each of these participants in the budget process (217). However, the integrity of multiple-use management under integrated forest plans is completely lost in this process, and any relationship between the actual appropriations and integrated resource management is coincidental (138).

The annual appropriations, along with specified output targets,³ are allocated among the regions, and then to the national forests. Allocations are closely tied to specific resources. The translation of line item appropriations back into integrated management is "done on an ad hoc basis by the resource managers themselves out there on the individual ranger districts" (215).

Allocated funding and output targets thus become the management guidance for on-the-ground management. The accounting for expenditures must, by law, match the appropriations; managers can be held personally responsible for the misuse of Federal funds. The Forest Service does have some authority to transfer funds among programs (technically known as reprogramming), but reprogramming has limited use because:

1. the authority is for relatively limited amounts;
2. the process is time-consuming, but the need may not be known until the field season is under way, late in the fiscal year; and
3. conventional wisdom holds that if money is not used, it wasn't really needed, and won't be available again (i.e., "use-it-or-lose-it" (215).

Problems and a Possible Solution

The result of line item appropriations and limited reprogramming opportunity is that expenditures are often reported as they were planned, not necessarily as the money was actually spent (215, 217, 254). Thus, the accounting data may not reflect the way funds were spent managing the various resources. Some of the inaccuracies are intentional, but the imprecision of translating line items into integrated resource projects and then trying to accurately allocate time among the resource line items is the principal culprit (217).

This cost-accounting problem is compounded by inaccuracies in reporting target accomplishment. For commodities (especially timber), the targets are readily measurable, and must generally be met. For other resources, however, the methods for measuring and reporting outputs are less precise and less tangible; watershed accomplishments, for example, are more related to the size of a watershed than to the effort expended (215). (See ch. 6.) As a result, there is "no recognizable relationship between variations in funding and variations in output" (215). Thus, under the current system of line-item appropriations and accomplishment reporting, Congress and the American people do not really know what they are ultimately buying when money is appropriated for national forest management.

To eliminate these problems, the Forest Service has proposed an alternative budgeting system, known as end-results budgeting. Under this approach, the line items for national forest management would be collapsed into one operations and maintenance account; separate line items would be retained for investments in roads, trails, and facilities, for reforestation and timber stand improvement, and for land acquisition (215). The General Accounting Office (GAO) (251) was favorably impressed with the agency's test of end-results budgeting, finding that expenditures were reported more accurately and that more outputs were being produced without increasing costs.

End-results budgeting is not without its problems. Congress may fear losing control over the budget for each resource program, although this fear is unrealistic, because Congress doesn't really have this

³Congress only establishes timber sale targets in the Forest Service's ~@ appropriations, and the regional timber sale targets have only been enacted during the past decade (a response to the below-cost timber sales debate). Other resource output targets are established by the Forest Service Washington Office, based on the enacted appropriations for that resource.

control now if expenditures are reported as planned. Nonetheless, the softness of output measures for noncommodity resources could lead to increased focus on the hard, measurable output targets. (See the discussion of monitoring in ch. 6 and of performance appraisal in ch. 9.) Wilderness, for example, is measured in acres managed, a function of Congress's designation, not of managerial performance. For end-results budgeting to work, accurate measures are needed for changes in the quantity and quality of all resources resulting from management efforts (215, 259).

“Off-Budget” Funding

Special Accounts and Trust Funds

The Forest Service has a number of special accounts and trust funds that are independent of the regular, annual appropriations process. (See box 8-B.) Not all special accounts and trust funds are “off-budget” some require annual appropriations from Congress to allow money from the account to be spent. However, for several special accounts and trust funds, Congress permanently appropriated adequate funding when the fund or account was created.⁴ The Forest Service has 14 permanently appropriated special accounts or trust funds, 7 with annual expenditures exceeding \$10 million. In 1987, permanent appropriations amounted to more than a third of the Forest Service budget for the National Forest System (297).

The funding for six of these major permanent appropriations is largely or entirely related to the timber program. As described above, the Forest Service returns 25 percent of its receipts to the States for use on roads and schools in the counties where the national forests are located, and timber usually accounts for 95 percent or more of total receipts. (See also box 8-C.) Deposits to the Knutson-Vandenberg (K-V) Fund are a portion of timber sale receipts, while brush disposal and other cooperative deposits are predominately deposits from timber purchasers for work necessitated by timber harvesting, and the Timber Salvage Sale Fund receives receipts from designated salvage sales. Finally, the Reforestation Trust Fund uses tariffs on wood imports (principally on imports of softwood ply-

wood from Canada) to eliminate the backlog of needed reforestation and timber stand improvement work.

The Forest Service has substantial discretion to determine the amount of money deposited in four of these funds—K-V, salvage, brush disposal, and other cooperative deposits. The agency determines:

1. the portion of timber receipts deposited in the K-V Fund;
2. whether a sale is officially a salvage sale, with receipts deposited in the Salvage Sale Fund; and
3. how much timber purchasers deposit for brush disposal and other cooperative work.

There are virtually no limits on the collections. Deposits to the K-V Fund, for example, accounted for more than 99 percent of timber receipts on the Beaverhead National Forest in 1987, and more than 90 percent of timber receipts on eight other forests (298). Nationwide, nearly 20 percent of timber receipts were deposited in the K-V Fund in 1987, including more than \$9 million on the Klamath National Forest (47 percent of the forest's timber receipts) and more than \$8 million on the Tahoe National Forest (55 percent of the forest's receipts) (298). Deposits for brush disposal and other cooperative work are generally less than deposits to the K-V Fund, but still ranged as high as \$7 million each on the Willamette and Mt. Hood National Forests in 1987 (298).

All four of these funds must be used on the national forest where the money was collected (except for the portion allocated to overhead in the regional and Washington offices). Thus, at each national forest, the Forest Service has substantial discretion for determining a large share of its budget, if it has timber to harvest. A distinction is often made between “rich” forests and “poor” forests (217). Rich forests simply have more timber available and therefore more special account or trust fund money—than poor forests. (See also box 8-D.)

Within each national forest, the Forest Service also has discretion over how to spend the permanently appropriated funds. Timber salvage funds are limited to preparing and administering new salvage

⁴Technically, the permanent appropriations are not “off-budget,” because the House and Senate Committees on the Budget must include these appropriations when considering the Federal budget. However, permanent appropriations occur unless Congress acts to alter them, and are generally excluded from discussions by the House and Senate Appropriations Committees and from their committee reports. Since Permanent appropriations occur outside the regular annual appropriations process, they are discussed here as “off-budget” items.

Box 8-B—Forest Service Trust Funds and Special Accounts

The Forest Service has 6 special accounts and trust funds that require annual appropriations and 14 with permanent appropriations.¹ (For a more complete description of budget terms and these Forest Service accounts, see *The Forest Service Budget: Trust Funds and Special Accounts* (297).) One permanent appropriation--National Forest Roads and Trails Fund--has been effectively eliminated by the House and Senate Committees on Appropriations since 1982, because these funds have been transferred to the U.S. Treasury to offset annual appropriations for road and trail construction and maintenance. In addition, a 15th permanent appropriation--the Tongass Timber Supply Fund--was terminated in the Tongass Timber Reform Act of 1990.

Seven of the Forest Service permanent appropriations are substantial sources of funds, with more than \$10 million appropriated annually in each account. The seven major permanent appropriations, in order of 1990 appropriations (257), include:

- . payments to States (\$365 million in 1990);
- Knutson-Vandenberg (K-V) Fund (\$217 million in 1990);
- Timber Salvage Sale Fund (\$162 million in 1990);
- Working Capital Fund (\$110 million in 1990);
- brush disposal (\$47 million in 1990);
- . other cooperative work (\$43 million in 1990); and
- . Reforestation Trust Fund (\$32 million in 1990).

Six of these seven major permanent appropriations are largely or entirely tied to the timber sale program. The Working Capital Fund is at most indirectly linked to timber, since it is essentially a means of apportioning equipment and other capital costs among the various forest management activities. The one major (\$10 million or more) special account or trust fund not connected with the timber program is the Land and Water Conservation Fund (LWCF), which provides money for acquiring recreation lands (\$63 million for the Forest Service in 1990). However, LWCF requires annual appropriations from Congress; it is not permanently appropriated.

¹The difference between special accounts and trust funds, in Federal accounting, is that interest on the trust fund balances accrues to the trust fund while interest on special account balances accrues to the U.S. Treasury. There is no difference in the means of financing or in the authority of the agency to spend money from the account.

sales, while brush disposal and other cooperative deposits are only available for the specified tasks that require money to be deposited. However, K-V Funds are available for reforestation, timber stand improvement, or other activities within the timber sale area. In 1990, 53 percent of K-V Funds (\$116 million) were used for reforestation, 14 percent (\$30 million) for timber stand improvement, and 33 percent (\$71 million) for other programs (287). These other programs can include rehabilitation, maintenance, or improvement of watersheds, wildlife habitats, and other resources. Thus, not only timber managers have an interest in the collections and use of these permanent appropriations; this is particularly true of K-V Funds (124, 187).

Implications for Planning and Management

Are permanent appropriations necessary to accomplish various timber management and sale activities? The answer is unclear. The Bureau of Land Management (BLM) in the Department of the Interior manages about 2 million acres of highly

productive timberland in western Oregon. While it must accomplish many of the same tasks as its sister agency, BLM has no K-V Fund, no authority to require deposits for brush disposal or other activities, and no purchaser road credits (291). BLM funds road construction and certain timber management activities through direct congressional appropriations or through uncompensated requirements on the purchasers. The productivity and ownership patterns of the lands might make such funding mechanisms adequate, but BLM has demonstrated that such programs may not be necessary to manage lands and sell timber.

No evidence has been presented to show that the permanent appropriations are efficient (for the Forest Service or any other agency). Because the money is available without action by Congress or the administration, permanent appropriations are rarely reviewed. Also, as noted earlier, permanent appropriations are typically excluded from analyses of Forest Service efficiency, and even from reports of

Box 8-C--Peculiarities in Forest Service Payments to States

In 1976, Congress amended the 1908 Act establishing permanent appropriations to return 25 percent of Forest Service receipts to the states for use on roads and schools in the counties where the national forests are located. The counties were concerned that the Forest Service was using timber receipts to pay for reforestation and road construction (see box 8-D, below), thereby reducing the payments to counties. Therefore, Congress defined Forest Service gross receipts to include certain reforestation funds (i.e., deposits to the Knutson-Vandenberg or K-V Fund) and timber purchaser road credits. On forests with low timber values, these "receipts" are often the majority of the timber value; for example, deposits to the K-V Fund accounted for 99 percent of timber receipts on the Beaverhead National Forest in 1987 (298). In such situations, Forest Service payments to counties and deposits to the K-V Fund exceed the cash timber receipts, effectively requiring transfers of funds from forests with higher timber values. While the Forest Service has always had sufficient cash timber receipts to cover county payments and K-V Fund deposits nationally, a number of forests require additional funds to meet these two cash requirements—28 forests (8 in the Northern Region, 10 in the Intermountain Region, and 10 others) with a total transfer of \$2.4 million in 1987 (298). However, this interregional transfer is well hidden in the Forest Service budget.

Forest Service expenditures. However, the substantial local discretion over the level and use of these funds prevents Congress from exercising full control over the Forest Service budget. Some might argue that Congress should have limited opportunity to tinker with Forest Service funding; the earlier discussion and analysis of end-results budgeting suggest the benefits and problems of greater agency fiscal autonomy. Nonetheless, whether permanent appropriations are an efficient and appropriate means of funding Forest Service activities remains unclear.

Forest Service permanent appropriations undoubtedly affect national forest planning. As described above, forest supervisors have little direct control over their annual budgets for implementing the forest plans. However, they do control the funds available from the permanent appropriations. Furthermore, because at least the K-V Funds are

available for a variety of tasks, employees in many resource specialties have a budgetary interest in supporting timber sales. Some critics have even suggested that Forest Service management is driven primarily by efforts to the budget (124, 187). The use of K-V and other funds on some forests does lend credence to this view, but managers on other forests apparently rely much less on these funds. Thus, budget maximization is certainly not the sole motive of Forest Service employees. Nonetheless, budgetary considerations do support an internal interest in maintaining or expanding the timber sale program in national forest planning.

SUMMARY AND CONCLUSIONS

Economic considerations enter national forest planning primarily as concerns about the balance among resource values, about management efficiency, and about the impacts of national forest management on communities. RPA and NFMA require various economic analyses, and MUSYA directs management to consider "the relative values of the various resources." These laws clearly indicate that efficiency is an important consideration, but not the principal criterion for management decisions.

The Balance Among Resource Values

Some have suggested that efficiency is the appropriate standard for determining the balance among resource outputs and environmental protection. Efficiency is generally evaluated by comparing benefits (social benefits generated by a government agency) with costs (including nonfinancial costs). To analyze investments, current and future benefits and costs are compared by calculating the present net value of the investment. The Forest Service uses a computer model—FORPLAN—for such analysis. As described in chapter 7, this model maximizes the present net value of the specified objectives, subject to various constraints.

FORPLAN is a useful tool for examining the efficiency of management alternatives, but has limited capability to determine the most efficient management balance. First, many uses and outputs of the national forests are not marketed, and the existing techniques for valuing unmarketed uses and outputs might not provide values that readily compare to market prices. Furthermore, the FORPLAN objective function includes only uses and outputs; nonuse values of the forest (option, bequest, and

Box 8-D—Timber Purchaser Road Credits

In addition to the various special accounts and trust funds, the Forest Service has a unique means of funding road construction in the national forests. Under the 1964 Forest Roads and Trails Act, the Forest Service can require purchasers to build the roads specified in the timber sale contract. The law also allows the agency to compensate the purchasers, which it does by granting credits equal to the estimated construction costs. These credits can then be used to pay for the timber that is harvested, before any cash must be paid. Purchaser road credits can be viewed as short-term, interest-free loans for buying Federal timber, although purchasers see them as reimbursement of required expenditures. In 1987, the Forest Service granted nearly \$120 million in road credits, including \$12 million on the Willamette National Forest and \$9 million on the Umpqua (298). Furthermore, purchasers can transfer the credits among timber sales within a given national forest (but not between forests or between purchasers), essentially allowing them to extend the term of this interest-free loan.

In some circumstances, the timber purchasers cannot use their credits. The Forest Service specifies the minimum cash payment for each tree species in each sale, based on regional standards. If using the credits would reduce the purchaser's cash payments below the minimum, some or all of the credits cannot be used.¹ (Such unusable credits are called "ineffective" road credits.) This situation is most likely to occur where timber values are quite low, such as the northern and central Rocky Mountains. Timber values can be low, because the trees are smaller in diameter and occur in more scattered, less dense stands, or because the purchasers face higher operating costs. The low timber values and low timber volumes typically mean fewer and smaller sawmills, and thus probably less efficient, and possibly less profitable, operations.

The existence of effective and ineffective credits is important, because it also distinguishes between "rich" and "poor" forests. The credits are less likely to be effective in forests with low timber values, and purchasers of timber from these forests are at a disadvantage because they are less likely to have access to the short-term interest-free loans.² Thus, forests with low timber values are less likely to be able to sell timber, and therefore have fewer opportunities to fund road construction and the various special accounts and trust funds that provide a significant portion of the budget.

Furthermore, the current system of effective and ineffective credits is unfair to purchasers, because operators in certain areas often cannot use their credits. Congressional efforts at providing a more balanced system have focused on allowing ineffective credits to be transferred (or sold) to other forests and/or other purchasers. However, such a move could cost the government money; estimates of ineffective credits range as high as \$100 million annually. In addition, purchasers of Bureau of Land Management timber (and probably of private timber) would still not have access to purchaser road credits. Nonetheless, the current system is unbalanced and does not treat all timber purchasers fairly, as equals in their chosen business.

¹Purchasers in such situations are also less likely to face competition in bidding for Forest Service timber, however, and the fewer bidders generally means less overbidding and therefore a relative price advantage. Purchasers can mill poorer timber and face higher operating costs without necessarily being less profitable

²In such situations, purchasers can bid up timber prices by the amount of the ineffective credits without increasing the required cash payments. Such bids, sometimes called "wooden dollar" bids, allow purchasers to delay their cash payments by making the Credits effective (usable). "Wooden dollar" bids also increase Forest Service payments to counties (see box 8-C, above), and thus have a detrimental effect on the U.S. Treasury.

existence values) can only be included as constraints on uses and outputs. FORPLAN analyses are only as good as the information in the model, and thus are restricted by incomplete knowledge of biological interactions, by sparse data on noncommodity uses and outputs, by model limitations for addressing spatial relationships, and by inadequate analyses of the efficiency of the management prescriptions used. Finally, investment efficiency may require that future investments be tied to current expenditures, but Congress is reluctant to commit to expenditures by future Congresses.

In addition to these limitations on using efficiency criteria generally, and FORPLAN in particular, to determine the management balance for the national forests, Congress and the public have rejected efficiency as the standard for determining management direction. Furthermore, the beneficiaries of many management activities pay less than the full cost of producing the benefits, and some pay little or nothing. The Forest Service has implicitly recognized these limitations in selecting forest plans that do not maximize present net value. Instead, the balance among uses, outputs, and protection can

only be determined through public involvement—as the Forest Service and the public discuss their needs, concerns, and values and consider the possibilities of achieving them through national forest management (See ch. 5.)

The Impacts of Management

The impacts of national forest management on communities are typically addressed in terms of community stability. Congress has long expressed concerns about community impacts, but the legislative direction to consider community stability in forest planning is ambiguous. Nonetheless, forest planning is to address local concerns, and locals are often concerned about the impacts of management on their communities.

The Forest Service generally uses an input-output model—IMPLAN—to identify the economic impacts of management alternatives. IMPLAN estimates the employment and income by industry sector for multicounty areas around each national forest. However, this approach can mask impacts on specific communities, because different resource-related firms may exist in separate communities within a county. Furthermore, the wood products industry is the only resource-dependent industry identified as a separate sector in Commerce Department data; although the Forest Service is working to improve IMPLAN, modifying the data to separate recreation, livestock, and other resource industries is an expensive and time-consuming task. Finally, the imprecise definitions of community and of stability limit the agency's ability to fully display the impacts of national forest management.

Traditionally, community stability has been equated with sustained yield, particularly of timber, but no evidence exists to show that sustained yield or timber management can promote community stability. Furthermore, the Forest Service has no ability to influence demand factors, which are important to stable industry production, and it is questionable whether the Forest Service alone bears responsibility for timber industry stability. Nonetheless, abrupt changes in Forest Service timber sales can be disruptive. Thus, the Forest Service has defined its responsibility to communities as attempting to avoid causing radical or abrupt shifts in local social and economic patterns.

An additional significant impact of national forest management is the potential effects on county

budgets. The Forest Service returns 25 percent of its gross receipts to the States for use on the roads and schools in the counties where the national forests are located. In most years, more than 90 percent of Forest Service receipts result from timber harvesting. Thus, to meet budget needs, counties often support continued or expanded timber harvesting. This is also a problem, because timber receipts can fluctuate by 50 percent or more from year to year. Counties need to be fairly and consistently compensated for the tax exempt status of the national forests (and other Federal lands), but the current system might not approximate tax compensation.

Planning and Budgeting

The budget may be the most important economic concern in forest planning and in plan implementation, but the current budget system has serious defects. Various national forests used different budget assumptions in preparing their plans, some constraining the budget to realistic alternatives and others allowing any budget level. Because of this, current forest plan budgets cannot be simply aggregated into an annual budget proposal for the National Forest System. Unconstrained budget assumptions are useful for examining a full range of opportunities, but realistic budgets are necessary for displaying priorities and likely management activities to Congress and the public. Although difficult to achieve, both types of budget assumptions should be considered in planning.

Another problem is that the current budget system subverts the integrated resource management required by NFMA. More than 50 functional line items appear in the annual budget, with the funding and output targets modified by the Forest Service Washington Office, the Secretary of Agriculture, the Office of Management and Budget, and the House and Senate Committees on Appropriations. The resulting appropriations bear little resemblance to the integrated management presented in the forest plans. In the field, the allocated funds and targets are retranslated back into integrated projects, but the allocations may not match the plans very closely.

This process leads to inaccurate reporting of costs and accomplishments. Despite direction to report expenditures accurately, they have often been reported as they were planned, without assurance that actual expenditures match the plan. Furthermore, while hard, measurable outputs are reported for

commodity resources, the measures used for other resources allow for substantial imprecision in reporting. (See ch. 6.) The Forest Service has proposed “end-results budgeting” to eliminate these problems, and the General Accounting Office has found the test to accurately report expenditures. However, measures that relate management efforts to changes in resource quality and quantity are needed before end-results budgeting can take into account all resources.

Finally, permanent appropriations account for nearly a third of the Forest Service budget annually. Most of these special accounts and trust funds are related to the timber program, deriving money from timber sales and/or providing money for timber

management activities. Each national forest has substantial discretion to determine the amount of money available in several of these accounts, and in one, the K-V Fund, the money can be used for any management activity in a timber sale area. However, the BLM operates without permanent appropriations in western Oregon, suggesting that they may not be necessary. No evidence has shown that permanent appropriations are efficient, and there has been virtually no congressional oversight or control over these discretionary funds. Nonetheless, these permanent appropriations clearly can influence national forest management, because managers have the opportunity to increase their own budgets by increasing timber sales.