ROLE OF ECONOMICS IN IMPLEMENTING
THE NATIONAL FOREST MANAGEMENT ACT (NFMA)

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It is a pleasure to discuss with you the role of economics in implementing NFMA. I must confess, as have several other speakers on the morning program, that I am not an economist, a confession that likely will not be necessary in the light of my subsequent comments. As Art Nelson indicated in his introduction, I will be speaking from my perspective as the chairman of the Committee of Scientists that has been involved with the Forest Service in drafting and evaluating proposed rules that will govern the agency’s land and resource management planning in the future.

I need to adjust my title slightly to make clear that I will discuss the role of economic analysis in implementing NFMA. My frame of reference will be the role of economic analysis in the planning process that is being evolved for the development of forest land and resource management plans. Specifically, I will discuss:

--where in RPA/NFMA economic analyses are required;
--the process by which the regulations have been developed;
--the requirements of the regulations themselves; and
--the major places and ways in which economic analysis figures in the planning process envisioned by the regulations.

A few words about the relationship of NFMA to the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) are in order. About one-half of the length and well over half of the substance of NFMA involves amendments to RPA. These amendments add several new requirements, the most significant
of which relates to planning for individual National Forests. Thus, the rather general direction for the development of a National Program and Assessment contained in the original RPA is augmented by more specific direction calling for the development of land and resource management plans for each "unit" of the National Forest system. It is within the context of these local forest plans that allocations and land management decisions for specific National Forests are to be made. Thus, NFMA adds an entirely new level of planning to the National Assessment and Program required by the 1974 RPA. In terms of economic analyses, the importance of NFMA lies in its implicit requirements that economic issues be considered, analyzed, and the results displayed throughout every major step in the planning process. This requirement pertains equally to planning at the National Forest level and to development of higher level Regional and National plans.

The RPA, as amended by NFMA, clearly specifies a number of areas in which economic analysis should play a major role. These include:

--the supply and demand analysis, particularly as it relates to supply and demand of renewable resources at the individual National Forest level, to be included in the National Assessment (section 3(a)(1) of RPA as amended);

--analysis of the reforestation requirements of section 3(d)(1) of RPA as amended which provide that "forested lands in the National Forest system shall be maintained in appropriate forest cover...designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans;"

--The economic analyses submitted in support of the National Program (sections 4(1) and (2) of RPA as amended);
Analyses of the economic implications of transportation systems (section 10 of RPA as amended) and timber sales (section 14 of NFMA);

Economic analyses required in support of land management plans for individual National Forests required by section 6 of RPA as amended, including analyses designed to insure that:

---the planning process shall achieve integrated consideration of physical, biological, economic, and other sciences (6(b));
---plans provide for multiple use and sustained yield of products and services obtained from National Forest system lands (6(e)(1));
---plans are prepared in accordance with the National Environmental Policy Act (6(g)(1));
---plans are prepared in accordance with guidelines that insure the consideration of the economic and environmental aspects of various systems of renewable resource management (6(g)(3)(A));
---planning guidelines insure that methods designed to regenerate even-aged stands are used only where, for clearcutting, it is determined to be the optimum method (6(g)(3)(F)(i)) and only when interdisciplinary review has been conducted, including environmental, biological, esthetic, engineering, and economic impacts (6(g)(3)(F)(ii));
---planning guidelines identify lands not suited for timber production, considering physical, economic, and other pertinent factors and assure that no timber is harvested on such lands for a period of 10 years (6(k));
--a process is formulated and implemented for estimating long-term costs and benefits to support the program evaluation requirements of the National Forest Management Act (6(1)); and

--the economic analyses requisite to insuring that sale of timber is limited to a quantity equal to or less than a quantity which can be removed from a National Forest in perpetuity on a sustained yield basis and that, when a departure from such requirement is proposed, that it is consistent with overall multiple use objectives (section 13 of RPA as amended).

In this context, it should be pointed out that there is a debate as to whether NFMA provides clear guidance as to the role that economic considerations, apart from economic analysis, should play in decisions concerning National Forest management. After considerable thought on this matter and study of the legislative history of NFMA, the Committee of Scientists concluded that, with regard to policy, the Act does not contain clear direction. However, with respect to process, its direction is clear. Despite contentions to the contrary, economic efficiency criteria are not written into law in NFMA. The Committee feels that the law requires only that the economic consequences of alternative decisions be displayed and considered. How much weight is to be placed on the economic consequences of an action, as these are reflected in a cost benefit or other analysis, is still a matter of administrative discretion. Some analysts of NFMA contend that Congress intended in the act to say that the National Forests should be managed according to economic efficiency criteria. Although many wish Congress had provided such direction, the Committee does not think it did.
The regulations for implementing section 6 of RPA as amended by NFMA were drafted over a period of almost two years. The Committee of Scientists, created by section 6(h) of NFMA is charged with providing technical advice to the Secretary of Agriculture as to the adequacy of the proposed regulations. It first met in May of 1977. From then until April of 1978, the Committee and the National Forest system land management planning staff participated together in development of a first draft of the regulations. Although the draft was the Forest Service's, the Committee contributed material in a number of areas. From April 1978 until August of 1978, the first draft underwent revision within the Forest Service and by Assistant Secretary Rupert Cutler and his staff. Intense representations by timber and environmental interest groups, particularly concerning departures from non-declining yield, silvicultural practices, and determination of lands not suitable for timber harvest, delayed publication of the first draft until August 31, 1978. During the fall of 1978 and early winter of 1979, comments on the regulations were received from the general public and the Committee of Scientists conducted its technical evaluation and prepared its report. On the basis of public comments and the Committee's report, which was submitted on February 22, 1978, the Forest Service substantially revised its first draft. This revision includes a number of subjects that were not treated at all in the original draft and other requirements that are treated in substantially greater detail. The second draft, plus a synopsis of the public comments on the first draft, a draft Environmental statement, and the Committee's report, will appear in the Federal Register on May 4, 1979. Although the regulations were required to be completed by October 22, 1978, it is likely that they will not appear in final form until late summer or fall of 1979.
The regulations, as NFMA requires, establish the procedures for preparing land and resource management plans for each National Forest and contain specific guidelines for management of each of the renewable resources of the National Forests. The regulations are strongly process oriented in that they seek explicitly to explain the content of plans and the process by which they will be prepared. Although some feel that the regulations are too process oriented, the Committee has concluded that this emphasis on process is what Congress intended and is, therefore, appropriate. The following comments, based on the revision of the regulations contained in the Committee of Scientists report, summarizes the major provisions of the regulations. Although the specific wording of some requirements may be changed when the Forest Service's second draft is published, it is unlikely that the basic provisions discussed here will be altered in any significant way.

The regulations provide for a three-tiered planning process, including both the National Assessment and Program and Forest Plans mandated by RPA as amended, and Regional plans proposed by the Forest Service to link national and local planning. Thus, future RPA planning in the National Forest system will be based upon land and resource management plans for each of the 154 National Forests and Grasslands. These will be linked by Regional Plans, one for each of the nine Forest Service regions, to the National Assessment and Program. Key elements in this three-tiered, vertically integrated planning scheme will be the upward flows of local information on the capability of Forest land to produce renewable resources and the demands for, and costs of, uses, goods and services to be derived from each Forest. These data will be aggregated in Regional Plans and the regional aggregations, in turn, will be further aggregated in the National Assessment. The National Program will incorporate these local and regional supply and demand data.
with national demands and allocate regional and local targets and outputs under various budget levels. The regulations will contain rather explicit requirements for carrying out capability assessments for each National Forest unit. In addition, separate sections will describe the content of the Regional Plan and the process by which it is to be drafted.

The regulations will also provide clear guidance for meeting Congressional intent in three key areas: interdisciplinarity, public participation, and coordination. NFMA states that land and resource management plans are to be developed through an interdisciplinary process. Although such a process is difficult to describe in regulation language, statements relating to the composition of planning teams and their manner of operation are included in the regulations. NFMA also stresses the need for full public participation and coordination with other Federal, State and local units of government. The regulations will go well beyond anything the Forest Service has previously prepared in specifying the steps that must be taken to insure that both of these requirements are met.

Procedures and processes to be used in preparing Forest Plans are described in considerable detail. The key features include:

--a thorough integration of the planning process with requirements of NEPA;

--identification of issues, concerns, and opportunities to be treated in the plan through a process incorporating input from the public and other units of government;

--development of criteria to guide the development of the plan;

--requirements to guide the gathering of inventory data and other information necessary as a part of the plan;
formulation of a reasonable range of alternatives based on an analysis of the management situation and incorporating various mixes of goods, services, and uses based on demand and price trends;
estimation of the effects of each alternative, including physical, biological, economic, and social effects;
choice of a preferred alternative upon which the final land and resource management plan for the unit and EIS will be based; and
development of procedures for monitoring and evaluating the physical, biological, economic, and social effects of management practices implemented as a result of recommendations in the plan and procedures for modifying practices should they be shown to be producing effects other than those described as desired in the plan.

Finally, the regulations contain standards for the management of each of the renewable resources of the National Forest system. These standards stress aspects of timber management, largely because NFMA itself emphasizes timber. However, substantive provisions are included for other resources, such as fish and wildlife, range, recreation, water, and wilderness, and in such specialized areas as diversity and soils where NFMA requires special emphasis. Special attention is given in this section to complex and controversial issues such as size of clearcuts, buffer strips along streams, and timber harvesting requirements including identification of lands not suitable for timber harvesting and timber harvest scheduling.

As might be expected, provisions as complex and far-reaching as these require economic analyses at many places. Although one can identify particular places where economic analyses play a major role, it would be more accurate to say that economic analysis must pervade the entire planning process. Economic implications of management practices must be displayed for
consideration and evaluation at each step in planning and the economic consequences of alternatives must also be spelled out for consideration prior to the choice of a preferred alternative. NFMA has clearly raised economic analysis to a co-equal role with environmental analysis in the planning process. It has not, however, required that economic considerations dominate the process of administrative choice concerning the preferred alternative. The administrator is still left considerable latitude as to how the various factors will be weighed in arriving at a final decision.

Major opportunities for economic analysis occur in the following places in the planning process:

-- in the estimation of cost, supply, and demand that are associated with the vertical integration of Forest, Regional, and National planning;

-- in developing the techniques to meet the requirements of Sec. 6(1) of NFMA relating to estimation of long-term costs and benefits, a process which has hardly been begun by the Forest Service;

-- extending these cost benefit techniques and preparing others to conduct the analyses associated with the estimation of the economic effects of alternatives as required by the regulations governing the planning process;

-- in developing specialized cost benefit analyses specifically designed to reveal the economic implications of particular management practices as they might be applied in given situations such as:

--- determining the economic consequences of the application of specific management techniques;

--- determining the maximum size of openings to be created by even-aged silviculture;
--assessing the economic implications of special measures to be required in buffer strips designated to protect streams and other water bodies;

--justifying any type conversions that might be proposed in light of the stringent provisions that any such type conversions that reduce diversity must be justified in over-all multiple use terms; and

--assessing the economic implications, particularly in terms of benefits foregone, of wilderness designation.

--in conjunction with special requirements for managing the timber resource, particularly in developing and refining procedures for applying economic analysis to the determination of lands not suitable for timber production and to the complex and volatile matter of revealing the economic consequences of proposed departures from non-declining yield timber harvest schedules; and

--in establishing procedures and analytical techniques to monitor and evaluate the degree to which the management practices implemented as a consequence of an approved plan are, in fact, realizing the economic objectives established in the plan.

Although meeting requirements in all of these areas will be difficult and will require imaginative thinking by economists, the burdens in the latter two areas, timber issues and monitoring, are particularly acute. Section 6(k) of NFMA clearly requires that the Forest Service, for each National Forest, be able to identify lands "which are not suited for timber production, considering physical, economic and other pertinent factors to the extent feasible..." The legislative history of NFMA shows that economic considerations must play a major role in this determination. The draft
regulations envision a process for the rank ordering of all timber producing lands of a National Forest in terms of their relative efficiency for timber production. Such a process does not now exist. If the regulations are approved in anywhere near their existing form, it is clear the Forest Service had better have developed someplace in its bag of tricks a way of meeting this requirement. Timber harvest scheduling is equally complex. The regulations attempt to deal with Congress' somewhat vague direction in this area by establishing a non-declining flow schedule as a standard and requiring the examination of departures from this schedule if certain trigger conditions exist. In one way or another, each of these trigger conditions involves economic considerations. In light of the extreme volatility of the timber harvest scheduling-departure issue, the Forest Service will clearly have to have air-tight economic analyses if it hopes ever to justify a departure from non-declining even flow. Finally, one of Congress' most significant inclusions in NFMA is the monitoring and evaluation provision. Here Congress envisioned a sort of feed-back process whereby management practices would be continually monitored. If monitoring revealed that practices were producing results contrary to those envisioned in an approved plan, then steps must be taken to revise practices (or the plan) to bring the two back into harmony. Although the context of Congress' monitoring requirement was essentially environmental, in drafting the regulations it was generally agreed that economic consequences were as significant as environmental effects and that the monitoring should thus be extended to economic effects. Although a good bit is known about how to sample and detect environmental effects, designing that part of the monitoring system will be very difficult. It appears to the Committee that little thought has been devoted to developing the kinds of systems that will be needed to monitor economic effects. Meeting this requirement, therefore, may prove most difficult for the Forest Service.
In closing, I must reiterate a point made by the Committee at several places in its report. The character and complexity of the economic analyses envisioned by NFMA and the regulations for implementing them will place an acute burden on the present economic analysis capabilities of the Forest Service. The agency has informally estimated that its staff resources in this area fall far short of those needed to carry out the analyses envisioned by the regulations. Adequate personnel in each of the key areas of planning are absolutely vital to the long-run success of the planning process envisioned by RPA as amended by NFMA. Unless Congress and the Forest Service make serious efforts either to provide adequate funds to hire additional staff or to retrain existing personnel so that a larger body of expertise than now appears to exist within the agency can be brought to bear on economic analyses, the Congress and the public are likely to be disappointed in the quality and content of the first generation of forest plans.

There are, of course, major opportunities for economists outside of the Forest Service to contribute to resolving the issues identified here. However, the short time schedule on which plans must be developed and the sheer complexity of the process suggest that coordinating any major input of expertise from outside the agency will be a management nightmare.

Despite these obvious problems, the planning process envisioned in RPA/NFMA holds the potential to produce documents of very high value to administrative decision-making within the Forest Service. This potential should be enough to stimulate economists both within and without the agency to accelerate their efforts to meet the challenge that the economic analyses envisioned in the RPA planning process represent.