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Proceedings of the 1987 Airlie House Conference on the Resources Planning Act

Clark S. Binkley, Ed

Garry D. Brewer, Ed.

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REDIRECTING THE RPA

Proceedings of the 1987
Airlie House Conference
on the
Resources Planning Act

Edited by
Clark S. Binkley
Garry D. Brewer
V. Alaric Sample

YALE SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES
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This Bulletin was produced at the Yale University School of Forestry and Environmental Studies. Dr. Joseph A. Miller, the School's Librarian and Lecturer in Forest History, artfully managed the process of transforming conference papers into this book. Margery Maass edited the entire document. Judy Stone and Brian Young handled computer-based production. The skill, hard work and patience of the production staff turned the usually difficult editorial task into a pleasant one indeed. We greatly appreciate all of their efforts.

Redirecting the RPA: Introduction

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Born of the forest management controversies two decades ago, the planning process established by the Forest and Rangeland Renewable Resources Act (RPA) has itself become controversial. Appropriations for the RPA staff at the Forest Service have been specifically singled out for cuts. Some early supporters suggest that it's "Time to Punt" [1] and advocate "Burning Up All the Papers". [2] Literally hundreds of appeals have been filed on the national forest plans which have been prepared under the terms of the RPA.

The Forest Service provides services to a broad spectrum of constituent groups, ranging from wilderness advocates to mineral interests, hikers to logging contractors. Contemporary theories of rent-seeking suggest that these interest groups would organize to shift the burden of producing their desired outputs to the general federal taxpayer. The bureaucratic interests of the Forest Service would be well served by orchestrating and coordinating this raid on the public treasury, the argument goes.

It is then indeed curious that the RPA, precisely a mechanism to focus the seeking of rents, has become so pressed. The answer partly resides in the continued reliance by the Forest Service on the "scientific management" paradigm. [3] Problems are identified by resource assessments, and solutions to these problems are developed through rational/analytic means. The RPA, embodying these principals, has run headlong into public participation, participatory democracy, and the new realities of interest group politics.

Yet the facts matter; resource assessments remain the basis for predicting the biophysical outcomes of alternative policy and management prescriptions. This monograph concerns precisely the interface between the facts and the politics. Our central question is how to develop a politically acceptable set of federal activities which is responsive to the findings of the resource assessments periodically completed by the USDA Forest Service.

Approach

We examined this question through a modified version of a procedure developed by the Dahlem Konferenzen. These conferences, named after the quarter of Berlin where they originated, have become a well known and highly regarded means of communication in the sciences.

In the Dahlem model, three to four critical questions or topics of **interest** are selected by an oversight group. Knowledgeable individuals are enlisted to write brief papers on each. **All** conference participants are asked to comment on these preliminary drafts, to do so in writing and in advance of the conference itself. The meeting is then structured around alternating discussions, reportings, and draftings of the ongoing and evolving sense of the panels tasked to explore each of the points.

Our aims were related, but more modest. Our conference, held at Airlie House in September 1987, took two days rather than the full six days the original format requires. We did not use a supporting staff of editors and word processors to transform each day's notes and reports into workable and smooth manuscripts overnight but rather relied on a system of rapporteurs for each of the group discussions. Accounts of the two days' discussions were sent to the participants for their comments and clarifications.

This monograph includes the twelve papers we commissioned for the conference, along with an essay synthesizing some of the key ideas which were developed in the papers and the conference discussions.

The papers and conference discussions worked from a common set of stipulated premises:

i. The anticipated results of the 1989 Assessment. We proceeded from the assumption that, like previous Assessments, the 1989 Assessment will find that demand is rising faster than supply for the key forest products—water, wildlife, timber, recreation, range, and minerals. Appropriate social actions are to increase supply or decrease demand.

ii. The RPA process as it now exists (A summary of the **process** in contained in chapter 3 by Sample, below)

iii. Each author was asked to discuss, but not be limited to, the traditional USDA Forest Service functions of administering the national forest lands, providing support for forest management to the states and private individuals, and providing the major support for forestry research

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in the US.

The papers examine the problems of the RPA in two dimensions. One cut explores several alternative *responses* which would address resource **scarcity** in the US forest sector. Possible responses include:

- expanded production on the federal lands.
- expanded production on state lands.
- expanded production on private lands. and
- reductions in demand through product substitution and/or resource saving technologies.

Each of the "response" papers considers both commodity and non-commodity outputs. We asked each author to advocate one of the four modes of operation. These papers examine how the players noted below would react to each particular response if fully adopted. Finally, each paper concludes by describing how the RPA process would be most useful in supporting and achieving the benefits of each particular response to future changes in the US forest sector.

A second cut through the problem focuses on the *players* in the US forest sector. The relevant interests include:

- environmental groups.
- commodity interests,
- the USDA Forest Service bureaucracy
- the US Congress
- the Office of Management and Budget,
- state economic development.

We asked the author of each "player" paper to address the relative merits of the alternative responses to **the** Assessment from the perspective of that particular player, while recognizing the concerns of other players. Because these groupings are broad ones, each paper addresses internal conflicts within **the** group (e.g. southern vs. Pacific Northwest lumber producers; wilderness advocates vs. off-road vehicle users; states which own significant forest land vs. those who do not). These papers conclude by discussing how the RPA process is or could be helpful in achieving the benefits/avoiding the costs of the each of the alternative responses to the Assessment.

The figure below depicts this plan (the numbers indicate the **chapter** numbers of the monograph). Each topic is covered twice, once in the row and once in the columns. The papers which focus on responses (the

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columns) are intended to advocate that response across all current Forest Service functions. The papers dealing with the various interest groups (the

	<i>RESPONSES</i>			
	4. Federal Supply	5. State Supply	6. Private Supply	7. Decreased Supply
<i>PLAYERS</i>				
8. Environmental Groups				
9. Commodity Groups				
10. Congress				
11. OMS				
12. States				
13. USDA Forest Service				

rows) are free to choose whatever response best suits the needs of that group. The strength of this plan lies in the whole design; no one piece is intended to address completely the theme of the conference.

A final paper discusses policy dynamics: how does an organization terminate old programs to make way for new ones?

Summary

While political horizons are measured in years, forests take decades to mature. The RPA grew out of this tension between the political and the biological timescales. The I{PA-process was to articulate a vision of forestry in the US, particularly for the Forest Service, powerful enough to gain political and therefore budgetary commitments. The vision was to derive from decennial resource Assessments, and the commitments were to rise out of the quinquennial RPA Programs. Commitment to a particular vision of Forest Service activities would guarantee responsible long-term management of the national forests, quell the political controversies surrounding the Forest Service, and provide predictability needed by private industry--timber, minerals and recreation--to invest in the capacity to use the forest resources controlled by the federal government.

As Hagenstein (pees. communication) puts it, "These unrealistic expectations have been dashed, support for the law is waning fast, and

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'ecological collapse' of the RPA process is possible." In their discussion of policy dynamics, Ascher and Brewer (ch. 14) note that opportunities for constructive change often accompanies collapse. A major underlying problem is to define the distinctive role of the Forest Service in general and the national forests in particular. Because the national forests so dominate the US forest sector-in the production of market as well as extra-market goods and services-defining the role of the national forests has profound implications for the roles of other lands.

The first part of this monograph examines the federal role in the US forest sector. Our synthesis essay (Chapter 2) discusses five ways the federal government can intervene, ranging in degree of direct federal intervention from direct operations to performing minor but potentially significant catalytic functions. The Forest Service aspires to an active role in operations but in doing so ignores other, possibly more effective methods of operation. For a variety of powerful reasons, the Forest Service itself may be incapable of limiting the scope of its activities, and therefore of defining a distinctive role outside its traditional ones.

Lemaster (Chapter 4) explains the traditional rationale for a strong federal presence in forestry. Reviewing the traditional economic rationale for public intervention-presence of natural monopolies, external economies, or public good-&he concludes that the national forests exist on the basis of the extra-market goods they produce. He acknowledges that markets could be used to produce these goods, but that society has **elected** not to allocate resources such as fish, wildlife, water or most forms of recreation through the market system. In the absence of markets, too little of these resources are produced unless the government intervenes. Indeed the legal basis for the national forests probably derives from an early recognition of market failure in the production of water.

While Lemaster justifies a strong continued direct operations **role** for the Forest Service, he acknowledges that problems remain. A particular problem is the chronic failure to supply adequate capital to the national forests despite the many investments available on these lands which would yield acceptable returns. Improved capital budgeting was, of course, an original objective of the RPA but the problem remains. Overcoming this problem would require the Forest Service to adopt a different role; Lemaster describes a proposal to lease the national forests, a form of delegated operations.

Another form of delegated operations would increase state responsi-

bilities in forest sector activities. Webster (Chapter 5) explains that at the state level there is strong sense of connection between forest resources and major societal purposes. Perhaps as a consequence, controversies over issues such as wilderness which are highly charged at the national level play a comparatively small role in state-level decisions. Analytical and administrative economics of scale make it difficult for the national interest groups to intervene effectively in state actions. Despite the clear political advantages of an increased state role in the U.S. forest sector, the problem of marshalling adequate capital persists. Webster explains the "classical low-level development trap" which occurs when current operations are funded out of current receipts. In this case, current revenues are based on past investments, and past investments are based on past revenues. Thus, it is argued, low levels of past expenditures guarantee low levels of current receipts, low levels of current investment, and low levels of future receipts.

To break out of this trap, some new infusion of capital is required. Although it is tempting to suggest federal revenue sharing, Webster points out the substantial risk of importing to the states precisely the political problems which beset the Forest Service. He concludes that innovative forms of financing—recycling revenues from the sale of nonrenewables or private investment in public timber—offer better bets for raising the necessary capital.

Lemaster argues that market failure requires a public presence in forestry yet Lemaster and Webster concur that existing public arrangements starve the forests of the capital needed for the myriad good investments available in the production of all forest outputs: timber recreation, water, fish, wildlife. Improving the functioning of markets is a clear alternative to public intervention. Nelson makes this case. He begins by noting that increased use of market mechanisms in forestry allocation decisions does not necessarily imply transferring the ownership of the national forests to private hands. Market mechanisms could be brought to bear through, for example, greater use of fair-market-value user fees for recreation or grazing, the kinds of leasing arrangements described by Lemaster, or simple alterations in the procedures used in selling timber. Nelson further indicates that increased use of market mechanisms does not preclude the need for government planning. Efforts would be shifted, however, from direct decisions concerning the production levels to the redesign of the institutional framework within which markets would function. In this model, the Forest Service, perhaps through a mechanism

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like the RPA, would identify, test, implement and evaluate alternative organizational arrangements for the provision of forest outputs.

In his chapter on demand-side management, Hyde expands on the idea of institutional redesign as both a direct form of technical change, and as a mechanism for inducing technical change. As an example of the former, constraints such as those requiring a nondeclining flow of timber greatly increase the cost of timber production (as well as the cost of providing nontimber outputs such as spotted owl habitat). Relaxing such constraints is a form of technical change in forest production. As an example of the latter, instituting market prices for products such as recreation or water will induce changes in consumption levels through a variety of mechanisms involving demand-side technical change. The Forest Service, through its research program, can develop the technology necessary to achieve these improvements in the use of forest resources in meeting consumer demands.

The first part of this monograph suggests a rich set of means available to the Forest Service for intervening in the operation of the U.S. forest sector. A strong, direct role for the Forest Service was possible during the progressive Roosevelt/Pinchot times (although difficult even then) but has become increasingly untenable as the political profile of the Forest Service diminishes and interest groups become more deeply entrenched. Alternative modes of operation—through the states, through market mechanisms, through the catalytic function of research—warrant careful, detailed examination. But change will inevitably hurt some interests while it helps others. Who are these interest groups, and what is necessary to gain their support for changes in Forest Service direction?

In Chapter 8, Shands defines environmental groups as those organizations interested in the amenity resources—wildlife, outdoor recreation, scenery, and streams and lakes—embedded in forests. Such interests are diverse, some favoring roads and some not, some favoring early successional habitats and some old growth. Most of the attention by national groups has been focused on questions related to management of the national forests. Questions related to state and private lands are considered only to the extent that they effect these federal lands. The direct operations mode used by the Forest Service to manage the national forests is congenial to the national environmental interests because it eases the organizational burden of dealing with literally hundreds of ranger districts. High organizational burden perhaps helps to explain the lack attention paid by

these organizations to other public lands. As a consequence, these groups would probably oppose a shift from centralized planning to other forms of Forest Service operation.

In Chapter 9, Hagenstein defines business interests to include ranching, timber, and mining as well as recreation enterprises. The latter, of course, may share many of the same concerns for amenity resources as do the environmental interests. Predictability is a main requirement for business interests. Because of unrealistic budget estimates, the RPA program does not help business interests predict actual federal output levels. Rather than get mired down in the annual budget process, Hagenstein argues that the RPA should articulate a long-term vision for the national forests. He suggests as a starting point the notion that the national forests should be "managed to provide benefits that private land does not." Note that this does not preclude service to business interests, as the national forests contain much of the nation's inventory of old growth timber, unexplored mineral deposits, and desirable locations for ski areas. Nor does focus on the national forests, *de facto* practice in the current RPA, preclude critical examination of alternative modes of Forest Service action.

Lyons and Knowles use Chapter 10 to explain a fundamental problem of Congressional participation in RPA: with the array of other national issues confronting them, it is generally difficult to get members of Congress even to focus on questions of federal natural resource management, let alone to probe them deeply. In response to this situation, any output from the RPA which is transmitted to Congress needs to provide a concise statement of needs, and the consequences of failing to provide for them.

Responses to change in Forest Service direction will be dealt with primarily by members from rural districts in the West, and will be fragmented along the lines of earlier national forest policy debates. A driving issue for many will be the impact on federal payments made to states and counties—over a quarter-billion dollars in 1986. Shifts in federal role in the forest sector will be accompanied by redistribution, and possibly reductions in these federal payments. Those areas confronted with a net loss in payments are almost certain to be more vocal in their opposition than the potential gainers would be in their support.

In theory, the Office of Management and Budget should be a strong advocate for the RPA process, a process which bases program development and budget requests on rational analysis. In practice, however, Sample explains in Chapter 11 that OMB regards the RPA as a device for

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promoting increases in the Forest Service budget irrespective of the innate merit of such budgetary expansion as measured by the ratio of marginal benefits to marginal costs. At the same time, the history and values of OMD prompt it to seek a broader range of responses to forest sector problems, minimizing the federal role in favor of free-market solutions and greater roles for the states and the private sector. Through its pivotal, through poorly understood role in budget review, OMB has a greater impact on the implementation of the RPA program than perhaps any other "player" at the federal level. With an eye towards the federal budget deficit and the keen competition for increasingly scarce budget resources, opportunities to expand the federal role will be quite limited in the future. Yet perhaps because of its emphasis on budget review, OMD has not been effectively harnessed as an agent of change.

Partridge, too, makes the case for a greater state and local role in helping to solve forest sector problems. In Chapter 12, he reiterates some of the political benefits of state-level activities noted by Webster, but goes on to point out the advantages of such a strategy to the Forest Service. Greater reliance on the states would reduce federal-level political **controversy**, would free the Forest Service to pursue other, perhaps more important activities, and would probably lead to overall gains in economic efficiency. To implement such a strategy requires a significant change in the RPA structure, with state and private resource and program information taking on a level of importance equal to that currently reserved for the Forest Service.

Leman paints the RPA on a larger canvas of institutional management and organizational process. To change the RPA, the Forest Service itself is perhaps the key interest group. The original RPA legislation combined the related but distinct activities of national planning and policy analysis. Because of apparent bureaucratic imperatives related to budget and power enhancement, the Forest Service has emphasized the national planning aspects of the RPA. Yet contemporary political circumstances limit the effective scope of *any* national planning effort.

Over the years, the RPA process has repeatedly been subjected to evaluation, with many of the same suggestions for improvement made repeatedly. Why has the Forest Service so resisted making changes so widely recognized as necessary?

The final chapter of this book discusses change. While there are inevitable difficulties in resource forecasting, a greater problem lies in

understanding the costs, benefits and processes of change. Deeply rooted cultural values associate change with a sense of loss or failure rather than with an opportunity for creation and growth. Perhaps the pain of terminating old activities to make way for the new proscribes the kind of deep analytical effort which must attend any such transition. Shortening the planning cycle, emphasizing program evaluation as a way to "experiment" with the socio/political resource system, and moving towards an adaptive management framework all reduce the costs of change. The RPA process itself, and the Assessment in particular, can be used to estimate the distributional impact of policy shifts, and to aid in designing policy responses to indemnify those who suffer from the concentrated costs of changes which are desirable when society's interests as a whole are taken into account. In this way, redirection of the RPA process would pave the way for positive changes in overall Forest Service direction.

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The Resources Planning Act: Strategic Planning or Policy Analysis?

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Fourteen years have passed since the Forest and Rangeland Renewable Resources Act (RPA) was enacted, so it is appropriate to examine the successes and failures, strengths and shortcomings, of this ambitious planning and analysis initiative. We commend the Forest Service for providing both leadership and means to contribute to this examination in the form of the Airlie House conference here reported.

Reflection and redirection of the RPA activity are particularly appropriate now that the plans prepared for individual national forests under the National Forest Management Act (NFMA, a series of amendments to the original RPA) are nearing completion.

The following remarks comprise neither a summary of the conference, nor a comprehensive evaluation of the RPA as a planning activity. Rather, they derive from discussions with long-term participants in the process, the papers presented elsewhere in this monograph and other written evaluations of the RPA [1]. Our recommendations are broad rather than specific. We have not, for example, analyzed what changes in the RPA might be per-

mitted under existing law or what changes might require new legislation.

Our major conclusions are two:

- The current RPA process confuses the related but distinct functions of *strategic planning* and *policy analysis*.

- Both strategic repositioning and effective policy analysis require explicit attention to the process of change, and in particular, to methods for indemnifying or compensating those who suffer from changes. Such attention is presently inadequate.

We begin by explaining the difficulties of using the RPA as a tool for strategic planning, a purpose for which it is poorly suited. A continuing need to examine the particular role the Forest Service performs leads us to discuss several different modes of government action, thus to open up unaccustomed possibilities. Improving the RPA as a policy analysis process is then taken up in terms of its contributions to problem solving, a perspective we find compelling. Finally, and because of the overriding importance of policy change, we focus attention on termination, an aspect of the policy process which typically suffers neglect.

Why not strategic planning?

The RPA, both in law and practice, charts overall direction for the Forest Service but it also analyzes possible Forest Service responses to particular problems. This confusion of strategic planning and policy functions inevitably frustrates the RPA's several audiences, and ultimately serves neither purpose well.

Strategic planning seeks to answer the question "What are the distinctive roles of the Forest Service in national forest management, in forestry research, and in assistance to the states and private individuals?" The importance of this broad class of questions was recognized from the earliest days of the Forest Service, notably in the division of labor between Gifford Pinchot and his deputy Overton Price. Pinchot framed and painted the big picture; Price took care of myriad particular problems.[2]

The arrangement worked well, but for particular reasons that no longer exist. Five features of the current political situation limit the capacity of the Forest Service to make strategic decisions and constrain the utility of the RPA as a tool for strategic planning: (1) Limited budgetary control. (2) Weak capital planning and budgeting. (3) Confusion about the audience for the RPA. (4) Dominance of quantitative methods over qualitative ones.

(5) An expanding and diffusing mission.

The Forest Service has only limited control over its budget and other resources needed to implement its programs. In its early years, the RPA helped increase the Forest Service budget over what was expected.¹³¹ However, in recent years the intent of **the** original supporters of RPA to insulate Forest Service budgets from larger political considerations has failed. It is probably naive to have expected otherwise. Such status is "**unnatural**" in **the** jungle ecology of Washington. Indeed, special budgetary insulation and political protection for the Forest Service existed historically only for as long as President Teddy Roosevelt's tenure in office. Pinchot's noisy firing sometime afterwards is readily seen in light of his losing the fight to keep **the** Forest Service from the more natural political state—the evident condition today.

Without reasonable control over the resources needed to implement a strategic direction, discussions concerning the choice of direction are ultimately empty. Once this basic fact becomes apparent, **the** logical participants in these discussions quickly lose interest.

Lack of budgetary control is nowhere more obvious than **with** respect to capital planning. Because political horizons loom close in time but capital investments are far distant, many believe that the federal government generally falls down when it comes to capital budgets. Even if not applicable to the entire government, most people still realize that the problem pervades and hampers capital-intensive resource agencies, such as the Forest Service. To a first approximation, strategic planning for the Forest Service *is* capital planning, without which most crucial questions about role, purpose, and direction cannot be resolved.

Confusion about the source of the **RPA** proves most troublesome and limits its usefulness for long-term planning. By law **the** Secretary of Agriculture, not the Chief of the Forest Service, submits the RPA to Congress. And while the Forest Service prepares RPA drafts to reflect prevalent agency views, the Secretary gets to write the final document, in which political considerations of the moment weigh in and often heavily. The result can be discordant and confusing.

Having Congress as the primary audience further limits the RPA for strategic planning purposes. A good strategic plan presents a distilled conceptualization of the external world to audiences within an organization. In this way, a strategic plan becomes a means of internal management. But because RPA is aimed externally, it cannot fulfill this critical role of clas-

sical strategic planning.

Excessive reliance on quantitative planning methods systematically excludes several kinds of information essential for strategic thought. Almost by definition strategic planning must confront matters of personal preference and cultural differences which seldom yield to precise specification. Equally important strategically as "hard" historical facts, are "softer" contingencies in the future where hopes, fears, and imaginings often weigh in decisively. There are no data in the future, a truism beyond the reach of quantitative techniques, which can at best provide only partial assessments of the past.

In the context of strategic planning, the "soft" information relating to distinctive human traits, cultural differences and change, or poorly understood physical phenomenon such as global warming and acid deposition, may have overwhelming implications for the Forest Service. Yet their meaningful quantification is impossible or error-prone. And once quantitative information takes precedence over other forms of knowledge, the latter are systematically excluded from serious consideration.

Creativity and innovation suffer, too. Heavy dependence on past patterns of cause and consequence seldom opens up minds to consider creative possibilities. And lacking new concepts and ideas, it is hard to imagine much innovation taking place.¹⁴¹ The main reason for introducing creativity and innovation into policy processes-via strategic planning for instance-is to press those in responsible positions to think beyond the "company line." The company or party line has long been recognized as "the most important single reason for the tremendous miscalculations that are made in foreseeing and preparing for technical advances or changes in the strategic situation."¹⁵¹

The Forest Service is bureaucratically unable to limit its mission. Especially during periods of sustained decline in budgetary resources, two essential tasks of strategic planning are to define activities the organization will *not* pursue and to stimulate means to cut back and focus on the essentials. Unfortunately, the Forest Service, on its own, is quite powerless either to refine or carry out a limited agenda. That power resides elsewhere but is seldom exercised.

There are simple and relentless reasons explaining this weakness of the Forest Service and of public institutions more generally.

- Institutional stakeholders all demand more services, and the cadre of stakeholders ever expands.

- The naturally aggrading forces which control the destiny of a governmental bureaucracy are not checked by the same economic considerations which limit the size of private organizations.

- Instead of continuously refocusing their activities, public organizations, such as the Forest Service, tend to become progressively more diffuse.[6]

While the essential roles of the Forest Service require continual assessment and strategic respecification, the RPA process is not equal to these tasks. And even trying to force the RPA to yield strategic insight seems to reduce its effectiveness as a tool for policy analysis.

If not strategic planning then policy analysis?

The RPA assessment is performed every ten years, and the program is developed every five years. Neither schedule conforms to the kinds of problems that necessitate policy analysis, problems which typically are episodic, recurrent on short cycles, or unanticipated until a crisis forces attentions to focus on them. The policy analytic role of RPA would be better served either by an explicitly political schedule—perhaps every two years to conform to the pattern of congressional and presidential elections.

Similarly, if the assessment is to support policy analysis effectively, then it should be more or less continuous: likewise the funds enabling this research. Fluctuations in realistic demands for analysis thus prompt heightened or reduced activity, not a fixed dicennial schedule.

Policy analysis is, in common practice, oriented towards finding solutions to particular problems. However, the “goal orientation” sometimes adopted in the RPA is more suited to strategic planning; it hardly contributes to solving specific problems.

As a policy analysis tool, the geographic, ownership, and temporal dimensions of the RPA require attention. Different geographic regions demand different roles of the Forest Service around the country, but a regional analytic focus is overshadowed by the RPA’s strong national one. What works and is appropriate in New England could be quite unworkable in the Pacific Northwest. Policy analysis must recognize that sometimes the best solutions, even to problems which occur on the national forests, might lie elsewhere. For example, development of state parks or recreation on private lands can offset the need for expanded recreational facilities on the national forests. And while there is a clear need to keep the future in mind,

the near term consequences of policy choices certainly require more attention and greater clarification than do the longer term ones.

Finally, the RPA was intended as a comprehensive, long-term budget plan. This is neither necessary nor desirable for the purposes of policy analysis. The budgetary implications of specific policy choices are of course important, but these can be analyzed in the absence of any comprehensive attention to the overall problem of Forest Service budget development. Furthermore, comprehensive budget development diverts attention and resources away from many more important elements of policy analysis. Policy analysis in the context of agency budget development may also tend to bias the selection of policy options towards those with a significant federal role, regardless of the innate desirability of federal approaches.

Roles and functions

Throughout any discussion of focus and emphasis for a specific program such as RPA, larger and more general questions persist about what government does or should do. Government functions in many different roles as it provides a variety of goods and services to the populace. We believe it is useful momentarily to reflect on what government generally does, its methods and reasons, in order to appreciate the specific difficulties facing the Forest Service as it tries to cope with the RPA mandate.

Consider five different roles and associated functions a government might perform: direct operations, delegated operations, monitoring and control, revenue sharing, and catalytic. We consider these briefly and use quick sketches to illustrate the main features of each.

Direct operations is where government is the main institution in which responsibility and authority are vested and where dollars, policy formulation, decisions, program monitoring, service delivery, and new developments all join. Certainly this role demands the utmost in administrative detail for government to function, much less succeed. Experiences with nationalized industries in Western Europe and the centralized economies of the socialist countries demonstrate various severe weaknesses of this role. Nonetheless, there are unavoidable chores that only government can perform. National defense is the clearest illustration, but the Federal Reserve Bank (by virtue of its control of the money supply), several

mortgage and development banks, and only a few other agencies fit the model. And just as well for America, as various unhappy Great Society efforts in the 1960s and 1970s to make the federal government a direct service provider attest.

The detailed administrative approach does not work for clear enough reasons—which start with the impossibility of writing detailed rules to fit every case, and end with the lack of highly trained people to administer every case, assuming that an administrative solution is possible.[7] Much of the difficulty with RPA, in our view, appears rooted in a long standing and basic confusion of the role and reality of government—the Forest Service in this case. The RPA, no matter the reason, has limited consideration of alternative roles and means to deal with the nation's forests. If not direct operations, then what roles does the Forest Service perform?

Delegated operations is a more fitting role than the direct one, but here, too, there are difficulties. In this case actual service provision is turned over to some other institution (public, private, or even a nonprofit one qualifies), but determination of what to spend money on, how to spend it, and how to account for it is concentrated in one definable governmental unit—federal for our purposes—as are the power to allocate enabling resources and to create new management approaches to the underlying problems. The U.S. Postal Service, AMTRAK, most NASA operations, and some infrastructure projects of the Army's Corps of Engineers illustrate the model. An inherent problem here is that delegated operations relies on centralized financial coercion but lacks primary control over those doing the work or delivering the services. Those on the scene are often constrained by complex rules meted out by higher authority, as in the cases of the U.S. Department of Agriculture's administration of farm price supports and other localized programs[8] and the Forest Service's difficulties in allocating timber under RPA.[9]

In hierarchies, such as delegated operations, leaders often impose what they consider to be rational guidelines on their subordinates without having adequate information about the needs and experiences of those putting the policies into practice. Performance suffers either when unworkable guidelines are slavishly followed or when local realities are acknowledged and left to overpower the guidelines. Nonetheless, delegated operations may be effective if guidelines are kept simple, the task environment is understood, predictable, or stable, and operations are

closely monitored.

Historically, the Forest Service performed well in a delegated mode because rules and regulations were well understood (some might even say "**simple**"); furthermore, the task environment was comprehensible and changing at rates well within the Service's adaptive capabilities. Accordingly, there was slight need for close monitoring—a remarkable characteristic long ago noted in Kaufman's classic, *The Forest Ranger*. Few of these circumstances remain in 1988.

Monitoring or *control* is another model, as illustrated in the functions Congress performs when it provides legislative oversight, when executive agencies create and impose regulations, or when courts (especially administrative ones) hand down decisions. However, policy evaluation, auditing, and program coordination activities at all levels of government provide an even clearer and probably more important illustration of monitoring and control. The policy analysis opportunities in the Forest Service are best viewed from the standpoint of a monitoring function—one which is impeded by existing ambiguities within the RPA document and process.

Revenue sharing has emerged in recent years as a response to the limitations of the national government as a direct or delegated service provider. The model acknowledges federal preeminence as collector of taxes and writer of checks, while shifting operational responsibility downward to states and cities. Grants to state and local government for community and regional development, income supplements and job retraining, or natural resource and environmental assistance fit this role. Interestingly enough, from a Forest Service perspective, the revenue sharing model has been used to deal with regions, as in the case of subsidies for infrastructure, environment, and related services, e.g., federal highway construction, Corps of Engineers, Bureau of Land Management, Environmental Protection Agency (toxic waste disposal), and the National Park and Fish and Wildlife Services.

A fifth model might be a *catalytic* one, in which government adds a "little something **extra**" to boost or encourage specific activities. Education (tuition and loan assistance, land grant provisions), research and development, tax incentives, environmental waivers, domestic content bills, trade adjustment assistance, tariff protection, and dozens of other relevant func-

lional illustrations come to mind. **RPA**, to the extent it slights policy analytic ends, misses opportunities to highlight and inform decisions that take form as catalytic policies and programs.

Simply stated, RPA as currently conducted aspires to a stable and direct, but exists in a chaotic and delegated, operations role. These aspirations persist at the expense of monitoring, revenue sharing, and catalytic opportunities. Recasting RPA as a tool for realistic problem solving while downplaying unattainable strategic aims is a concrete way to develop several of these neglected possibilities.

Policy analysis in a problem-solving process

To restructure the RPA as an effective policy analysis tool, it is important to consider policy as a continuous process, rather than as a discrete event, and to discontinue tying it to an arbitrary schedule, as is the current case. It is also useful to orient thinking toward realistic problems. Six steps in a problem-solving process are important: Issue or problem identification, generation and ex ante estimation of alternatives, selection and modification of one of these to fit political realities, implementation, ex post evaluation, and termination.[10]

Greater or lesser shortcomings can be found in the RPA at every step in the process.

In the issue or problem identification phase, the RPA should serve as a "distant early warning system" for helping the Forest Service to identify problems looming on the horizon which might merit congressional, executive, or private sector attention. The early warning would provide time to think more creatively and to carry out analyses to avert crises (or to minimize their impacts). Unfortunately, the RPA has been silent on many of **the** important forestry issues of the day: acid rain, climatic warming, tropical deforestation. By ignoring these issues, the RPA has missed the opportunity to link forestry to popular, public concerns-which often translate into essential political support. From a **less** bureaucratic but more scientific point of view, ignoring these issues also minimizes the Forest Service's **contributions** to some of the most exciting science occurring in the world today, so-called "Global Change."IIII

Constraints on the policy process make issue identification vital. As we have pointed out, since the RPA is not well tuned to marginal changes, it should handle only the more pervasive and critical problems, primarily by

sensing them as early and keeping as far ahead of **them** as possible. Furthermore the political capacity to deal with problems is quite limited, reinforcing the need for careful and timely issue identification. Effective management requires emerging problems to be sensed and clearly defined as soon as possible, especially when control over them is diffuse, shared, or limited.¹¹²¹

Once sensed, priority needs be established to determine a problem's proximity and likely consequences, especially if left unattended. **The** generation of alternatives follows easily as one begins to puzzle over questions about who should take what steps (and at what costs and benefits) to resolve, soften the blow, or accommodate to the problem. Policy analysis, in this sense, must be creative as it guides one to visualize changed and changing circumstances. No one believes that creativity can be ordered. It must be stimulated and nurtured continuously if its constructive advantages are to be available for improved decision making.

Selecting from among many possible alternative courses is complicated in the RPA environment because issues must be confronted within an open, public process. Political risks, seen as loss of agency control, abound because chosen solutions often fail to coincide with agency preferences. But limiting or not taking the risk of public ventilation has often meant decisions of little relevance to contemporary forestry problems.

The failure to detail policy implementation in the RPA creates another needless pitfall, and contributes to a sense of incredibility. The absence of a clear set of steps for moving from **the** current situation to a new one erodes political credibility and lends an air of unreality to many policy proposals. For example, one correspondent from the mining industry noted that his firm preferred the political uncertainties associated with operating in Chile to those of operating on the national forests in Idaho. This shortcoming occurs in other federal legislation governing resource use. Jake Dykstra, president of the Pt. Judith, Rhode Island fisherman's cooperative, gained Widespread attention by wishing for the pre-Fisheries Conservation and Management Act days because, "Dealing with the **Rus-**sians was a damned sight easier than dealing with MFS [the U.S. National Marine Fisheries Service]." Shaky to non-existent linkages between the estimation of alternatives, decision making, and implementation were here similarly at fault.

As implemented the RPA contains no systematic policy evaluation, and

because it does not, pursuit of the monitoring and control roles and functions is unnecessarily limited. While the effectiveness of **some** Forest Service programs has been studied (the Forestry Incentives Program-FIP-is a good example), the evaluations are not institutionalized as a part of the policy process nor do they consider a wide enough range of program outcomes and longer term effects. The RPA calls for an annual report by the Chief of the Forest Service to discuss progress towards meeting RPA objectives. This potentially effective platform for policy evaluation has not been used.

Every policy decision contains within it the promise of generating information and insight about the world. These promises are only realized through, and are only as good as, one's observation and measurement of results: policy evaluation in other words. Effective evaluation strengthens the empirical basis for predicting the **impacts** of alternative policy **choices**. Each policy choice is an **experiment**, and each experiment is liable to be adjusted, or even stopped, based on the **results** of ongoing evaluations of it.[13]

The final step in the policy process--termination-is the subject of the next section.

Policy dynamics

Change is an essential element of policy analysis or strategic planning. Because resources are limited, changes in programs or policy direction require the termination of some activities to make way for new ones. Benefits to some are reduced while those to others are increased. Believing themselves entitled, the beneficiaries of the old programs carry an effective veto over termination, and therefore over strategic or policy **change**.[14] Consequently explicit attention needs to be focused on the problems of policy termination.

Termination concerns the adjustment of policies, programs, and organizations that have become dysfunctional, redundant, outmoded, or unnecessary. It does not have to be an all-or-nothing act. Indeed, partial adjustments often are indicated and result in institutional revitalization. This possibility becomes all the more desirable in periods of austerity, where a prime source of institutional change comes from recycling, not adding to, the human and capital resource base. Conventional thinking ignores the fact that

retrenchment is not purely about disbanding operations: it is often part of a strategy designed to sustain the larger organization. . . . *Retrenchment must be considered to be an investment in the future*, since contraction is the price paid for future success. Retrenchment deserves the same creative analysis as any other investment decision; otherwise, downgrading—rather than downsizing—will be the result.[15]

There is destruction before there is creation, which causes great difficulties and poses great challenges, especially in the harsh fiscal climate governments face in this, the era of retrenchment.

Termination is not fun. It is often equated with failure, and it is nearly always tied up in high emotions and considerable irrationality—at just the time when clear thinking and solid analysis are most needed. Understandably, most of us would just as soon not think about it, although “one’s ability to take advantage of discovery is directly proportional to one’s ability to terminate prior policy and organizational commitments.”[16] The key idea here is continuity: end as beginning. . . making way for the new. Continuity extends backward in the policy process, too. Careful prior evaluation is a main means to make cuts and changes selectively, discriminately, and fairly.

Managing termination begins by identifying influential and influenced groups and estimating the magnitude of impacts on them both. RPA assessment methodologies (e.g. the Timber Assessment Market Model) are comparatively well-suited for analyzing distributional consequences of alternative policy choices—jobs, producer profits, consumer benefits, resource rents, returns to the U.S. Treasury, impact on private sector profits, regional consequences. There are three main shortcomings however. Such distributional consequences are not always displayed. Basic scientific information to understand these consequences is not well enough developed. And no practical experience exists to confirm or refine the analytic findings.

Several practical hints come to mind to bring the policy process full circle and into continuity. We consider only a few that stand out especially in the case of RPA.[17]

To accomplish policy changes it is necessary to develop methods to *indemnify or compensate the losses* associated with program termination. General lessons can be learned here based on a fast growing body of experience and literature in industrial reorganization.[18] Some specific

guidance in this regard could also be developed based on previous attempts to do so, such as in the Redwood Park case.

Use the natural course of events to provide opportunities for policy change desired on other grounds. For example, suppose that it is a desirable policy to reduce timber harvests from the national forestlands in a certain area. The timber industry in the area relies on these logs to operate, so the reduction would adversely affect those employees. If the mill closes for other reasons—inability to compete due to antiquated capital, for example—this can be used as an opportunity to implement the policy change.

Conclusions

The natural characteristics of forests demand attention to the long-term implications of current decisions. The RPA, designed to provide information, apparently serves neither the external nor the internal clients of the Forest Service. Changes are needed, but what changes?

We have outlined an approach to policy analysis, emphasizing the need for improvements at the ends of the policy process—in issue identification and in policy termination—and the needs for changes in the mechanics of the process, such as timing. We have also noted the importance of systematic evaluation, regional differences, and various possible governmental roles. As a general matter, we urge the Forest Service to broaden its policy vision, particularly with respect to solutions which lie outside traditional Forest Service programs, or outside the Forest Service itself.

How would the RPA differ from the sum of individual plans for the national forests? In the first place, the RPA would be problem, not program, driven. Timing explicitly tied to political events would strengthen the capability to deal with policy problems. In the second place, the RPA could deal with the overall efficiency of Forest Service programs, a task which surely requires attention.¹¹⁹¹ Efficiency could well mean taking account of broader (including international) implications of the plans which cannot be addressed effectively in the fragmentary approach of present forest planning. In the third place, the national forest plans do not address the roles of forestry research and extension, nor do these plans critically examine where solutions lie outside the Forest Service itself.

What about strategic planning? There is an important recurring need to

understand the distinctive role of the Forest Service-in forestry research and in the state and private forestry programs as well as in the management of the national forests. The RPA has not in the past met this need. Indeed, because of the vested bureaucratic **interests**, the gridlock of stakeholder interests and the pervasive failure to consider the process of policy change, the Forest Service may not be able to lead the effort to redefine this role.

And perhaps demands ought not be placed on it to do *so*, considering what appears to be a much more pervasive problem of clarifying government's role and function for the many natural **resources** it manages. Imagine, for example, the creative opportunities that become available to the Forest Service by recasting its basic role as a monitoring and controlling or as a catalytic one. We recommend neither course, but rather simply note a much **larger** challenge that extends well beyond the more modest aims of the present conference and inquiry.

References

1. Charles E. Hewett and Thomas E. Hamilton, eds., *Forests in Demand: Conflicts and Solutions* (Boston: Auburn House, 1982); Gerald Stairs, ed., *Moving along the Learning Curve* (Durham, NC: Duke University, School of Forestry and Environmental Studies, 1980),

2. John Milton Cooper, Jr., "Gifford Pinchot Creates a Forest Service," in Jameson W. Doig and Erwin C. Hargrove, eds., *Leadership and Innovation: A Biographical Perspective on Entrepreneurs in Government* (Baltimore: The Johns Hopkins University Press, 1987): chap. 3.

3. The Forest Service budget grew more rapidly in RPA's first five years than at any time in history. V. A. Sample, *The Impact of the Federal Budget Process on Implementation of the National Forest Management Act* (Washington, DC: The Conservation Foundation, 1988 forthcoming). However, RPA's unique contribution to this growth is not universally accepted. C. K. Leman, *Resource Assessment and Program Development* (Washington, DC: U.S. Department of Interior, Office of Policy Analysis, 1980).

4. This important line of thought wraps around RPA in several different ways. Following it up, however, goes well beyond the limited scope of the present effort. For leads here, consult: Garry D. Brewer, "On the Theory and Practice of Innovation," *Technology In Society* (Fall 1980): 337-63.

5. Herman Kahn and I. Mann, *Ten Common Pitfalls*(Santa Monica, CA: The RAND Corporation, RM-1937, July 1957): 42, is a classic statement of the matter.

6. Bureaucratic creativity does flourish when an organization loses its reason for existence and thus stimulates its members to discover a new and sustaining rationale. Herbert Kaufman, *Are Government Organizations Immortal?*(Washington, DC: The Brookings Institution, 1976). Historically the answer is "yes."

7. Roben A. Levine, "Rethinking Our Social Strategies," *Public Interest* (Winter 1978): 88-92, at 90.

8. Gregg Easterbrook, "Making Sense of Agriculture," *The Atlantic*, vol. 256, no. 1 (July 1985): 63-78.

9. Uncertainty about what the Forest Service role is and ought to be comes through consistently in the many fine contributions contained in Hewett and Hamilton, eds., *Forests in Demand*.

10. These six related phases are introduced in Garry D. Brewer, "The Policy Sciences Emerge," *Policy Sciences*, vol.5(September 1974) 239-244. They are fully developed in Brewer and Peter deLeon, *The Foundation of Policy Analysis* (Chicago: The Dorsey Press, 1983),

11. The relevant connections include the following: ICSU, the International Council of Scientific Unions, probably the preeminent institution extant responsible for setting global environmental research priorities and then coordinating their achievement. SCOPE, Scientific Committee on Problems of the Environment, the relevant operating group of ICSU and source of many facts that account for the globe's changing status. SCOPE 21, *The Major Biogeochemical Cycles and their Interactions* (New York: John Wiley, 1983), is indicative. GEMS, Global Environmental Monitoring System, a long-lived consortium of monitoring networks worldwide, most notable for its publications which go beyond the scientific details to interpret what these mean in understandable human terms. IGBP, International Geosphere-Biosphere Program, perhaps the most ambitious current observation and monitoring program in existence; under the direction of ICSU and often referred to simply as "Global Change." U.S. Forest Service participation with any of these institutions and activities would certainly be appropriate. It is not now evident.

12. As basic control theory suggests: The shorter the lead time to decision, the greater the gain or force one must apply to attain desired corrections in course. Furthermore, the shorter the lead time (with a crisis

being a limiting case) the greater the uncertainty and higher the risk of losing control.

13. Different bodies of managerial practice and theory reflect this general view. It is known as adaptive management in the environmental communities, as social experimentation in social science ones, and as demonstrations and prototypes by policy scientists. No matter the differences in identifying labels, all agree on the root importance of careful and thorough evaluation.

14. John W. Gardner, "The War of the Parts Against the Whole," *The Seventeenth Annual Cosmos Club Award* (Washington, DC: The Cosmos Club, April 3, 1980).

15. Cynthia Hardy, "Investing in Retrenchment: Avoiding the Hidden Costs," *California Management Review*, vol. 29 (Summer 1987): 111-25, at 112-13. [Emphasis in original.]

16. Robert P. Biller, "On Tolerating Policy and Organizational Termination," *Policy Sciences*, vol. 7 (June 1976): 133-49, at 137.

17. A richer list is contained in Robert D. Behn, "How to Terminate a Public Policy: A Dozen Hints for the Would-Be Terminator," *Policy Analysis* (Summer 1978): 393-413.

18. Industrial policy, deindustrialization, productivity policy, reindustrialization, and so on are commonplace catch words in this regard. A sober historical view, quite "uncommon" in this emotion-charged field, is worthwhile: Richard R. Nelson and R. N. Langois, "Industrial Innovation Policy: Lessons from American History," *Science*, vol. 219 (18 February 1983): 814-18.

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A Summary of the RPA Process and Implementation to Date

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In September 1987, a conference was held to explore the means by which the implications of the 1989 RPA Assessment could best be recognized and incorporated into the development of the 1990 RPA Program. This briefing paper will provide background on the RPA for those participating in the conference, as well as a foundation for the preparation of the individual papers that will be delivered and discussed at the conference. First is a brief discussion of the Forest and Rangeland Renewable Resources Planning Act (RPA) and the documents that it requires be periodically developed: (1) an Assessment, (2) Program, (3) presidential Statement of Policy, and (4) Annual Report of the Forest Service. Following that is a summary of the implementation of the RPA, from its passage into law in 1974 to the present. This will cover the findings of the 1975 and 1979 Assessments (and 1984 Supplement), the development the 1975, 1980 and 1985 Programs and the Statements of Policy, Annual Reports and annual budgets prepared in association with them.

Origins of the RPA concept

The impetus for what was to become the Forest and Rangeland Renewable Resources Planning Act (RPA) came almost entirely from one man, the late Senator Hubert Humphrey. One of Humphrey's abiding concerns as a legislator and political leader was that, as a nation, "we are so constantly embroiled in issues of immediate focus that we are failing to look to the long term"(1). During hearings on the RPA, this former pharmacist from Minnesota noted that "we work too much on an ad hoc basis in the Congress and the Executive Branch, moving from crisis to crisis,

applying policy and funding Band-Aids and aspirin to long-term problems that require permanent treatment. This is particularly true of our forests and rangelands."(2) Humphrey was well aware of the role of our 770 million acres of forest land and 820 million acres of rangeland in America's long-term social and economic well-being. In his mind, the fact that we had achieved only a small portion of the potential of these lands was attributable to two primary factors:

(1) no long-term goals for the nation's forest and rangelands had ever been clearly articulated and

(2) even were such goals to be identified, no mechanism yet existed for achieving them in the context of the annual budget process.

Humphrey's concern that short-term objectives and needs often obscure and defeat any longer-term goals applied to many areas of federal policy. However, he felt that the situation on our forest and rangelands was among the most acute. Part of the problem was the nature of political decision making; there was "a basic dichotomy between the time frames involved in renewable resources and the political, social, and economic spheres"(3). Forests are often managed on a cycle of 80-100 years; the federal chief executive changes every four to eight years and more than half of the members of the House of Representatives have served for four years or less. Humphrey and the subsequent cosponsors of the RPA felt that the most orderly manner in which to secure the needed investments on these lands was to:

(1) gather and assess facts to determine the conditions on these lands

(2) set goals for the use of the lands which would be consistent with investments made in the resources but would satisfy society's anticipated needs

(3) keep long-term needs in focus and not allow their circumvention by short-term objectives

(4) revise plans regularly to refine estimates of supplies of, and demands for, resources and improve plan performance

(5) commit sufficient funds to these programs to make the plans become reality.

The framework of the RPA

Thus, the RPA was developed for two purposes: first, a basis for strategic **planning—the** establishment of long-term resource output goals

and the development of a management plan with both short-term and long-term **objectives—and**, second, to guide Forest Service budget development in order to make possible the attainment of those objectives. To these ends, the RPA calls for the Secretary of Agriculture periodically to prepare and submit to the Congress four different documents: a Renewable Resources Assessment ("the Assessment"), a Renewable Resources Program ("the Program"), a presidential Statement of Policy, and an Annual Report.

The Assessment

The Assessment is prepared at ten-year intervals and is to represent the best available factual basis for renewable resources decision making. It is required to include:

- (1) an analysis of present and anticipated uses, demand for, and supply of (forest and range resources on lands of all ownerships)
- (2) an inventory ... of present and potential renewable resources, and an evaluation of opportunities for improving their yield of tangible and intangible goods and services, together with estimate" of investment **costs** and direct and indirect returns to the federal government
- (3) a description of Forest Service programs and responsibilities in research, cooperative programs and management of the National Forest System, their interrelationships, and the relationship of these programs and responsibilities to public and private activities, and
- (4) a discussion of important policy considerations, laws, regulations, and other factors expected to influence and affect significantly the use, ownership, and management of forest, range, and other associated lands(4).

The Program

A Program is then developed, based upon the findings of the Assessment, at five-year intervals. If it has been five years since the most recent Assessment, a brief update to that Assessment may be issued to summarize its major findings "as revised in accordance with new data, analytical methods, and expectations about the future"(S) and to describe the implications of these findings for the upcoming Program. The Program must include:

- (1) an inventory of specific **needs** and opportunities for both public and private program investments

- (2) specific identification of Program outputs
- (3) a discussion of priorities for accomplishment of Program opportunities
- (4) a study of personnel requirements to implement ongoing programs
- (5) recommendations which evaluate the objectives of Forest Service programs, explain the opportunities for state and private landowners to participate in programs to enhance resource outputs, and state national goals that recognize the interrelationships between renewable resources(6).

The Program, as submitted by the Secretary of Agriculture to the President, may contain several alternatives for addressing the needs and opportunities identified in the Assessment rather than just a single recommendation. In practice, these alternatives have been examined in detail in the environmental impact statement which accompanies the Program, not in the Program document itself. It is important to note that the Program represents the alternative selected by the Secretary of Agriculture for recommendation by the President to Congress. As such, it is not necessarily only a strict reflection of the collective professional judgment of the Forest Service, but is also a political document expressing the policies and perspectives of the current Administration.

The Statement of Policy

Once the Assessment and Program have been completed, they are submitted by the President to Congress along with "a detailed Statement of Policy intended to be used in framing budget requests by that Administration for **Forest** Service activities for the five-year program period." (7) The Congress then has 90 days in which to either accept the Statement of Policy as submitted or adopt a resolution in either house disapproving it. In the latter instance, "Congress may revise or modify the Statement of Policy transmitted by the President, and the revised or modified Statement of Policy shall be used in framing budget requests." (8) That the Congress intended to hold the President strictly accountable to the Statement of Policy is clearly spelled out;

Requests presented by the President to the Congress governing Forest Service activities shall express in qualitative and quantitative terms the extent to which the programs and policies projected under the budget meet the policies approved by Congress... In any case in which such a budget so

presented recommends a course which fails to meet the policies so established, the President shall specifically set forth the reason or reasons for requesting Congress to approve the lesser programs or policies presented.(9)

These accountability provisions of the RPA were the primary points of dispute between the Congress and the Executive Branch, particularly the Office of Management and Budget (OMB). It was largely for this reason that OMB recommended in 1974 that the legislation be vetoed by then President Nixon. But these provisions were only one manifestation of a larger battle being waged concurrently between Congress and the President over the Congressional Budget and Impoundment Control Act. In this context, Humphrey himself noted that, "as initiator of this renewable resource legislation, one of my goals was to assist in strengthening the linkage of goal setting and budget performance."(10) Congressman Frank Evans, a member of the House Appropriations Committee, was more explicit, describing the RPA as being "in the same spirit as the Congressional Budget and Impoundment Control Act, . . . [giving] the Congress more control over the Forest Service budget."(11) Although President Ford, in a post-Watergate conciliatory gesture to the Congress, chose to disregard OMB's recommendations and sign the RPA into law, it was noted in the President's statement accompanying the new law:

I would be less than candid if I did not admit that certain provisions of this act disturb me, especially those provisions relating to Presidential discretion in formulating annual budget requests for our national forestry programs.(12)

The Annual Report

A final reinforcement of the budget performance aspect of the RPA comes in the requirement of an Annual Report "for the purpose of providing information that will aid Congress in its oversight responsibilities and improve the accountability of agency expenditures and activities . . ."(13) More than that, however, the Annual Report binds together the other elements of the process by evaluating both the progress of the Forest Service in implementing the Program and "the accomplishments of the Program as they relate to the objectives of the Assessment."(14) Costs and benefits are to be monitored in both qualitative and quantitative terms. Each report must assess the balance between environmental quality factors such as aesthetics, public access, wildlife habitat, recreational and wilder-

ness use, and economic factors such as **the** excess of cost savings over the value of foregone benefits and the rate of return on renewable resources.OS)

Summary of RPA implementation to date

The RPA was signed into law by President Ford on August 17, 1974 and required that both the first Assessment and first Program be submitted to the **Congress** no later than December 31, 1975.(16) Both **the** 1975 Assessment and the 1975 Program were largely seen as trial runs due to the short period of time available for their preparation and because of the preoccupation of both the agency and Congress with what was **soon** to become the National Forest Management Act. The first in-depth resource inventory and analysis under the RPA came in the 1979 RPA Assessment. Likewise, the first full-scale set of recommendations under **the** RPA came in the 1980 Program. Since that time, we have seen not only an update of both these **documents** (the 1984 Assessment Supplement and the 1985 Program) but also a series of annual **budgets** to provide a preliminary indication of the **RPA's** usefulness in guiding budget development.

Findings of the 1979 Assessment and 1984 Assessment Supplement

The first full-scale RPA Assessment effort was completed in 1979 to serve as the basis for preparation of the 1980 Program and EIS. This was not the first attempt to inventory the nation's forest and rangeland resources(7), but it was without a doubt the most comprehensive up to that time. For the first time, the Congress had a reasonably complete picture of the nation's 1.6 billion acres of forest and range-their distribution, ownership and productivity-to guide policy development and decision making which necessarily would involve both federal lands and private lands. The analysis in the Assessment was primarily concerned with prospective trends in supply and demand for these renewable resources and evaluated the economic, social and environmental implications of these trends. From this, the Assessment described the projected evolution of the resource base assuming the continuation of current trends, then identified opportunities to increase and extend supplies to avoid or reduce any projected shortfalls.

The basic assumptions underlying the Assessment's projections of demand and supply of such resources as outdoor recreation and wilderness, wildlife and fish, grazing, timber, minerals and water were based on

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anticipated changes in population, the gross national product, disposable personal income, institutional and technological change, energy costs and capital availability for both housing and industrial development(18). Recognizing the uncertainty of changes in such major determinants as population, economic activity and income, and the implication of significant error in their projection, three alternative sets of assumptions were used. The three alternatives were felt to cover the range over which growth in the major determinants, and the associated projections of demand for renewable resource **products**, could reasonably be expected to vary, and illustrated the sensitivity of the demand projections to changes in the major determinants(19). Because **past trends** in these determinants were seen as resulting from large-scale technological, socio-political and institutional forces not normally subject to rapid change, the emphasis in the Assessment is generally on the middle of the three alternative sets of assumptions.

The major **findings** of the 1979 Assessment are summarized as follows:

- Substantial growth is anticipated in population, economic activity and income:

The population annual growth rate will gradually decline from 1% in the early 1970s to about .3% by 2030. GNP will nearly double from 1978 to 2000 and, by 2030, will be approximately 3.7 times the 1978 level (in constant 1972 dollars). Disposable personal income is expected to nearly quadruple, and per capita disposable personal income will be nearly 2.7 times the 1978 average. The nation will be faced not only with meeting the resource demands of an additional 80 million people, but the demands of a total of nearly 300 million people with greater purchasing power than today's population.

- Consumption of forest and range resources is already rising rapidly:

Past increases in the major **determinants** has fueled such increases in resource demand as a quadrupling in the number of camping households since the early 1960s and an increase in timber consumption from 11.5 billion cubic feet to 13.7 billion cubic feet in 1977.

- Projections show **demands** for **forest** and **range products** rising faster than supplies:

With the continuation of recent trends in investment in forest and range

land, water programs and facilities, supplies of both commodity and non-commodity outputs will increase at a much slower rate than demand. **This** growing imbalance will have adverse economic, social and environmental implications, such as rising real prices for timber and forest products, higher imports and more competition for a diminishing relative supply of recreation opportunities and fish and wildlife uses.

- The nation has a huge resource base, most of it privately owned, but production is far below potential:

Of the nation's 1.6 billion acres of forest and range land, nearly 53% is held by private landowners. Nearly 72% of the nation's commercial forestland is held privately, and more than **80%** of that by farmers and other non-industrial private landowners. Range production in 1977 was only about 35% of **its** biological potential and forestlands produced only about 60% of what is possible just in fully stocked natural **stands—an** even greater productivity is possible under more intensive management. The greatest potential for increasing forest productivity is on the 58% of the commercial forest land base in non-industrial private ownership. In addition to their greater productive potential, most of these lands are advantageously located near large wood products markets in the eastern United States.

- Projected demands for most renewable resource products can be met through greater investment in intensive management:

Opportunities exist to greatly increase production of renewable resource products of forest and range lands—enough to meet demand for nearly all products. Achieving this potential will require more intensive management of much of the land and water base, the integration of all renewable resources in management plans, construction of new facilities, improvements in the efficiency of utilization, and the preservation of some renewable resources. These measures will require large public and private investments in management, research and assistance programs, but preliminary analysis indicates that, when all the economic, social and environmental benefits are considered, these investments will result in a net gain to society and the economy.

The **1984** Supplement summarized the major findings of the 1979 Assessment revised to reflect new data, analytical methods and expectations about the future. The **1984** Supplement maintained basically the same

assumptions for the longer term but reflected somewhat lower expectations for growth in GNP and disposable personal income in the short term. In addition, the Supplement included a number of simulations of possible economic changes which could change the Assessment outlook for overall timber demand, stumpage prices, softwood lumber production, prices and imports and the inventory of growing stock in private ownership.

The possible futures that were simulated included: (1) management of forest industry ownerships intensified to take advantage of all opportunities yielding a 4% return net of inflation, (2) a reduced level of U.S. housing starts, (3) the imposition of a **10%** or a **20%** ad valorem duty on softwood lumber imports, (4) an increased level of export of lumber, plywood and pulpwood, (5) an increased level of national forest timber **harvests** and (6) a further reduced area of commercial timberland, primarily in the South(20). Perhaps the most salient change in the 1984 Supplement was a substantial downward revision of projected demand for softwood timber and a significant increase in projected demand for hardwood timber. Equally significant is the conclusion that, while expectations of future timber demand have changed substantially since 1979, expectations of demand for most other forest and range resources remain fundamentally the same (see Table 1).

In addition to the previously noted changes in assumptions about short-term growth in GNP and income, the Supplement noted a number of disturbing trends that acted to reduce earlier projections of timber supplies and raise earlier projections of future timber and wood **products** prices. Primary among these were the greater than expected losses of commercial forest land to agriculture and urbanization, and a widespread failure of private landowners in the South to replant with softwood species after harvesting mature stands of planted pine. These preliminary findings have been confirmed and explored in greater detail in a Southern timber study recently released by the Forest Service(21). It is expected that these new findings will have significant impacts on the upcoming 1989 Assessment.

Development of the 1980 Program

One of the most important outcomes of the 1975 Program was the dissatisfaction within the Office of the Secretary of Agriculture over Congress' use of the Program in developing the Forest Service budget for FY 1978. Unable to fund the full Forest Service budget request, Congress had decided to fund the 1978 targets in the Program at 85% across the board.

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TABLE 1. INDEX OF RESOURCE CONSUMPTION PROJECTED IN 1979 RPA ASSESSMENT (A:) AND 1984 ASSESSMENT UPDATE (B:) USING MID-RANGE ASSUMPTIONS FOR MAJOR DETERMINANTS; INDEX YEAR = 1977

RESOURCE USE		1977	1990	2000	2010	2020	2030
SOFTWOOD TIMBER	A: (1)	100	131	141	150	155	158
	B:	100	116	124	136	146	147
HARDWOOD TIMBER	A: (2)	100	177	213	243	283	307
	B:	100	200	253	303	343	357
GRAZING	A: (3)	100	127	135	136	138	141
	B:	100	*	*	*	*	141
CAMPING, DEVELOPED	A: (4)	100	116	150	181	214	245
	B:	100	*	*	*	*	245
CAMPING, DISPERSED	A: (4)	100	116	133	157	182	205
	B:	100	*	*	*	*	205
DOWNHILL SKIING	A: (4)	100	142	178	228	279	334
	B:	100	*	*	*	*	334
FRESH WATER CONSUMPTION	A: (5)	100	113	117	138	151	159
	B:	100	*	*	*	*	171
FRESHWATER FISHING	A: (6)	100	118	139	157	174	190
	B:	100	*	*	*	*	*
BIG GAME HUNTING	A: (6)	100	114	125	134	142	148
	B:	100	*	*	*	*	*

SOURCES: AN ASSESSMENT OF THE FOREST AND RANGELAND SITUATION IN THE UNITED STATES, FS-345 (WASHINGTON, DC: USGPO, 1980):

- (1) TABLE 6.5, BASED ON EQUILIBRIUM PRICE TRENDS
- (2) TABLE 6.6, BASED ON EQUILIBRIUM PRICE TRENDS
- (3) TABLE 5.12
- (4) TABLE 3.2
- (5) TABLE 7.9

AMERICA'S RENEWABLE RESOURCES: A SUPPLEMENT TO THE 1979 ASSESSMENT OF THE FOREST AND RANGELAND SITUATION IN THE UNITED STATES (WASHINGTON, DC: USGPO, 1984)

* NO INTERIM YEAR PROJECTIONS DISPLAYED IN 1984 ASSESSMENT UPDATE

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SDA officials felt that a different allocation of **funds** among **resource** programs was required depending on the overall agency funding level, rather than maintaining fixed proportions regardless of overall funding. The timber industry in particular was concerned that, in times of decreased budgets, relatively more funding emphasis would be placed on national forest timber sales in order to maintain stability in their raw materials supply. USDA specified that program decisions be based on increments of management effort on a resource-by-resource basis. The Forest Service argued for a small number of integrated multiple-use alternatives, fearing that a separate treatment of **resources** might result in an overall program that was physically, economically or environmentally not implementable on the ground. The incremental decision process prevailed, however. As a final check, USDA officials did ask the Forest Service to review the final Program to be sure that no insurmountable implementation problems had been created(22).

Based on the major findings of the 1979 Assessment, the Forest Service had drafted a plan to address the key needs and opportunities that had been identified. Recognizing that the greatest and most economic opportunities for increasing future timber supplies were on the non-industrial private forestlands, the Forest Service recommended major increases in the technical assistance programs of their State and Private Forestry (S&PF) division—a 125 percent increase by 1985 and a 200 percent increase by 2030. Significant opportunities existed to extend timber supplies through applications of newer harvesting, processing, and fabrication technologies, and the Forest Service felt that a second major emphasis on Research was both necessary and cost effective. The third major thrust of the Forest Service plan was the more intensive management of the 191 million acre national Forest System (NFS). Timber production would be increased by higher investments on the **best** growing sites and the more complete utilization of harvested timber. Increased production of non-commodity resources on the national forests, such as recreation, fish and wildlife habitat and water, would receive an even greater emphasis (see Table 2). This was in recognition of the recent and continuing rapid growth in demand for these resources and that, while commodity resources could be increased on private as well as public lands, it was more feasible to expect major increases in non-commodity resources from only the public lands.

An independent analysis conducted by economists at USDA concluded that: (1) because of major increases projected in harvesting from

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TABLE 2. INDEX OF RESOURCE OUTPUT GOALS FOR THE NATIONAL FOREST SYSTEM IN THE 1980 PROGRAM (A:) AND THE 1985 PROGRAM (B:); INDEX YEAR = 1978

RESOURCE (1)		ACTUAL 1978	1982	1984	1986	1988	1990	2000	2010	2020	2030
TIMBER (BBF)	A:	100	97	100	102	104	106	112	122	129	134
	B:	100			93	94	95	115	131	148	164
MINERALS (PERMITS)	A:	100	138	159	168	177	186	207	234	255	262
	B: (2)	100			*	*	*	*	*	*	*
RANGE (MM ALM)	A:	100	100	101	102	102	102	102	103	104	107
	B:	100			99	99	103	104	107	111	114
RECREATION USE (MM RVD)	A:	100	111	118	122	126	130	141	160	174	209
	B:	100			102	108	111	148	162	177	191
WILDERNESS MGMT (MM ACRES)	A:	100	255	268	275	275	275	275	275	275	275
	B:	100			209	229	242	248	252	257	261
WATER (MM ACRE FEET)	A:	100	109	110	111	111	111	113	114	114	114
	B: (3)	100			*	*	*	*	*	*	*

SOURCES: A RECOMMENDED RENEWABLE RESOURCES PROGRAM - 1980 UPDATE,
FS-346 (WASHINGTON, DC: USGPO, 1980).

A RECOMMENDED RENEWABLE RESOURCES PROGRAM - 1985 UPDATE,
FS-400 (WASHINGTON, DC: USGPO, 1986)

- (1) OUTPUT UNITS ARE PROVIDED MERELY TO INDICATE THE BASIS ON WHICH THE INDICES ARE COMPUTED; THESE UNITS ARE NOT ASSOCIATED WITH THE NUMBERS IN THE TABLE IN ANY OTHER WAY
- (2) MINERAL GOALS IN THE 1985 PROGRAM WERE EXPRESSED IN QUADS OF ENERGY MINERALS PRODUCED AND WERE NOT COMPARABLE TO THOSE IN THE 1980 PROGRAM, WHICH WERE EXPRESSED IN NUMBER OF MINERAL LEASES AND PERMITS
- (3) WATER GOALS IN THE 1985 PROGRAM WERE EXPRESSED IN TERMS OF THOUSANDS OF ACRE FEET OF INCREASED WATER YIELD AND WERE NOT COMPARABLE TO THOSE IN THE 1980 PROGRAM, WHICH WERE EXPRESSED IN TERMS OF MILLIONS OF ACRE FEET OVERALL

* NO INTERIM YEAR GOALS DISPLAYED IN 1985 PROGRAM

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non-industrial private lands and because a continuation of current trends in regeneration would not sustain projected harvest levels after the turn of the century, S&PF technical assistance programs needed to increase faster than the NFS role in timber production, (2) because new forest products technology could greatly extend softwood timber supplies in the next twenty years and because the increased cost of NFS programs had already severely limited research, greater funding increases were needed in research than in either NFS or S&PF, and (3) because it would be "more cost effective to put relatively greater emphasis on recreation, fish and wildlife and wilderness programs than on timber and range management, . . . non-market programs should increase more rapidly than the timber and range programs of the NFS." (23) The USDA analysis had, in other words, confirmed the findings and reinforced the Program policy thrusts recommended by the Forest Service.

When the recommended Program was submitted by USDA to the President, OMB called for fundamental changes in its direction. OMB challenged the adequacy of the supply and demand projections and, because of this uncertainty, required that a wider range of choices be offered to the Congress. At the high bound of this range, the annual rate of program growth was reduced from 6.7% to 4.9% and at the low bound, established by OMB, the annual growth rate was 3.2% (24). Like those at USDA, officials at OMB also preferred the flexibility of a resource-by-resource approach to the integrated approach taken by the Forest Service. However, the programs singled out by OMB for the greatest reductions were Research, State & Private Forestry and the non-commodity resource programs on the national forests. The timber output levels recommended by USDA were retained essentially intact at both the high and low bound. At OMB, the primary focus is on short-term federal outlays and on cash returns to the Treasury. The exigencies of near-term allocation of budget resources militate against the consideration of longer-term objectives and against an emphasis on the economic valuation of non-market resources.

Congress responded by rejecting the President's Statement of Policy on the recommended Program and made clear that it would issue its own revised Statement of Policy. As presented, the Program had avoided the recommendation of a "preferred alternative"—i.e. a specific set of objectives—as required by the RPA. Neither the high bound nor the low bound described the expected condition of each resource five years hence. The impact on long-term goals also had not been assessed—the low bound

assumed that all investments would be deferred for five years yet failed to reckon any impact, despite the rapidly increasing demands described in the Assessment. A "white paper" prepared by the Senate Agriculture Committee explained Congressional opposition to the wide range between bounds, and specifically to the low bound imposed by OMB. The House Interior Appropriations Subcommittee noted further, "the Administration had not presented obtainable levels of output at various levels of funding in order to give **Congress** a choice based on sound assessments of the capability of the national forests to produce goods and services, but rather . . . proposed outputs calculated on lower levels of investment intended to bring the RPA more in line with constrained budgets"(2S)' As an amendment to the Forest Service appropriations bill for FY 1981, Congress issued a revised Statement of Policy "generally accepting the high bound" portion of the 1980 Program.

This was not the end of the OMB low bound approach, however, but the beginning. An examination of the annual President's budget **requests** and subsequent Congressional appropriations for the Forest Service for the period covered by the 1980 Program, **FY** 1981 - 1985, look nothing like the high bound Program approved by the Congress. They are, however, remarkably consistent with the original OMH low bound proposal, both in terms of overall agency funding levels and in the allocation of funding among the different resource programs(26). Those areas on which the Program had placed the greatest emphasis for investments in future productivity received **the** greatest cutbacks. By 1985, research was being funded at about half **the** Program recommended level, a real-term *decrease* of 25% since 1980. S&PF was funded at 17% of the Program recommended level, a real-term decrease of 77%. Funding for non-commodity resource programs on the national forests, rather than being emphasized, fell off as much as 40%. Funding for the national forest timber program increased by 13%, the minerals program by 57%. In the annual budget requests submitted to Congress, the objectives of the Program had been turned upside down. Despite the fact that the budget requests were contrary to Congressionally-endorsed Program goals and objectives, both short-term and long-term, Congress approved them with no fundamental changes or revisions.

Development of the 1985 Program

The 1985 Program was submitted to Congress in the fall of 1986. A draft Program had been completed much earlier by the Forest Service and USDA

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but had been withheld by OMI3 for nearly a year and a half. 'there is again a high and low bound with a considerable range between them for most resource programs. The pattern of the 1985 Program is much the same as that of the 1980 Program except that the initial funding levels are below those in 1980 and generally increase at a slower rate. The primary emphasis of the high bound is again State and Private Forestry, Research, and the non-commodity resource **programs** on the national forests, reflecting the consistency of the findings in the 1984 Assessment Supplement with those of the 1979 Assessment. The low bound calls for zero growth for all programs across the board.

The expectations represented by the high bound seem very optimistic, especially given the results of actual appropriations. Arriving late as it did, the 1985 Program was barely in time to become involved in budget development for FY 1988; **FY 1986** was history and the **FY 1987** budget had long since gone through most of the appropriations process. The high bound projects steady increases in funding for most programs beginning in FY 1988, despite the fact that actual funding for most programs decreased sharply from **FY 1986** to **FY 1987** and the current budget proposal for FY 1988 calls for still further decreases. Moreover, the funding decreases to date are much more consistent with the institutional values at OMB than they are with the guidelines in the 1985 Program:

- State and Private Forestry is projected to increase by 54% over the five year period 1986-1990. Actual funding has held constant despite a requested decrease of 55% from FY 1986 to FY 1987 alone; the current request is for a 40% decrease from the level appropriated in FY 1987.
- Research was projected to increase by 14% over the five years. Actual funding has fallen off 2% from FY 1986 to FY 1987 and is expected to fall another 2% in FY 1988.
- on-commodity programs on the national forests: Funding for recreation and wilderness use was projected to increase by more than 70%; from FY 1986 to FY 1987 it is already down by 6%. Funding for fish and wildlife habitat management was projected to increase by 95%; it is already down by 11%.
- Commodity programs on the national forests: Funding for timber was projected to increase by 41% and is down 3% from FY 1986 to FY 1987; funding for minerals was projected to increase by **48%** and is down 3%; funding for range was to increase by **48%** and so far remains unchanged.

At this writing, Congressional appropriations committees are continu-

ing to evaluate testimony on the FY 1988 budget request for the Forest Service. At the Forest Service offices, the studies and analyses that will become the 1989 RPA Assessment are well along toward completion, and the first preparations for the 1990 RPA Program are beginning to stir.

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On Expanding the Supply of Forest Resources from Federal Forest Lands

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While the purpose of this paper is to consider the advantages and disadvantages of expanding supplies of forest resources from federal forest lands, it seems first **necessary** to answer the questions. "Why should the federal government be engaged in supplying forest resources? What rationale is there for such an activity?"

Role of government

Most people would agree that government has a role to play in a market economy characterized by private enterprise and the vestment of property rights to private parties. At issue is the relative size of **the** role, which has been an enduring one. Adam Smith, the founder of classical economics, wrote in *The Wealth of Nations* that the appropriate role for government is three fold: (1) defense, (2) **the** administration of justice, and (3) certain public works.^[1] Smith saw government as generally wasteful and corrupt. His attitude toward businessmen was also negative. He observed: "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public or in some contrivance."^[2] In Smith's view, however, the excesses of businessmen were moderated by competition.

Richard A. Musgrave, an economist of the Smithian tradition and a noted authority on public finance, reasons that an important role for government is "securing necessary adjustments in the allocation of resources by the market" through effective budget policy.^[3] This role arises out of the failure of the market system to allocate resources in accordance with the preferences of society, or in other words, to secure a socially optimal allocation of resources. Musgrave identifies two situations in which there is partial failure. That is, when too many or too few resources are allocated.

The first situation is where "natural monopolies" are said to occur.^{14J} The industries involved are characterized by decreasing costs and, more often than not, production processes requiring very large capital outlays. Examples of natural monopolies occur in industries providing electricity, natural gas, and telephone service. Optimal output of these services requires that supply be increased until marginal cost and average revenue are equal. But under decreasing cost conditions, such an output involves a loss for the private producer. Government intervention is necessary to secure a socially optimal supply. Either the private producer must be given a subsidy or the good must be provided by a public enterprise that operates at a loss.

Musgrave lists external economies or diseconomies as a second situation in which government intervention may be necessary.^{15I} In a well-functioning market economy, prices indicate the relative values of different goods to consumers as well as their marginal costs to producers. Prices also indicate the marginal social benefits and costs of these goods. But occasionally, when some goods are exchanged in markets, there are inefficiencies. Some people incur costs for which they are not compensated, or some people receive benefits for which they make no payment. External diseconomies occur in the first instance. An often used example is a manufacturing plant that dumps pollutants into a river, imposing costs to subsequent users of the water, who are not compensated. External economies occur in the second instance. An example is a profound scientific discovery, such as the transistor, in which society benefits far more than the discovering scientists, who receive only patent royalties. In either case, government intervention might be advisable, depending upon the degree of inefficiency in resource allocation.

In the two preceding situations, the market system fails to secure a completely efficient allocation of resources. In the case of public or, as Musgrave called them, social wants, the market system fails to allocate any resources whatsoever. In other words, the system fails completely.

Public wants must be satisfied collectively because if one individual is excluded, then everyone is excluded. Public goods - the goods that satisfy public wants - are supplied to society as a whole, and the benefits accrue collectively to society. Two or more people can simultaneously use a public good without diminishing its supply. ^{16I} Public goods are not appropriable by individuals. Their benefits are indivisible and cannot be withheld from individuals who refuse to pay for them.

Consider national defense. It is extended to everyone in the country whether or not they are willing to pay for it. Other examples of public goods are space exploration, police and fire protection, street lighting, and air pollution control. If public goods are to be supplied to satisfy public wants, "the government must step in and compulsion is called for."17) The market system will not provide public goods because individuals who have not paid for them cannot be excluded from reaping their benefits. Since no one can be excluded, rational consumers could conceivably conceal their preferences, thereby avoiding the incurrence of any costs, while reaping the benefits other consumers would provide.

Musgrave's fourth situation is merit wants. These are societal wants satisfied in part by the market system, but considered "so meritorious that their satisfaction is provided for through the public budget, over and above what is provided for through the market and paid for by private buyers."18) Merit goods which satisfy merit wants include "publicly furnished school lunches, subsidized low-cost housing, and public education."19)

In sum, according to Musgrave, there are four general situations in which the government can intervene in markets and secure a more efficient allocation of resources through budget policy, namely: (1) natural monopolies, (2) external economics or diseconomies, (3) public wants, and (4) merit wants.

Supplying resources from the national forests

How do the national forests and the resources they yield: timber, forage, fish and wildlife, outdoor recreation, and water, fit Musgrave's scheme for government intervention?

Timber and Forage

Timber and forage are exchanged in private markets. Some of these markets are less structurally perfect than others. As one would expect, the exclusion principle applies. Those who own property rights to these resources can exclude any potential buyer unless he is willing to meet the requisite terms of exchange. National forests are public lands managed as private property insofar as timber and forage are concerned. Access to the national forests for timber and forage is obtained only after a consideration has been paid.

There is no evidence of a natural monopoly being involved in produc-

tion of either timber or forage. In other words, there is no evidence that the long-run unit cost function for either timber or forage continuously declines to a scale of output that saturates potential market demand. Few if any external costs are associated with growing trees and forage. Timber harvesting and **livestock** grazing is another mauer. Reports of external costs in timber harvesting and livestock grazing are frequent in some areas of the country. The extent of these externalities vary widely, and government intervention typically occurs in some form of regulation.

Both timber and forage are intermediate products in the sense that they are used as inputs for a further stage of production. For example, timber is largely used to make lumber which in turn is used to construct housing. Forage is consumed by range livestock which are slaughtered and processed to make red meat for human consumption. Since timber and forage are intermediate products with several close substitutes, it is improbable that they fit the conventional economic notion of a merit good.

Fish and Wildlife, Recreation, and Wilderness

The national forests tend to be treated as common property in terms of access for fish and wildlife, undeveloped recreational activities, and recreational use of designated wilderness areas. Exclusion for these kinds of uses generally does not occur.

Fish and wildlife are also usually considered common property resources.^[10] Legally, with a few exceptions, they are owned by the states because of a long history in common law. In the context of free access, fish and wildlife exhibit a public good character. Two or more people can pursue them simultaneously without diminishing their supply (up to the point of overcrowding or prior occupancy of key sites). When taking occurs, as it does with game species of fish and wildlife, a form of exclusion occurs, and their public good character ceases to exist.

Similarly, again in the context of free access, undeveloped recreational **activities** and recreational use of designated wilderness areas of the national forests are managed as common property resources and exhibit a public good character. Until congestion occurs or key sites are occupied, two or more people can engage in these activities simultaneously without diminishing their supply.

Free access is the critical factor in determining whether these resources are public goods. Fish, wildlife, and recreation resources are not intrinsically public goods. Were user fees imposed for access to the national

forests to use these resources, the exclusion principle would apply. In an economic sense, these resources would be little different from timber and forage as they are currently produced in the national forests. Indeed, they would be little different than if they came from private land.

A brief digression on wilderness seems necessary because of wide differences in usage of the word. There are many reasons that designated wilderness areas are established by Congress. One, though not the most important, is for various kinds of dispersed recreational activities. Nevertheless, people's perceptions about wilderness vary widely. Some can have what they believe to be a wilderness experience in natural settings where man's impact is in fact quite noticeable. These settings may be located on private lands. If user fees were imposed for access to the national forests for recreational use of designated wilderness areas, the exclusion principle would apply. And in this context, wilderness would not be a public good. It, too, would be like timber and forage as they are currently produced in the national forests.

Krutilla and Fisher make the point about public lands, common property resources, and public goods differently:

(T)here is no purpose in attempting to detail a relationship between public lands and public goods. There is no necessary relationship, and certainly no simple, straightforward one. Relationships arise more naturally between public lands and common property resources,...and between common property resources and public goods. The latter is the service provided by the former under no exclusion and demand insufficient to generate congestion or marginal resource costs,...[11]

Available evidence also indicates that the long-run average cost curve associated with the production of fish and wildlife populations and their respective habitats is U-shaped. Therefore, a natural monopoly would not occur. Further, there are no distinguishing external economies or diseconomies. Some fish and wildlife species might be considered merit goods. Threatened and endangered species are an example. Elk and game species of waterfowl would be another.

Available evidence also indicates a natural monopoly would not be present in the production of sites for undeveloped recreational activities, including designated wilderness areas. External economies or diseconomies would tend to be site specific when they occur, making generaliza-

lions difficult and their collective net effects virtually impossible to determine.

Sites for undeveloped recreational activities, including **designated** wilderness areas, seem to fit the criterion for merit **goods**. Congress has recognized recreation as a legitimate, even a preferred land use, and has subsidized outdoor recreation throughout the postwar period, particularly during the **1960s** and 1970s. A notable example of such congressional action is passage of the Land and Water Conservation Fund Act and subsequent appropriations under its authority.¹¹²¹

Water

In *the Wealth of Nations*, Adam Smith, when discussing scarcity, compared water and diamonds.^{113J} He pointed out the former had value in use, but no market value, while the latter had no value in use, but high market value. His example was probably appropriate for eighteenth-century Scotland. It is, however, not appropriate for the arid **western** United States in the twentieth century. Water does have market value, and there are established markets for the exchange of private water rights.

Most of the federal reservations in the West, including the national forests, are found in the uplands, and the percentage of water flow originating in or flowing through these reservations is substantial. It is **estimated** that more than 60 percent of the average annual water yield in the eleven coterminous western **states** is from federal reservations.^{114I} Interestingly, no **revenues** for the U.S. Treasury are generated by **these** water yields. This is a **result** of the development **policies** for settling the western frontier.

Water rights on federal **reservations** are limited by their purposes. For example, in *U.S. v. New Mexico*, the Supreme Court ruled that insofar as the national forests are concerned, the federal government has water rights only to the extent "necessary to preserve the timber or to secure favorable water flows for private and public **uses** under state law." **For** these purposes the national **forests** were established.^{115II} In contrast, the purposes of the national parks are broader and the implied reserved water rights are those necessary to conserve the scenic, natural, historic, and biotic elements of the parks and to provide for their sustained public enjoyment.

Water is not a public good when one of its uses - domestic, crop irrigation, steam and electrical generation, manufacturing, minerals extraction and processing, livestock watering, et cetera - reduces its supply

either quantitatively or qualitatively. further, it seems unlikely that **increas-**ing water yields from forested or range watersheds, either quantitatively or qualitatively, would be characterized by decreasing costs.

External costs might occur in the event of large-scale manipulation of vegetation to increase water yields. For example, grasses might be substituted for trees, but significant costs would be incurred in terms of lost wildlife habitat, aesthctic quality of the environment, and sites for undeveloped recreational activities. o situation can be identified in which water has been considered a merit good.

To summarize, having the government supply timber, forage, fish, wildlife, undeveloped recreation sites, and wilderness areas cannot be rationalized by having these resources counted as public goods when considered individually. Second, no evidence suggests that production of these resources would be characterized by decreasing costs, so this rationale for government intervention in the market cannot be used. Third, while some external costs and benefits may attend the production of these resources, they do not seem to be of such a magnitude that a large degree of government intervention in the market is warranted. Finally, it is difficult to conceive of timber, forage, and water as being merit **goods**. It is apparent, however, that certain species of fish and wildlife **as well as** certain sites for dispersed recreational activities can be so considered. Scarcely, however, would their production warrant the the size of the national forest system.

A Mix of Resources

But suppose that timber, forage, fish, wildlife, dispersed recreation opportunities, water and wilderness are considered collectively rather than individually. In other words, depending on the management regimes applied, a forest would yield these resources in different qualities and quantities. And, in the parlance of economics, these resources would be joint products, products necessarily produced during the life cycle of a forest.

Some of these resources have market value; some do not. When ownership of a forest is private, those resources with market value tend to be favored and consumed relatively rapidly. When these tendencies are perceived as being extreme - **the** mix of market and nonmarket resources being different than a social optimum - and their consumption too skewed to the present, an economic rationale can be made for public

ownership of forestland and public production of forest resources.

The rationale, of course, is based on the presence of external diseconomies. Private forest landowners tend to emphasize production of market resources and products for immediate consumption to a greater extent than might be socially optimum, while incurring social costs for which there is no compensation. Government intervention in the form of ownership of some forest lands would compensate if production was to emphasize nonmarket resources and longer time horizons for resource consumption and investment. The resulting balance between privately and publicly owned forest lands in the production of market and nonmarket resources and in time preference with regard to their consumption and investment would then more closely approximate the socially optimum.

Unfortunately, competition and conflict over the use of forest resources will continue. It is inherent. As discussed earlier, some forest resources, e.g. timber and forage, have a private good character, and others, e.g., recreation and fish and wildlife, have a public good character (assuming access is free and congestion has not occurred). When those with a private good character are exploited or used, those with a public good character can be adversely affected or even taken. For example, when trees are cut to provide logs for the manufacture of wood products, certain kinds of wildlife habitat can be destroyed and dispersed recreation opportunities lost. An external cost occurs if the uses of the wildlife and recreation resources are not compensated. This is difficult to do as a practical matter. For the usage of these resources tends to be transitory, and the cost minimal to any particular individual.

In conclusion, there is an economic rationale for the government being engaged in the ownership of forest lands and in supplying forest resources when a forest is considered as a biological unit yielding a set of market and nonmarket resources. The quantity and quality of nonmarket forest resources yielded under private ownership would be less than socially optimum. Further, the time preference for the consumption of forest resources would be sooner than socially optimum. Hence, there is public ownership, federal, state, and local, of a portion of the nation's forest lands. The combined production of forest resources from public and private forest lands tends to approximate the socially optimum quantity and mix.

Brubaker reaches the same conclusion:

For the most part, however, the case for public management

currently does not rest on any presumption of the superiority of public management; rather it assumes that public managers are equally as competent as private. Instead the argument returns to social efficiency concepts, holding that private operators will not produce the socially optimum quantity and mix of goods. In particular, they will neglect the production of public goods.[16]

Legal rationale

Aside from an economic rationale for federal ownership of forest lands, there is a legal rationale whose development preceded that of the economic rationale.

Public concern grew in the late eighteen hundreds about the rate of cutting in the nation's forest lands, particularly in the pine forests of the Lake States and the redwood and Douglas-fir forests of the Pacific Coast. It was argued by many opinion leaders that the cutting rate was such that the nation's supply of timber would soon be exhausted. In a sharp break with public land policy of the time, Congress passed the Forest Reserve Act of 1891 (also called the Creative Act of 1891).[17] It authorized the president "to set apart...and reserve...public lands wholly or in part covered with timber or undergrowth,...as public reservations..." No provisions for the management of the reservations were specified in the act. They came six years later in the Organic Administration Act of 1897. Among its contents was a statement of the purposes of the forest reserves (as they were designated and called at the time):

No public forest reservation shall be established except to improve and protect the forest within the reservation, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.[18]

As clear as this wording of the statute seems, it was recently reasoned in the Supreme Court decision in *U.S. v. New Mexico* that Congress intended national forests to be reserved for only two purposes: to secure favorable water flows and to provide a continuous supply of timber; that "to improve and protect the forest" does not "form a third and separate purpose of the national forest system." [19] Justice William Rehnquist wrote the opinion of the Court, and he argued in a footnote:

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A close examination of the language of the (Organic Administration) Act, however, reveals that Congress only **intended** national forests to be established for two purposes. Forests would **be** created only "to improve and protect the forest within the boundaries," or *in other words*, "for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber." (Original emphasis.)

Four **Justices** dissented in the decision, and in the dissenting opinion, Justice Powell wrote in part: "Although the language of the statute is not artful, a natural reading would allribute to Congress an intent to authorize the establishment of national forests for three purposes, not the two discerned by the Court." Thus, it seems the exact purposes for which national forests can be **established** are somewhat unsettled even today.

The Weeks Law was passed in 1911 and marked a dramatic change in fcederalland policy, which, up until that time, had been concerned with first, disposing of the public domain, and second, **reserving** parts of it for certain public interest purposes.¹²⁰ Congress authorized appropriation "for use in the examination, survcy and acquirement of lands located on the headwaters of navigable streams or those which are being or which may be developed for navigable purposes..." It further directed the secretary of agriculture "to examine, locate and recommend for purchase such lands as in his judgement may be necessary to the regulation of the flow of navigable streams..."

In 1924, these provisions of the Weeks Law were amended and broadened substantially by section 6 of the Clarke-Me ary Act, which authorized and directed the Secretary of Agriculture:

to examine, locate, and recommend for purchase such **forested**, cut-over or denuded lands within the watersheds of navigable streams as in his judgment may be necessary for the regulation of the flow of navigable streams or for the production of timber.¹²¹

Simply put, **Congress** authorized the purchase of private land either for regulation of water flow of navigable streams or for timber production.

The Multiple-use Sustained-Yield Act directed that the national **forests** "be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes."¹²² The **establishment** and maintenance of **wilderness** areas was stated to be consistent with the act's purposes and

provisions. The sustained-yield policy established by the act was a physical standard as opposed to an economic one. The renewable resources of the national forests are to be administered to achieve "in perpetuity...a high-level annual or regular periodic output...without impairment of the productivity of the land." **These** policies are consistent with and tend to reinforce the earlier economic rationale for government ownership of the national forests.

Congress directed in the **Forest and Rangeland Renewable Resources Planning Act of 1974** that a strategic plan or program be used to guide basic Forest Service activities and budget requests.^[23] It further directed that this program be based on a comprehensive assessment of the demand for and supply of renewable resources from forests and rangelands of all ownerships throughout the nation. The Resources Planning Act (RPA) was different from earlier acts dealing with the national forests and the Forest Service. The intent of the authors was not to set policy, but to establish a **process** by which policy could be developed, funded, **and** implemented, a policy that was to be supported by a comprehensive, factual overview of the long-term demand and supply situation for forest and range resources.

Section 5 of RPA, a **relatively** modest provision, called for the development and use of local national forest management plans. Two years later, this section was renumbered and greatly expanded by the National Forest Management Act (NFMA), which was designed as an amendment to **RPA**.^[24] NFMA sets standards and guidelines for management of the national forests and, in particular, for land management planning. They are to be implemented by regulations promulgated by the Secretary of Agriculture and are to include, among other things, regulations on the suitability of national forest land for timber production, timber harvest levels, and timber harvesting methods.

NFMA effectively set constraints on the kind of management activities that may occur on the national forests, in other words, **limits** on the strategic planning directive contained in RPA, perhaps in recognition of the productive capabilities and limitations of the individual national forests. Congress seemed to be concerned whether the sum of the national **forest parts** would equal the **RPA** whole.

In conclusion, a rich legal history and rationale supports the federal government being engaged in the ownership of **forest lands** and supplying **resources** from them to the general public. Arguably at least, the national forests were established: (1) to improve and protect the **forests**, (2) to

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secure favorable conditions of water flows, and (3) to furnish a continuous supply of timber. They are to be managed to produce both market and nonmarket resources, **namely**, outdoor recreation, forage, timber, water, wilderness and fish, "in the combination that will best meet the **needs** of the American people."¹²⁵¹ The outputs of **these** resources are to be at high levels and sustainable, but such that there is no impairment in the productivity of the land. Strategic planning is to be used to guide management activities in the national forests, but national forest plans and their implementation are to be constrained by standards set forth in the National Forest Management Act, put into effect through regulations promulgated by the Secretary of Agriculture.

Advantages and disadvantages of expanding supplies

Forest and rangeland renewable resources are very important to the economy and quality of life in the United States. This is explicitly recognized in section 3 of the amended RPA which begins: "In recognition of the vital importance of America's renewable resources of the forest, range, and other associated lands to the nation's social and economic well being..." Other things being equal, expanding supplies of these resources from the national forests would be advantageous to many American people, especially in the context of growing population and incomes. Expanded supplies would tend to drive down prices of market resources and increase opportunities for the public to use nonmarket resources.

Unless it is assumed the present mix of renewable resources currently coming off the National Forest System is desirable, and in "the combination that will best meet the needs of the American people..." the increases will not be proportionate. Indeed, after examining Forest Service data in the 1985 RPA Program, a respected academician from Yale University **testified**:

The minerals program appears to be highly economic. The major noncommodity programs— for recreation, wilderness, water and fish and wildlife—also seem to be efficient. The timber program is marginal, and the range program is clearly uneconomic.¹²⁶¹

He subsequently observed:

Reallocation of the (Forest Service) budget from the inefficient range and marginal timber programs towards the highly efficient mineral and noncommodity **programs** would en-

hance **the** economic impact of Forest Service activities without changing the overall budget level for **the** agency.

These observations lend substance to the frequent cry of environmentalist critics for a more balanced program.

One disadvantage of a Simple, isolated expansion of supplies of national forest renewable resources is that if it is not done in the context of **other** possible public expenditures, it might preclude a more cost-effective use of public resources.

Another disadvantage of expanded supplies of national **forest** renewable resources is that it could inhibit private investment in close substitute products. An increased supply of national forest timber in a market would have a dampening effect on stumpage prices, reducing the return on **investment** of private forest landowners and the relative attractiveness of investing in timber growing. In a similar way, an increased supply of outdoor recreational opportunities in the national forests would discourage private investment in comparable recreational activities.

Still another disadvantage is that expanding supplies of national forest renewable resources could tend to heighten regional tensions. The West would benefit more than the other regions of the country. It is the region toward which most of the money would flow, and it is already looked upon as enjoying disproportionately favorable federal treatment. Many political leaders in the East, Midwest, and South have been clamoring in recent years for the federal government to manage its resources in the West for the benefit of the whole country, not just the region. At the same time, in order to cope with rapid **growth** and destructive boom-town development, western political leaders have demanded some control over federal lands and resources. For example, Montana and Wyoming levied and collected substantial severance taxes on the production of federally owned coal in their states.

Development of natural environments is a final disadvantage of expanding supplies of national forest renewable resources. It necessarily involves making irreversible decisions, like roading a roadless area, that limit options for future generations.

In policy formulation, government action is seldom neutral. *Pareto optimal* solutions - those making some people better off, while not making others worse off - seldom occur. Maximization of net **benefits** is the best that can usually be achieved.

Suitability of national forests for increasing supplies of renewable resources

The national forests in the West were created out of the public domain in the late nineteenth century. The public domain at that time, of course, was land that was left after most of the West was settled. While this is an oversimplification of historical events, it does contain an important element of truth about the relative biological capabilities of the national forests in the West. They tend to be at higher elevations, with harsher climates and thinner soils than the surrounding private forest lands.

Similarly, the national forests in the East are "the lands nobody wanted," agriculturally exhausted, cutover, and abandoned land purchased by the Forest Service under authority of the Weeks Law.[27]

While the national forests as a rule do not have the best land or the best location, they are biologically and often economically capable of providing huge quantities and qualities of renewable resources, satisfying a variety of human wants. The national forests are the largest public forest land ownership in the United States, and they are administered by an established, capable, and well-disciplined bureaucracy.

With the likely exception of wilderness, the national forests as a whole generally are not better suited to provide any particular renewable resource than the private forest lands that surround them. What distinguishes the national forests is the mix of market and nonmarket resources they provide. Private forest landowners as a group will not produce the socially optimal quantity and mix of renewable resources because the requisite economic incentives are lacking. The rationale underlying the existence of the national forests is to complement the outputs of private forest landowners such that a socially optimal quantity and mix of renewable forest resources is ultimately achieved. Hence, the national forests would produce relatively larger outputs of outdoor recreation, watershed, wilderness, wildlife and fish than would private forest landowners, and correspondingly, relatively lesser outputs of timber and forage.

Are the national forests particularly well suited to increase the supply of particular renewable resources? The answer has to be: "It depends." Suitability for any particular resource depends upon the physical and biological capabilities of the site, competing uses, the distance of the site to existing and potential users, relative cost of production, tastes and preferences in terms of the characteristics of the resource, and alternative

sources of supply. In other words, a proper response to such a question must be made on a resource- and site-specific basis.

Getting the necessary capital

Increasing the supply of renewable resources from the national forests would require an additional expenditure of federal money. And there is no sure way of getting it. The national **forests** and the Forest Service do not operate in a vacuum. Indeed, they compete with other such federal programs and agencies.

The basic rule of resource allocation that applies to the private sector, equating marginal benefits with marginal costs, also applies to the public sector. Hence, each line of government activity should be extended to the point at which marginal social benefits from the activity equal marginal social costs.¹²⁸¹ In less technical terms, the last dollar spent on an activity such as national forest administration should provide the same level of benefits as the last dollar spent on national defense, education, or highways. The rule applies within programs and between programs, within agencies and between agencies.

Although understanding of this rule is uneven in the public sector (as in the private sector), and there are wide differences between its understanding and rigorous application (again, as in the private sector), the budget **process** in both the legislative and executive branches coupled with the competition for funding between agencies and programs works to force a rough approximation of its use. In other words, if project X is known or perceived to provide more net social benefits than project Y, project X will be undertaken, other things being equal. And project Y could well be increasing outputs of renewable resources from the national forests.

Critics of the annual appropriations process abound. In the natural resource community, frequent proposals are made for "car-marked funding" and multi-year appropriations to remedy the adverse impacts of the annual process.

The ill-fated Timber Supply Act of the late **1960s** is an example of the former.¹²⁹¹ It would have allowed the **Forest** Service to retain timber sale receipts and use them **for its** timber management program. A similar proposal could be made for expanding supplies of renewable resources from the national forests. The strength of such a proposal is its appeal to

parochial interests. The weakness is that it is vulnerable to arguments applying the basic rule of resource allocation. Government revenues, regardless of their source, should be spent in a way that net public **benefits** are maximized.

Arguments for multi-year or long-term funding of natural resource programs are also made from time-to-time. Unfortunately, their advocates seem to have a less than complete understanding of the implications of the two-year life span of Congress. Multi-year funding beyond two years is a commitment made for a current Congress by its predecessor, a commitment that many members of Congress are reluctant to make.

Getting additional federal appropriations for increasing supplies of national forest renewable **resources** will be difficult in the foreseeable future. The deficits of the past seven years have caused a more than doubling of the federal debt. Federal interest payments as a percent of federal budget outlays have increased from 11.63 percent in fiscal year 1981 to 16.29 percent in fiscal year 1986.¹³⁰¹ They will continue to increase unless there is substantial increase in federal taxes or a dramatic increase in the growth of the economy. And if federal interest **payments** continue to increase at their expected rate, increased funding of minor federal government functions such as those of natural resources and environment is unlikely,

The obvious alternative is to get private capital, through long-term leasing of national forest lands. One proposal, developed by Marion Clawson, is discussed in detail elsewhere.¹³¹¹ To summarize, Clawson proposes opening national forest lands of all types—highly productive timberland, grazing land, and recreation land—to prospective leasees on a competitive basis. The size of the unit would be on an economic scale, and the length of the lease of sufficient duration to promote good management practices. Minimum standards of environmental protection would be assured by contract provisions. Clawson includes an innovative "pull back" feature in his proposal which would permit rival claimants, who meet the terms of **the** lease, to take a large portion of the land associated with it.

Conceivably, long-term leasing could attract additional investment capital to the national forests, promote efficient production of renewable resources, and retain public ownership of the national **forests**. Environmental quality would be achieved through strictures in **leasing** contracts.

Political considerations

Several political considerations would constrain an effort to expand supplies of renewable resources from the national forests. The first of these is conflicting national priorities. For example, the economic priorities of the Reagan administration have been to: "(1) restrain the growth of federal spending, (2) reduce personal and business taxes, (3) reduce regulatory excesses, and (4) encourage stable and moderate monetary growth." [32] Expanding supplies of renewable resources from the national forests would require increased federal spending, and hence, this priority would serve as a political constraint.

National priorities change, however. The stated economic priorities of the Carter administration were:

Adopting promptly an effective national energy program;
Managing federal budget expenditures carefully and prudently, so that we can meet national needs while gradually reducing the share of our national output devoted to federal spending;

Using tax reductions to ensure steady growth of the private economy and reforming the tax system to make it fairer, simpler, and more progressive;

Working to reduce the federal deficit and balance the budget as rapidly as the developing strength of the economy allows;

Improving existing programs and developing new ones to attack the problem of structural unemployment among the disadvantaged;

Promoting greater business capital formation in order to enhance productivity gains, increase standards of living, and reduce the chances that capacity shortages would inhibit expansion later on; Adopting more effective programs to reduce the current rate of inflation and prevent a reacceleration of inflation as we approach high employment; and

Pursuing international economic policies that promote economic recovery throughout the world, encourage an expansion of world trade, and maintain a strong international monetary system. [33]

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Both sets of priorities speak of reducing federal spending and taxes. But the Reagan **priorities** also deal with regulatory control and monetary policy which are not included among the Carter priorities, and the Carter priorities deal with energy, employment, capital formation, and international trade which are not included among the Reagan priorities.

The United States will have a new president in 1989, and it is probable he will initiate a set of economic priorities different from those of the Reagan administration. To the extent these priorities conflict with a policy of expanding supplies of national forest renewable **resources**, they will act as a constraint.

Another significant constraint is conflict among the various interests who use the national forests and who tend to be dichotomous in their orientation: production of market **resources** versus nonmarket **resources**, development versus nondevelopment of the national forests. An increase in federal spending to expand supplies of national forest renewable **resources** would be looked upon favorably by **interests** who would **benefit** and unfavorably by those who would not. The **resulting** conflict **might** have political consequences and these would act as a constraint.

Regional tensions can be a constraint to expanding **supplies** of national forest renewable resources. If one **region** of the country is seen to benefit at the expense of another, political representatives of the disadvantaged region would probably work to rectify the situation. In so doing, they would limit the extent of the expansion.

A final constraint is the public's perceptions of national **needs** and trends. Politicians, in order to be "in tune with the **times**", respond to changing constituent **attitudes**.

A current perception is that the economy of the United States is moving from manufacturing to **services**.^[34] (The heavy industry is a thing of the past, it is argued, and the future lies with an economy based on high technology and information processing. Many see the timber industry as a heavy industry, a thing of the past. They regard the national **forest timber** sale program as supporting the timber industry and therefore obsolete.

A similar perception **is** that red meat is unhealthy, and the **livestock grazing** program of the national **forests** is a subsidy to the livestock industry which produces red meat. People of this view are inclined to argue that Americans should reduce their **consumption** of red meat for health reasons, and accordingly, it does not make sense for the **Forest Service** to encourage red meat production through its livestock **grazing** program.

Such perceptions would act as a significant constraint on an effort to expand supplies of national forest renewable resources.

To summarize, government priorities, conflicts among user groups, regional tensions, and popular perceptions about national **needs** and trends would act as constraints on an effort to increase supplies of resources from the national forests.

Other critical considerations

The size of the federal debt is the most critical element in the socio-economic environment which argues for increasing supplies of national forest renewable resources. The federal debt increased more than two-fold in a space of six years, from 26.6 percent of GNP in fiscal year 1981 to 40.9 percent of GNP in fiscal year 1986, (135) making the United States the largest debtor nation in the world.

Federal interest **payments** have increased following the increase in the debt and command a growing share of budget outlays. The shares of most of the other 18 budget functions, including the natural resources and environment function, have correspondingly declined. National defense is one obvious, **important** exception.

This situation will continue until government spending is further reduced (which is unlikely), there is a significant increase in the rate of economic growth (which is possible), taxes are increased (**which** is most likely), or some combination of the preceding actions. Until federal **deficits** are substantially reduced, increases in funding of particular government programs that are not of the highest priority will be very difficult to achieve. And there is no reason currently to believe that expanding supplies of national forest renewable resources is of a high priority.

Perceptions about National Forest Management

Another critical consideration in the socio-economic environment surrounding national forest management is public and congressional perceptions about its direction, specifically the apparent uncertainty in its direction. For example, during a hearing on the 1985 RPA Program, Congressman Leon Panetta said to Assistant Secretary of Agriculture George Dunlop and (then) Forest Service Chief Max Peterson:

If I'm working on the budget process and I look at your plan, it doesn't tell me very much, because it depends on

where I want to go with it. If I don't want to give you a dime, I can justify it with this. If I want to support you ..., I can justify it with this.

In other words, the plan doesn't really say where you want to go, and, that, I think, is very important. You're going to have to take that stand if you expect Congress to, in turn, follow what I think you think is good policy.^{136J}

o doubt the current forest planning process and the public participation it requires in implementation of section 6 of the National Forest Management Act, has been the major contributor to the public's perception about uncertainty in national forest management. There is some basis for this perception. The regulations for forest planning were promulgated, revised, and repromulgated. FORPLA - the primary analysis tool for forest planning, has been repeatedly changed, so that there are two versions, each with several releases. Planning deadlines have come and gone unmet. Draft plans have been issued, discussed, and reissued. Final forest plans have been appealed.

The Forest Service seems to be struggling between its role as a federal agency with an allocative function and its real (legal) or perhaps self-imposed responsibilities for the economic stability of regions and local communities which are significantly affected by national forest management activities. The struggle is understandable. For, assuming the agency has legal economic stabilization responsibilities, can it reasonably be expected "to provide a sustained flow of renewable resources...in a combination which **best** meets the needs of society.... and, at the same time, achieve community stability? In other words, can the Forest Service simultaneously and **successfully** conduct resource allocation and economic stabilization functions? It seems very doubtful, particularly when societal demand for renewable natural resources is changing. Transitions in production are not without cost. Societal demand for national forest renewable resources has changed, and the productive activities of many national forest-dependent communities are not consistent with demand. If the Forest Service **attempts** to provide a combination of renewable **resources** "which best meets the needs of society," national forest-dependent communities might be adversely impacted. If the agency seeks to engage in national forest management activities promoting the economic stability of dependent communities, the needs of society as a whole might not be met. This dilemma must be dealt with decisively and promptly or the Forest

Service will continue to suffer losses in public and congressional confidence, making management of the national forests more difficult.

Forest Service Employee's Attitudes

A final critical factor in the socio-economic environment for increasing supplies of national forest renewable resources is the attitude and morale of Forest Service employees. The agency has a rich history, and its employees have historically prided themselves in their "can-do" attitude.

But Forest Service employees of today are not the Forest Service employees of yesterday. For one thing, they are more diverse in their backgrounds; no longer are they uniformly white males with similar academic training. More importantly, like all federal government workers, they have been told by the last four administrations — for nearly 20 years now — that they are not very desirable, that the nation could do without most of the services they provide. They have been sued repeatedly and have suffered some stunning defeats in court. They have engaged in massive reviews (e.g., RARE and RARE II) and exhaustive planning efforts whose products have received mixed reviews at best and malicious, conflicting attacks at worst. One Forest Service official recently told this writer: "You put your heart and soul in a forest plan, working nights and weekends, doing the best professional job possible, and when the plan hits the street, you get hit by everybody and their brother."

What is the collective attitude of Forest Service employees? How is their morale? The answers are unclear, but important. Expanding supplies of renewable resources from the national forests stand to be dramatically affected.

Summary and conclusions

The purpose of this essay has been to consider the advantages and disadvantages of expanding supplies of renewable resources from the national forests. It began with a discussion of economic and legal rationales for the federal government engaging in ownership of forest lands and supplying forest resources. The reason is to provide a socially optimum mix of renewable forest resources which would not otherwise be provided by the private sector which has little economic incentive to do so.

Huge quantities and a variety of qualities of renewable resources are supplied by the national forests each year. Expanding these supplies

would result in lower prices for market resources and increased opportunities to use nonmarket resources. There would also be disadvantages. If done alone, without consideration of other possible public expenditures, a more cost-effective expenditure could possibly have been implemented. Private investment in close substitute products could be forestalled. Regional tensions could be heightened, and irreversible decisions could be made in the development of the national forests.

Site-specific factors determine whether the national forests are better suited than surrounding private forests in producing any particular renewable resource. The exception, of course, is wilderness because past development has typically occurred on private lands.

Getting increased appropriations to fund activities to expand supplies of national forest renewable resources will be very difficult in the foreseeable future because of the deficit and debt problems of the nation. If expanded supplies are socially desirable, long-term leasing of selected portions of the national forests should be explored in an effort to get private capital.

Several political considerations would constrain efforts to expand supplies of national forest renewable resources, including government priorities, conflicts among national forest user groups, regional tensions, and popular perceptions about national needs and trends. Other considerations constraining such an effort are the far-reaching effects on the economy of the recent surge in the relative size of the federal debt, perceptions about the direction of national forest management, and attitudes and morale of Forest Service employees.

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State Resources and Programs as Sources of Forest Resource Outputs

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My specific assignment is to discuss state owned and managed resources as present and potential sources of major forest resource outputs. While concentrating on this topic, I will modestly broaden it in two appropriate ways. First, I will consider both state and county owned and managed land as part of non-federal public land. County owned land is important in a very few states where state constitutional provisions caused tax-reverted land to go to this level of government. Elsewhere such land went directly to the states. Management for both appears to be quite similar. Second, I will offer some brief but pointed observations on programs of assistance and incentives for private forest owners for which state forestry organizations are characteristically the lead agency.

State and county owned and managed forest land may be a modest part of all forest land at a national level but is a highly important factor in particular regions. My calculations from Forest Survey data of some time ago show that a bit over 6 percent of all commercial forest land in the United States is owned and managed by states and counties.

Regional concentration is striking. Twenty-one of 30 million acres of state and county owned and managed forest land is in twenty northeastern states. Some 17 million of these 21 million acres are in five states: Minnesota, Wisconsin, Michigan, Pennsylvania, and New York. The remainder of the thirty million acres is concentrated to significant extent in Oregon, Washington, and Alaska (particularly the latter two). Thus state and county land is an extensive factor in the broadly defined Great Lakes region and in the Pacific Northwest. Recent shifts in land ownership in Alaska from federal to state and native control have doubtless affected specific numbers - increasing the total of non-federal public land, for example. But the regional pattern has remained substantially the same.

The significance of state and county land can be easily illustrated for my own state. The State Forest system comprises 20 percent of Michigan's commercial forest land. This is enough to have a substantial effect on

timber supply, on forest-based industrial development, and on available recreational facilities and opportunities. Some simple comparisons may be useful. Michigan's state forest system has nearly twice the acreage of industry-owned land in the state, is 50 percent larger than the three national forests, and (in an odd statistical quirk) is essentially equal to the total acreage held by nonindustrial private forest owners holding 100 acres or more. This system has its principal origins in large-scale tax-delinquency which occurred in the wake of profound agricultural difficulties in the 1920's and 1930's. Wisconsin's system of county forests was formed in the same way and at the same time, as was Minnesota's combined system of state and county forests. Each is the biggest in the contiguous 48 states. Levels of government that are responsible reflect (as noted) state-constitutional provisions affecting tax-reverted land. It is my impression that large state forest systems in a number of other states also have origin in agricultural difficulty and tax reversion.

Nonindustrial private forest owners hold nearly 60 percent of commercial forestland nationwide. Early everywhere east of the Rockies they are dominant in terms of area held. In that broad area specific proportions range from virtually all forestland in a number of states, downward to a bit less than 50 percent in Minnesota. The latter is the only state in the area where nonindustrial private owners do not hold a majority of the forest land.

Uses and capability of state and county owned resources

State and county owned forest land is in the aggregate managed for a substantial spectrum of values and uses. Examples from Michigan's system seem reasonably typical of relatively large non-federal public land systems. This system provides a significant share of timber supply within the state, is the source of a significant share of wildlife habitat and associated opportunities, provides substantial outdoor recreation facilities of diverse kinds, and portions are managed primarily for naturalistic values. A major lobbying role by a statewide organization made up predominantly of hunters and fishers is a matter of some importance. They generally favor rather active vegetation management.

State and county owned forest land has a significant role in industrial development in several states with large systems. Washington provides one example. State-owned forest land there is managed for the explicit

purpose of providing income for support of the public education system. In the Lake States, state and county owned forest land often provide an initial and easily demonstrated timber supply for new industrial plants. This is commonly followed by some shift toward private holdings as a source of supply when the wood procurement organization of the new plant grows and strengthens. (We in Michigan, for example, have been quite aggressive in efforts directed toward forest industry development. Our state forest system is one of several assets. In effect, we have been able to aid a succession of new plants to get started with essentially the same assets. A quite natural shift toward private sources of supply occurred once a particular plant has been in operation some time).

A quite different situation may occur in states with quite small state or county forest systems, particularly if combined with dense human population. In such states non-federal public land may have primary value for landscape diversity in an otherwise highly developed landscape. This concept was developed several years ago by William Shands and Robert Healy in their book *The Lands Nobody Wanted: Policy for National Forests in the Eastern United States*. It may be applicable as well to some state and county forest systems. The range of human population density to acreage of forest land differs greatly from one state to another. For example, in the northeastern twenty states the range is from approximately one person for each three-tenths of an acre of forest land in Illinois and New Jersey to one person for every 15 acres in Maine. Michigan illustrates in-state variation: one person for every two acres of forest statewide; and only one person for every 25 acres of forest in the upper peninsula. Non-federal public land in very small systems closely adjacent to dense human population will be managed in all likelihood for different values and uses than will large systems at least major parts of which are in sparsely populated areas. Two factors point in this direction for small systems: their value for landscape diversity and their small share of potential supply of resource commodities.

A conclusion may now be drawn. State and county managed lands in large systems may be more suitable for production of resource commodity values than are national forests. A number of national trends appear to be reducing the ability of national forests to supply such values (or are at least greatly constraining any expansion of supply). State and county forests may also be more readily managed for purposes of exported-oriented tourism (i.e. deliberate efforts to attract additional visitors from beyond state and region). Both commodity values and export-oriented tourism

have a fundamentally economic orientation.

Political/Institutional reasons for less constrained management

There may be several political and institutional reasons why commodity and other economic outputs can be expanded more readily on state or county managed land in large systems than on national forests. State or local control gives a stronger and more apparent *tie* to economic development than does federal control. In a number of states and regions additional development of renewable resources and associated industries is seen as one route toward a stronger and more diverse state and regional economy. Many specific examples could be cited at length. And forces and factors encouraging this trend could also be analyzed at length. Suffice it to say that a strong sense of connection between forest resources and a major societal purpose (namely, employment and economic development) **exists** in a number of parts of the country. These include regions with large systems of state and county managed resources.

By contrast and despite strenuous Forest Service efforts, there seems to be little public sense of connection at national level between forests and other renewable resources and any simply stated major societal purpose. For some reason, resource affairs at U.S. national level frequently are interpreted by citizens and organizations as a zero-sum game where what's good for one interest must automatically be bad for others. A sense of connection between renewable resources and national economic purpose (beyond that of specific firms and industries) seems particularly weak. It is a peculiar quirk to have little interest at national level, and a great **deal** of interest in many states and regions. Reasons for this quirk are subject for another analysis; so is the demonstrably stronger sense of connection currently evidenced at the national level in Canada.

Simpler, more straightforward planning processes for resource management are a second **important** factor in a number of jurisdictions. There is little doubt that the processes for national forests specified by the National Forest Management Act are extremely complex. State processes can be and frequently are a great deal more straightforward, not being legally bound by anything as **complex** as **NFMA**. A strong sense of connection to societal purpose is able to more easily guide these simpler processes.

One particular difference in planning processes seems especially important. Planning for national forests involves public involvement processes strongly rooted in participatory democracy. Planning in a number of states uses methods that focus from the outset on work with group leaders and similar people. These methods are more rooted in representative democracy. I have argued elsewhere that methods rooted in representative democracy work more expeditiously than do those rooted almost entirely in participatory democracy. That appears to me to be an important distinction.

A difference in composition of the public strongly seeking to influence resource management is a third important difference between state and national levels. To date a number of national groups play a relatively small role in matters concerning state-managed resources while strongly seeking to influence management of federally-managed resources. Part of this may be simply a matter of first point of attention. But there is also a more enduring point. State-owned and managed resources belong to the citizens of a particular state. Reasonable consensus among those citizens is obviously important. National organizations may attempt to influence in-state consensus. But they do not have an automatic point of entry as in the case of nationally owned and federally managed resources.

One result of this difference in publics is less influence of national-level symbolic issues at state and local levels. Symbolic issues at national level are perhaps partially at the root of the zero-sum view of resource matters, noted earlier. A related difference is less tendency to transfer issues from one part of the country to another. Mention of below-cost timber sales is risky but does provide a simple example. Below-cost sales appear to me to be primarily and most extensively a Rocky Mountain issue. Nevertheless this issue is being vigorously transferred to national forests in other regions, my own included. One consequence in my state is difficulty in national forests meeting their simply-stated proportionate share of a rising total demand for timber. In sharp contrast, a simple statement for state forests concerning disaggregated revenues and costs has been issued with no appreciable reaction, certainly none negative to this point.

These factors lead me to believe that state-and-county managed resources are less tightly constrained concerning management for economic values than are federally-managed resources. At the same time state and county resources most certainly have to be managed in a way that is responsibly protective of environmental values. But these factors do mean

more opportunity for vigorous, result-oriented management and **less** tendency toward partial paralysis among competing interests and symbolic issues.

Financial constraints and possible alternative solutions

Methods for financing resource management by states and counties differ considerably from one jurisdiction to another. So does adequacy of the funding available at present. We can best identify typical financial constraints by examining one situation that is apparently reasonably common. That is the situation where management is financed **substantially** from current receipts (e.g. state **forest** timber **sales** receipts, recreation user fees, mineral royalties).

This arrangement can frequently be a major **constraint**. Past management influences current resource condition which influences current receipts which in turn influence current management which then influences future resource condition and receipts. In essence this is a classic low-level development trap, especially if **low-intensity** management has been the norm in the past. Even if additional investment in improved management would now demonstrably payout in attractive terms, capital simply isn't available due to reliance on current receipts. This, for example, is precisely the point made concerning management of Michigan's State Forest system by a group of interdependent economists several years ago in a wide ranging analysis titled "Michigan's Fiscal and Economic Structure". Specifics may **differ** but the central difficulty may occur in many states and organizations.

At least four generic alternatives may be available for breaking out of this low-level development trap.

State general funds

This would amount to additional regular appropriation for resource management. It would call for state general funds to supplement current receipts now going into resource management. It is fine if such appropriation can in fact be obtained. But there is often a severe difficulty in obtaining appropriation despite **promising** opportunities; a one-or-two-year appropriation process is being **asked** to fund long-term **projects** without a clear **distinction between investment and expenditure**. In essence, we're right back to the basic source of the original difficulty in funding.

Non-renewable resource revenues

The essential idea is to invest revenues from oil and **gas** and other non-renewables in improved management of renewable resources. This in **essence** is a way to strengthen the renewable resource base for the day when revenues from non-renewables diminish as a result of resource depletion in particular locations. This is an argument with considerable logic and appeal. It has apparently been applied successfully in several cases, most notably in California. One potential difficulty is the earmarking of such funds for public land acquisition or other purposes not supportive of improved resource management with an economic orientation. (This in fact has occurred in Michigan where a large fund based on oil and gas revenues is earmarked primarily for acquisition of land chiefly valuable for recreation purposes).

Federal financial assistance/revenue sharing

In a different federal budgetary climate this would make considerable sense. Superior revenue-generating capability of the federal tax **structure** is a major factor. Comparative efficiency of management of state-managed **resources** in light of political-institutional factors discussed in the last section is another major factor.

Counter-arguments are: (1) that increased federal assistance would be running against that current tide; and (2) that direct federal support of management of state-owned resources **might** risk importation of national symbolic issues and contentions directly into state resource management. This would seem to be a substantial risk. Perhaps this risk could be minimized by quietly augmenting existing federal/state funding mechanism at an appropriate time. (Augmentation of an existing mechanism is less likely to stir up a fuss than is a wholly new mechanism more visibly linking federal and state resource management). Even that will require at least partial turning of the current tide.

Innovative funding arrangements for specific purposes

This would involve more specifically investment-oriented funding mechanism for portions of state resource management. These are portions that **promise** allractive returns in direct financial terms. A "forest development fund" being discussed in Michigan illustrates the essential idea. The core of the matter would be to borrow money now to intensify timber

management on carefully selected portions of the state forest system in anticipation of increased future returns. Security for investors would rest in a portion of timber value on the state forests. Land tenure arrangements would be undisturbed. This concept was perhaps the furthest reaching initiative suggested in our Governor's target industry program for forest resources and industries. An extensive analysis of specific investment opportunities has been completed. Based upon it, major discussion with the state's principal bonding consultants is now going forward. These discussions are leading toward a legislative proposal for a state forest finance authority to administer the fund. This authority would be housed in the state forest resources organization.

Any of these alternative arrangements may be useful in loosening financial constraints in particular states. It is my impression that the second and the fourth may be more successful than the others in the present era. They are the arrangements based on investment of non-renewable-resource revenues, and innovative funding arrangements to provide investment funds for specific purposes.

Major state opportunities in assistance and incentive programs

State forestry agencies have a major role in programs of assistance and incentives for private forest owners (in addition to directly managing state owned resources). They are frequently the lead agency for focussing and improving a coalition of public and private organizations that play important parts in offering a potentially unified package of assistance and incentives.

My essential points are (a) that assistance and incentives are important, and are indeed the low-cost part of the resource supply curve, and (b) that state initiatives can help substantially to get these efforts focussed and improved. Each of these points can be usefully elaborated.

Comparisons made by Robert J. Marty show that assistance and incentives to private owners is a highly cost-effective route to additional outputs. He observes that in these programs the public pays only a part of the cost; owners willingly absorb a significant part. By contrast, in management of public land the public pays the whole cost. Thus assistance and incentives are the low cost part of the resource supply curve. Marty thus corrects an implicit assumption [that is often made, namely that assistance and incentives are the high-cost part of the supply curve. That incorrect assumption

is inherent in views that treat supply of goods **and services** from nonindustrial private forests as a residual after considering supplies from all other ownership categories. That view is simply bargaining from the wrong end of the price list!

There is also strong evidence of **the** major beneficial impact of readily available assistance. II. Fred Kaiser and others analyzed **the** investment response of owners of recently harvested pine land in southeastern states. They compared owners for whom assistance was readily available **with** those **for** whom it was not. **The** difference was stark. Eighty-four percent of those with readily available assistance made appreciable investment in reforestation, only 14 percent of those without readily available assistance **did** so. Kaiser later stated (in response to questioning) that he thought the basic pattern of response to readily available assistance was applicable in other regions as well.

There have also been several highly analytic measures of the payoffs of particular **aspects** of assistance **and** incentives. Frederick Cubbage has closely analyzed beneficial **effects** in comparison **with costs** for technical assistance to private **forest** owners. There have also been several analyses of economic effectiveness of the Forestry Incentives Program **and** associated financial incentives. Major analysts include Tom Mills, Paul Ellefsen, and Chris Risbrudl. All found that these assistance **and** incentive components payout quite well.

But assistance and incentives can be further strengthened by initiatives centering largely at state level. Two complementary Michigan illustrations may be useful.

A pilot project is operating in one portion of **the** state. It has two important objectives. The first is to more directly target **and** reach out to land owners **with** the most productive properties **and** strongest investment characteristics. The second is to more closely knit together the **efforts** of a substantial number of public **agencies** and private organizations involved in assistance **and** incentives. The project leader is my cooperative forestry specialist for this part of **the** state. **The** project is partially supported by Forest Service funding.

A forest improvement district has been formed in another part of the state. This is a self-organized coalition of private forest owners. They have **banded** together for mutually beneficial joint management and marketing. This forest improvement district has been organized **under** a statewide enabling act passed several years ago. **This act** sets the stage for a number

of kinds of state assistance to forest owners who take the initiative to organize themselves. From state perspective this amounts to another form of targeting.

These initiatives may reasonably be expected to further increase effectiveness of assistance and incentives. Methods that prove successful will likely be transferable both within the particular state and beyond. It may also be possible to combine successful aspects of the two initiatives with synergistic effects.

Summary and conclusions

Substantial resources are directly managed by state and county governments. These resources are concentrated to a considerable degree in two important regions.

State and county owned resources are managed for a wide spectrum of values and uses. The range and balance of these values differ somewhat between large and small state and county systems. Large systems appear to have opportunities for commodity values and an economic orientation beyond that now found on national forests. Small systems in densely populated states may have primary value for landscape diversity and associated values in an otherwise highly developed landscape.

Several political and institutional factors facilitate considerable focus on economic values in large systems. They are factors that are currently stronger at state than at federal level. They center on a stronger and more widely perceived link between resources and major societal purposes, generally simpler planning processes, and often less contention over symbolic issues than is the case at national level.

State and county resource management is often financially constrained by excessive reliance on current receipts reflecting past low-intensity management. This difficulty might be relieved in several alternative ways covering a range from quite conventional to rather innovative financial arrangements.

States also have a leading role in assistance and incentives for private forest owners. Assistance and incentives have been shown to be important and effective by highly competent analysts. Assistance and incentives are the low-cost part of the resource supply curve. There are possibilities for further improvement in assistance and incentives via state initiatives which are illustrated by two Michigan examples.

Improving Market Mechanisms in U.S. Forestry

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In discussing how to implement the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), one of the questions often asked is the role that private sources of supply can play in meeting RPA and other calculations of future national forest outputs. The question itself suggests that the private sector is to be treated as another source of forest supply, along with federal agencies and any other forest owners. Private suppliers are regarded, in essence, as one more factor to be entered into the calculations of central forest planners.

This very approach may itself be questioned, however, in light of some of the lessons learned about central planning over the years. Typical liabilities of central planning have included difficulty in keeping up with rapidly changing events; weak connections between field developments and central plans; supply-demand projections that have soon been overcome by events and proved to forecast poorly; and susceptibility of plan contents to political manipulations. Many plans have been rapidly outdated and have ended up ignored.

By contrast, the market provides a more incremental, flexible and decentralized process for bringing demands and supplies into a satisfactory balance. In a market system, there is no push to achieve any particular output levels to satisfy previously calculated demands. The actual output levels achieved are learned only after-the-fact; it is expected that they will often differ significantly from earlier calculations of businessmen, planners and other interested parties.

In short, the very concept that society should look to the private sector to provide any assigned or planned level of forest outputs is questionable. Rather, the more appropriate role of the private sector is to contribute to a market process in which output levels, prices and other key economic elements are jointly coordinated and determined through the workings of supply and demand.

It should be noted, moreover, that markets and private ownership are not themselves synonymous. There is in fact a worldwide trend towards

experimentation with use of market methods, even where ownership may remain public. *The New York Times* recently reported that:

In Moscow, entrepreneurial comrades are running their own beauty parlors and auto repair shops, while in China many farmers are eschewing the communal system in favor of selling produce they grow themselves.

On the other side of the ideological world, Britain and France are pushing to reinvigorate their state-owned companies by selling them to the public, while in Washington the Reagan Administration is pressing ahead with lax cuts and its war against government regulation of business.

It seems that no matter where you look, governments have been turning to market mechanisms - Adam Smith's ingenious invisible hand - to pep up their economies. Economists say there is unusual agreement among capitalist and Communist countries about the importance of giving freer rein to the market: that overarching mechanism that helps articulate consumer desires, encourages inventiveness and disciplines inefficient producers.

"In remarkably different circumstances, people are learning that one can make market systems work in very useful ways," said Charles Lindblom, a Yale University political economist and author of *Politics and Markets*.

Capitalist and Communist countries alike have been looking for ways to reinvigorate their economies and avoid the kind of painful stagnation that marked much of the 1970's. They are straining as well to increase efficiency in reaction to greater worldwide competitive pressures. And they are also recognizing that central planning does not work as well once countries achieve a basic level of industrial development.!!)

The United States is regarded around the world as an exemplar of the benefits of ownership and reliance on markets. However, U.S. forestry is an anomaly in this regard. Almost 40 percent of U.S. forestland is owned by the federal government. Federal forests contain more than 80 percent of the existing U.S. inventory of softwood timber.

Hence, unlike many segments of the U.S. economy, a turn towards market processes potentially involves not only privately owned lands but the vast forest lands owned by the federal government itself. One option

would be to sell the commercially most valuable forests to private purchasers. However, this option may be politically infeasible, or may be rejected for other reasons.

The United States could nevertheless experiment in public forestry in much the same way that nations all around the world today are seeking to introduce the discipline of market prices and the accountability of profits in their nationally owned businesses. Under such an approach, for example, individual national forests (or some other appropriate units of the forest system) might be given much greater autonomy to set their own production levels, set their own prices and arrange their own purchases. In return for this greater independence, the newly constituted forest units would then be expected to show a profit — or at least to cover their costs with the revenues earned from sale of forest resources.[2]

Private efficiency

Nations around the world have been seeking, not only the flexibility, responsiveness and coordinating capabilities of markets, but also the greater economic efficiency that seems typically to characterize private enterprise. Here again, there is nothing inherent in public or private ownership that necessarily makes one sector more efficient than the other. Indeed, the behavior of private firms is often far from efficient; the politics of corporations can be as fierce as the politics of the public sector. It has long been observed that the accountability of bureaucratic managers to stockholders is weak in the large private corporation.

Yet, public and private seem to represent different cultural milieus in the United States. The private milieu gives much greater value to efficiency, while the public sector places a much greater emphasis — often more in intent than the actual result — on equality of treatment of all citizens. Where efficiency requires discrimination, the cultural standards of “privateness” accept this consequence, whereas the cultural standards of “publicness” stand in the way. There is no particular problem in the private sector in charging high prices as a means of allocating access to natural resources, thus rationing use partly by excluding those with lower incomes. By contrast, it is only with much strain that the public sector is able to employ the pricing mechanism to allocate access to resources.

The public sector contains many other procedures and standards that give fairness, equity, and other social values a higher value than efficiency.

Public employees, for example, cannot be dismissed without extensive review and opportunity for appeal. Employment procedures in the public sector may make it less likely that an employee will be treated arbitrarily or unjustly, but also **less** likely that ineffective employees will **be** removed. Public equity standards result in the compression of pay levels in the public sector, making it impossible to offer salaries and other compensation very much above average pay levels. The private sector is thus typically able to command the talent it **needs**, whereas the U.S. public sector sometimes must go without skills because it is unable to pay the price.

The incentives of the private sector limit the voice of the citizens to those who have a direct financial interest in the matter. By contrast, every **citizen and** voter is encouraged in the public sector to give his opinion and to expect that this opinion will be heard. The American political system is one that leaves public decisions often to be determined by interest group bargaining and negotiation - sometimes called "interest group liberalism." In many areas of public policy, **interest-group** pressures are the true **driving** force, leading to the creation of wasteful and inefficient programs. The private sector, by contrast, is guided by the pressures of market incentives and within the individual firm through a structured decisionmaking process.

Observing the differences between public and private cultures, many observers have questioned the desirability of applying the value norms of "publicness" in all the areas where they are now applied. Instead, the argument is made that the norms of "privateness" would yield significantly more efficient production and, broadly applied, a significantly greater total national output of goods and services. The forces of market competition would tend to weed out poorly run and inefficient firms, leaving resources in the hands of firms that can do the most with them. With a greater **total** output, most citizens would end up better off, even if some had to suffer greater employment insecurity and other potential market disruptions in their life. Taking a broad view of all these issues, Charles Schultze argued in 1971 in *The Public Use Of The Private Interest* that:

In any except a completely stagnant society, an efficient use of resources means constant change. From the standpoint of static efficiency the more completely and rapidly the economy **shifts** production to meet changes in **consumer tastes**, production technologies, resource availability, or locational advantages, the greater the efficiency. From a dynamic stand-

point the greater the advances in technology and the faster they are adopted, the greater the efficiency. While these changes on balance generate gains for society in the form of higher living standards, almost everyone of them deprives some firms and individuals of income, often temporarily **and** for only a few, but sometimes permanently and for large numbers. The introduction of a new technology in a firm may displace a handful of skilled workers who, after a period of unemployment, find equivalent jobs elsewhere. Or a shoe factory in a one-plant community may cause, permanently lowering the income of middle-aged skilled workers, local merchants, and property owners. Both of these types of income losses may occur in an economy running at full employment; both are even greater in a recession. Under the social arrangements of the private market, those who may suffer losses are not usually able to stand in the way of change. As a consequence efficiency-creating changes are not seriously impeded.

Over the years the American political system has developed a set of formal and informal rules about losses associated with political decisions. First, we tend to subject political decisions to the rule, "Do no direct harm." We can let **harms** occur as the second- and third-order consequences of political action or through sheer inaction, but we cannot be seen to cause harm to anyone as the direct consequence of collective actions. There **is** absolutely nothing in either economic or political theory to argue that efficiency considerations should always take precedence. And sometimes there is no way to avoid unconscionably large **losses** to some group except by avoiding or at least moderating changes otherwise called for by efficiency considerations. Nevertheless, in designing instruments for collective intervention that will avoid loss, we place far too much stress on eschewing efficient solutions, and far too little on compensation and general income-redistribution measures. Over time, the cumulative consequences are likely to be a much smaller social pie for everyone.^{13J}

Improving market mechanisms

It is, as noted above, a central planning approach to speak of the private sector being assigned to supply some designated portion of total national forest outputs. Increasing the total output of private forests also is not necessarily a proper goal of public policy. It all depends on how the output is increased. If the effort does not yield an adequate rate of return on investment, for example, there is little to be said for increased forest output, public or private. In practice, it has often been necessary to provide new public subsidies in order to achieve expanded outputs. Rather than increasing outputs, public policy is more appropriately directed at the goal of improving the workings of markets. This task typically involves the design of better property right and other legal and social institutions that set the framework and rules within which the market functions. Such a goal is as applicable to forestry as to other areas of the economy. Further, the result could be either to decrease or to increase forest outputs.

The market for Western water, for example, could be improved by the adoption of a better defined property right regime.⁽⁴⁾ If they were assured saleable property rights to the water, many Western farmers might very well sell their water rights to urban users who value the water more highly. The **result** would be to conserve on agricultural use of water, while providing needed water for economic expansion elsewhere. It would also reduce the need to construct expensive dams, canals and other Western water projects, illustrating the point that improving market processes does not necessarily yield greater output, but instead may yield a more socially appropriate use of existing supplies. Indeed, it is one of the key **advantages** of a well functioning market that it often avoids the **need** to increase **total** supplies to meet demands that have been artificially stimulated by below-market prices.

The establishment of saleable and enforceable property rights to groundwater could similarly have such an effect. Groundwater rights would create an incentive for existing users to conserve, because they could later sell the valuable rights to the groundwater not currently used. If groundwater were managed more **efficiently**, it would help to diminish the need for **new** water containment and distribution facilities, along with other sources of water supply.

With respect to the uses of the land **resources** of the national **forests**,

the impediments to using markets are of two kinds. First, the federal land agencies typically do not respond directly to market incentives, nor do they allow the direct sale of **their** resources to private owners who would do the same. Although some **resources** are made available through lease for private production, the federal government typically imposes conditions on the lease that are specifically designed to supercede and override market incentives. For example, leases of oil, coal and other federal minerals typically contain a "diligent development requirement" that is designed to compel production within some specified period (often 10 years). Similarly, timber sales require in almost all cases that the harvest must occur within seven years or less.

The workings of the timber market could be improved by a redesign of the institutions which implement the sale of federal timber.¹⁵¹ To be sure, diligence requirements for timber **harvests** may be necessary at present, because payments of bid prices are largely deferred until **harvest** time and no **interest** is charged for delay of harvesting. As a result, lacking a diligence requirement, the optimal bidding strategy would be to bid very high and then wait until timber prices eventually reach a level to justify the high bid. However, if the Government were to charge an appropriate rate of interest, diligence requirements would lose much of their current appeal. If they were abandoned, while market interest rates were charged, (private timber companies might have much greater leeway in deciding when timber harvests should occur. Since they could hold federal timber supplies for longer periods, it would also be possible for timber companies to accumulate a substantial timber inventory and to achieve a closer coordination of private investment decisions with future harvesting opportunities.

Another example of an institutional redesign that might be undertaken to improve market processes would be to allow the direct sale among ranchers and other parties of grazing permits to public forest lands. Much like the creation of water rights, the establishment of an active market for grazing rights would transfer rights from those ranchers who value them less to those who value them more. It is also possible that environmental **organizations** might most highly value grazing rights. If the Government permitted it, wilderness groups might purchase **grazing** rights in **wilderness** areas, not to use them, but to retire them. Whatever the specific outcome, the consequence would be greater efficiency in the use of a forest resource, in this case the forage resource. It has also been pro-

posed that a special **wilderness** board, consisting of leading representatives of the environmental movement, might be created to manage and perhaps decide in some cases to sell off **parts** of the existing wilderness system. The revenues received from such **sales** then could **be used** to purchase additional wilderness. In this way, the market mechanism could be enlisted to improve the overall quality of the national wilderness system. Existing lands within the system would **be sold** when the **receipts** would be sufficient to allow the purchase of more desirable wilderness **lands** elsewhere - much as trading in **grazing** rights might allow for a better allocation of these rights.¹⁶¹

These examples illustrate ways in which market mechanisms in forestry might be improved by institutional redesign. To be sure, the market does not accomplish all tasks with ease. Information, for example, represents a particular problem for market incentives, especially information that is of broad social usefulness. This information may be valuable to all market participants, yet the inability to establish an effective property right to such information may frustrate **its** private provision. Hence, government involvement may be especially needed in areas such as the collection of broad market data and basic research. It is also, of course, true that the market does not take into account many environmental impacts. This may justify government regulatory involvement, assuming that these impacts are substantial enough to warrant the cost and problems of government intervention.

The next sections briefly describe steps that might be taken to improve the workings of markets for specific forest resources.

Improving timber markets

Subsidized production of natural resources is an old and honorable American tradition. The oil and gas industry is perhaps best known in this regard, long famous for its depletion allowances, tax rules for drilling expenses, and other government favors. The tax advantages to the timber industry are less well known, but have also done their share to contribute to the profitability of the industry. Most recently, the timber industry obtained a new form of government aid, the imposition of a tariff directed against Canadian timber imports and **designed** to raise American **timber** prices.

Federal lands have contributed to the support of the timber industry

through the practice in many areas of selling timber at prices well below the cost to federal agencies of holding the sales. In general, harvesting rules and other practices of federal forest agencies are unresponsive to market forces - indeed, are sometimes specifically designed to supercede these forces - thus removing a large segment of the U.S. timber resource from the market mechanism.

Improvements in the workings of the timber market could be achieved on both the public and private sides. The tariff, tax and other special favors bestowed on private timber owners could be curtailed or abolished. On public forests below-cost sales could be ended. More radically, as suggested above, the management of public forests could be altered to allow government managers of public timber to behave more like the owners of private firms. There are other more incremental steps that could be taken in the public sector, such as the lengthening of diligence requirements for timber harvests or the abolition of the restrictions on export of timber from federal forests. Ultimately, one might want to consider selling off into direct private ownership those public lands that hold exceptionally valuable timber and whose primary use is for timber harvesting.

A philosophy of making the market work better does not preclude a need for government planning. However, government efforts are shifted from overriding the market through direct commands to redesigning the institutional framework within which the market functions. Taking the case of large industrial forestry, the market here does not seem to have any obvious need of major redesign. There may be some issues of antitrust that arise in industrial forestry. Existing environmental regulation may be more closely scrutinized, perhaps applying benefit-cost tests more closely to forestry regulations, perhaps introducing tax or other market incentives for environmental protection (where such incentives are feasible), and perhaps also tightening up on regulation in some cases. It may **also** be desirable to require direct public purchase of private forest land, as opposed to regulatory controls that in some cases severely limit or might even preclude harvesting in order to serve wildlife and recreational purposes.

In contrast to industrial forestry, there has been a great deal of discussion over the years that the market works poorly with respect to private forest lands in non-industrial ownership. The main problem has **been** perceived to be a lack of information among non-industrial owners. **The** e owners may be unaware of regeneration, fertilization, thinning and other

forestry practices that could significantly increase the yields from their lands. They may not even be aware of their own volumes of timber, market prices and the revenues that they could earn from selling timber. Since non-industrial forests represent about 60 percent of the commercial forest area, any major improvements in the **workings** of this market could make a significant contribution to U.S. forestry efficiency.

However, others doubt that the non-industrial market works as poorly as some claim. Many non-industrial owners may regard their forest as a consumption item, rather than a production item. Given the small size of many non-industrial holdings, the dissemination of timber market information to widely dispersed owners could itself be costly enough to make the effort economically questionable. Moreover, if private timber owners need better information, there are private mechanisms - such as private contracts signed by non-industrial owners with timber management advisors and agents - that could serve this purpose.

In his comprehensive study of the issue, Marion Clawson offered the conclusion that "the scale of programs aimed specifically at the non-industrial private forests has been small and questions may well be raised about their effectiveness and their rationale." Without any special new efforts, Clawson found that "non-industrial private forest owners are indeed responsive to prices and that their timber output will increase in the future if wood prices continue to rise."⁷¹

Improving recreation markets

Compared with timber markets, the development of recreational markets in the United States is still in a primitive stage. It may be that the development of the institutions of a market is itself partly a response to economic forces. A market mechanism involves legal and other costs for the enforcement of property rights and the charging of prices. These costs may be justified only when potential prices and revenues reach a high enough level. It may be that the United States is only now reaching this point with respect to dispersed recreation. As Neil Sampson has recently said:

What we must do . . . is create new institutional ways for farmers, foresters and landowners to be able to **deal** with the "people" aspects of recreational use. If owners incur costs, and recreation users reap **benefits**, there has to be a way for

the users to repay the owners, or there simply will not be the amount of recreation that would otherwise be possible. We pride ourselves in this country on our ability to let the free market regulate most of our activities, but this is one where we have not yet invented a market mechanism in many places, and we need to encourage that.¹⁸

One of the main obstacles to private provision of recreation is the fear of legal liability, the threat of high damage awards, and the consequent high cost of insurance. The President's Commission on the American Outdoors reported recently that "as we held hearings across the country, we heard time and again about the liability crisis. In 1985-1986, liability premiums for recreational providers skyrocketed 200-300 percent - sometimes more."¹⁹ Many states have statutes which seek to protect landowners from lawsuits but only if they do not impose any fees or charges. Such laws obviously constitute a major obstacle to the development of private recreational markets. More broadly, legislative clarification of liability could do a great deal to improve recreation markets. Many **landowners simply** bar the public in order to avoid high insurance costs and other potential liability problems.

Many private landowners own parcels that are too small by themselves **for the** most enjoyable recreational use. However, if they joined with other nearby landowners, they might be able to pool their lands to create a recreational unit of an efficient size. Such pooling may require the formation of new cooperative, partnership or other legal pooling mechanisms, as well as the dissemination of information to landowners concerning the availability of such mechanisms. It might be regarded **as** a sort of condominium ownership for the limited purpose of providing recreational access. Just as the building of ordinary condominiums followed the availability of appropriate legal mechanisms, so might joint management of recreational lands also follow new legal arrangements designed specifically for this purpose.

Use of market processes depends on the existence of enforceable property rights. Government in some cases actively intervenes to prevent the exercise of such rights. For example, some states grant automatic public access to rivers and streams for fishing, denying property owners the right to exclude fishermen. Excessive fishing and **severe** depletion of **stocks** has resulted in some areas. It may be appropriate, especially for smaller streams, to allow landowners to control fishing and to charge fishermen for

access.

Active private **markets** for hunting have begun to develop in some areas. In Texas, the great majority of hunting today is for fee on private lands. However, nationwide, only 3.1 percent of the land available for hunting involves the payment of a fee. Forty-four percent of all hunting land in the United States is public, while 53 percent is private land that does not involve a fee. Further growth of private hunting will be encouraged by the economic difficulties of traditional agriculture. Some farmers may find that they can earn much more from the sale of hunting rights than they have earned from growing crops or raising livestock. Further growth of private hunting would also be encouraged by providing a more secure property right. Farmers need to know that, if they invest in improvements for wildlife habitat, they will be able to capture some of the benefits of increased wildlife numbers. State wildlife laws **may** need to be revised to allow landowners greater flexibility in seasons and in hunting levels on their land, where they have taken **steps** to improve wildlife habitat. Tighter and more vigorous enforcement of trespass laws is also critical. Ross Shelton reports that "an extended consistent marketing season plus **flexibility** in harvest would greatly improve landowners' incentives as well as their **prospects** of being successful with wildlife enterprises."¹¹¹¹

The workings of the recreational market could also be improved on public lands. Charging of higher recreation fees would **be** an effective way of raising revenues to cover management **costs**, as well as rationing access to congested areas. Where the absence of well defined entry points results in high collection costs, it may be appropriate to consider a requirement for a public land stamp to be carried by all users. Where federal and private lands are intermingled, cooperative arrangements to allow fee hunting and other market arrangements could be developed. Because some landowners effectively control access to public lands, they might **be** allowed to charge for this access in return for some sharing of the payments with the federal government or in return for habitat improvements and other publicly beneficial actions.

Federal land agencies have been slow to make land available for intensive recreational uses. Approval of ski facilities has become a time-consuming and expensive process, one any developer would have to think long and hard about **before risking** any **resources**. Obtaining public land to build a mountain hotel or other resort facility is difficult if not impossible. In the past, use of public lands for second homes was limited.

This use is being contracted, not expanded. Yet, an economic calculation would show in many cases that these potential intensive recreational uses of public lands create values far exceeding those of any other use. Putting the market mechanism to work would also mean devising new instruments and procedures to allow public lands to compete with other available lands for the purpose of determining the location of major new recreational facilities.

Improving forage markets

The markets for forage on private land and for livestock are decentralized and competitive. However, there may be some respects in which better informed participants in these existing private markets could make better decisions - for example, in deciding questions of the type of livestock to raise and the seasons and intensity of grazing use. Government may have a useful role in supporting research and disseminating information on these matters. The market for forage on public lands, by contrast, is highly imperfect. Due to long historic use and government acceptance, owners of private ranches have acquired de facto private rights to graze on particular parcels of public land. If ownership of property consists of the possession of a bundle of rights, as it is often asserted, one might even say that public ownership of land is a misnomer. Much like split private ownership of surface and subsurface rights, the BLM and Forest Service grazing lands also involve split ownership - private ownership of grazing rights and public ownership of other surface rights.

The private grazing rights to public lands, however, are subject to all kinds of limitations and conditions on their transfer. The BLM, for example, has actively sought in recent years to prevent subleasing of grazing rights. The agency was embarrassed by reports of subleasing of grazing rights for prices as high as \$10 or more per AUM, as much as 7 times what it was charging. The real sin here is not the high price, but the exposure of public ownership of the grazing rights as a myth. The BLM is unable to do what any ordinary private owner would do in the same circumstance, that is, to raise the price. Instead, it has sought to require that all leasing revenues above the government grazing price must be turned over to the government - which would effectively preclude most subleasing. This policy in essence puts the government in the position of requiring the inefficient use of the forage resource.

Improvements in the forage market **would** involve the abolition of the various restrictions on trading in grazing rights to public lands.^[12] Full freedom to sublease **would** be granted, as well as the ability to sell outright the grazing rights. Existing restrictions on possession of grazing rights - e.g., the need to own complementary base property - **would** be abolished. As suggested above, environmental and other private groups should also be able to buyout the grazing rights to public land, retiring these rights from grazing. Government funds from the Land and Water Conservation Fund perhaps might be used for this purpose.

The great majority of livestock grazing on BLM lands could probably be retired - an objective professed by a number of environmentalists - for less than \$1 billion dollars. There **would** also be further major benefits to the federal treasury. The long run discounted value of all the future costs to the government of administering grazing on BLM lands - both direct and indirect costs - are probably well in excess of \$1 billion dollars, by some calculations perhaps even as high as \$3 billion dollars. Hence, even if the government had to pay to buyout grazing rights itself, these expenditures in many cases would yield a net long run economic benefit to the government.

Improving minerals markets

As mentioned above, oil and gas and other minerals have been the recipients over the years of a variety of government tax, import control, and other special favors. They have also at times been subject to special taxation such as the windfall profits tax. For a long time, regulation of natural gas artificially **depressed** gas prices and inhibited exploration, eventually resulting in shortages of gas in the 1970's. It would be hard to argue that the net result of all these government interventions in the energy market has been a more efficient production and consumption of U.S. energy. Indeed, the trend of public policy for the past decade has been to remove many of these past government interventions as counterproductive.

Federal leases yielded 18 percent of the nation's oil production in 1985, 29 percent of its natural gas production, and 19 percent of its coal production. The broader philosophy of federal leasing has been that resources should be made available to the market only when their production will shortly be forthcoming and that this timeframe for production further

should be mandated by the government. In the case of oil and gas, this philosophy has translated into a strategy to lease what could be produced at current prices but not to lease resources that are uneconomic at present. In the case of federal coal, the strategy has been to not lease more than projections of near term production levels require - although large amounts of federal coal were leased in the 1960's with little public or policymaker attention given to this action.1131

These **features** of federal energy leasing policy reflect the strong concern to avoid speculation. Yet speculation is **the** allocation of natural resource use over time by means of the market mechanism. That is to say, federal energy leasing policy has been driven by a well-defined goal of not using the market mechanism, but actively avoiding **and** frustrating its use.114J

With respect to federal energy holdings, a first critical step towards an improved market process would be to achieve greater philosophical acceptance of the very concept of **using** the market in this area. Given such acceptance, a variety of policy measures could then be adopted. The basic approach would be to lease considerably larger amounts of federal energy **resources**, thereby leaving actual production of some of these resources well in the future. A necessary accompanying policy change would be to lengthen or abolish the "diligence" requirements that would otherwise threaten to force premature production of some of the enlarged resource base under lease.

Conclusion

The implementation of RPA has been based on a central planning framework. Future output demands would be projected and future sources of supply forecast. In this framework the private sector is treated as one more source of supply. Private production should be estimated - and perhaps modified by policy measures - as part of the broader process of bringing supplies up to the levels necessary to meet projected demands. If future demands seem to exceed supply, the focus should be on seeking expanded output of all sources of supply, including private sources. Furthermore, some policy measures to reduce demand should also be considered.

However, all over the world **countries** that have followed central planning approaches of this kind are today rejecting them as simplistic and

unrealistic. They are concluding that central planning cannot accumulate all the information needed and cannot keep up with events, especially in today's rapidly changing world economy. Instead, planners are looking to the market as a decentralized, more flexible and more rapidly adjusting framework for making economic decisions. Economic planners themselves are redirecting their efforts, devoting fewer of their own resources to production and consumption forecasts, and instead focusing on planning for means to make the market mechanism work more effectively.

Perhaps the RPA process for 1990 should take heed of this new international drive to recognize and remedy failings of past central planning. Instead of traditional central planning, perhaps the 1990 version of RPA should focus on the planning of new and better means of using the mechanisms of forestry markets. It would be ironic if the United States - the possessor of the foremost market economy in the world - should now fall behind even some communist and socialist nations in studying and applying the use of market methods for its nationally owned forest resources.

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Demand-side Management

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Our problem, as I understand it, is that the demand for the goods and services provided on forestland is growing faster than the supply. This is the general finding of the latest RPA Assessment. It is the given point of departure for this conference. And I believe it-in a general way.

The usual response of economists when presented with this problem is that, distributive and stability issues aside, it is no problem. Demand exceeding supply only implies increasing prices. Increasing prices induce production increases, **substitution** and technical change. The problem is to anticipate the price increases so that we can know where to extend additional productive effort and where to concentrate efforts searching for substitute products and developing new technologies. Anticipation is the key because we want to extend our productive effort, to find substitutes and to develop new technologies before prices rise to unacceptable levels. Anticipation is all the more important in forestry where long production periods and a **large** public role with attendant delays in budgetary responsiveness compound the likelihood of large and unacceptable price increases before the necessary output **response** becomes effective in the market.

This argument is fine except where there are non-priced goods or services, therefore where there are no price signals to act as incentives to increase production, to search for substitutes or to develop new technologies. Where there are non-priced goods and services we must create new incentives to respond to a demand which outstrips supply. (n our case, the US **Forest** Service already has the production incentives. For example, it knows that recreation demand is growing faster than recreation supply and it plans to do something about it. The questions are what - and what about those private providers of recreation who operate in a mixed market where the price, perhaps, does not reflect full market valuation?

If we accept these arguments, then they mean that our assignments for this conference are to address questions such as "Are the anticipatory signals sufficient and, if they are, how can we best respond to them?" One

clear response is to adjust production upward. This can be accomplished 1) by increasing all inputs and, therefore, all outputs using currently active production processes. This is the usual approach of RPA planning. It can also be accomplished 2) by substituting more plentiful or less expensive inputs in current production processes, or 3) by improving efficiency in the production processes themselves.[1] Each of these approaches creates more of the current outputs of goods and services from forestland: timber, water, range, minerals, **recreation/wilderness**, and wildlife and **fish**. Three other papers have the assignment to examine these approaches for federal, state and private lands. I will also **address** the second and third alternatives briefly (because they were assigned to me and) because I anticipate that they may not be the real focus of these other papers.

An altogether different set of responses are appropriate on the demand side of the problem. These responses are my primary assignment for this conference. First, where consumers observe no price signal (e.g., recreation, wildlife) there is the possibility of institutional change in order to introduce a rationing procedure. I will reflect on this possibility and I will also reflect on cases (perhaps doubly covered in other papers) where suppliers incompletely receive the correct price signal (i.e., water, non-industrial private timber). Second, where the outputs of forestland are intermediate goods which become inputs to other final goods (i.e., timber, water, range, minerals), then substitution and **technical** change are reasonable responses for our consideration. There are important restrictions on demand-side management of final goods and services (i.e., recreation and wilderness, fish and wildlife). We shall consider these restrictions in due course.

The body of this paper takes these potential responses in order: 1) production-side substitution and technical change, 2) institutional change where there is no adequate price signal and 3) substitution and technical change in the intermediate goods markets. The paper refers to known examples and empirical evidence where they **exist**. A final section of the paper reflects on the potential acceptance of the best ideas from these three **categories** by the interest groups who are most directly concerned.

*Production-side **substitution** and technical change*

This response to high prices (or potentially high prices, or demand exceeding supply) includes any substitution of current inputs or modifica-

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tions in current production processes which still yield the **same** forest outputs. Examples might be soil nutrients or genetic seed slack which yield the same volume of high quality timber as before but from a smaller area or in a shorter time period. Another example would be some procedure which permits more people to enjoy the same quality recreational experience on a given piece of land and within a given time period. We can let our minds run free and create all sorts of examples but, to be relevant, the examples must permit production at cost levels equal to or **less** than the anticipated price. That is, **higher** cost technologies are not responsive to our needs.

It is difficult to anticipate the potential of this response. I suspect there cannot be many opportunities for input substitution in the production of minerals or water.¹²¹ For timber, there is a long list of seed improvements and soil nutrients which might be applied- and will be applied on those sites that can support them financially as expected final harvest prices rise. I anticipate that one result of smaller recreation, wildlife and fish research budgets relative to timber research budgets is that we are less aware of the input substitution possibilities for production of these non-priced **services**. One suggestion is that wilderness trails **might** substitute hillsides for ridgetops and valleys in their placement.¹³¹ Hillsides often have space for several parallel trails, therefore space for more hikers before congestion sets in or before the land area attains its carrying capacity. Perhaps there is similar opportunity to use hillsides **instead** of ridgetops and valley bottoms to expand campground facilities as well. The answer largely depends on the possibilities for concealing human activity from other human activity and for protecting hillside **environments** which, because of their slopes, are more fragile than ridgetops and valley bottoms.

A second production-side response is for technical change. This means new production processes, new combination of inputs, leading to the same quantity and quality output of goods and services from forestland. There are two possibilities, implementation of currently known techniques which are actively in use elsewhere and development and implementation of altogether new production processes.

There is an obvious and important example for the former. The public agencies, including all federal and some state timberland managing agencies, can convert to a more **market** responsive timber management **strategy**. This has been a regular **suggestion** of forest economists¹⁴ for a least 30 years-and we do observe some movement in the direction of market

responsiveness, but the movement has been slow and there remains great potential for additional productivity gains. In brief, **this** means disposing of the current "allowable cut" procedure for determining timber management and harvest opportunities and replacing it with 1) timber harvest decisions dependant on timber sale prices which equal or exceed all costs of sale preparation and sale administration plus that share of road costs associated with harvesting the stand and 2) timber management decisions which no longer make financial accounting ties between independent timber management activities on different stands. For example, receipts from harvesting or commercial thinning in one stand cannot justify planting a neighboring acre. Moreover, we can obtain further easy production expansion by increasing management inputs on those good sites which pass the marginal financial tests. For example, thinnings should be done where the discounted future revenue gain due to expected yield increases from thinning exceeds the current cost of thinning. This too is not a new suggestion.

My own estimates in the mid-1970s for the Douglas-fir region alone showed a potential sustainable increase of 68 percent annually at current price trends--and from enough less land to permit expanding all reserved public land (National Parks, Fish and Wildlife Reserves, National Forest set-asides of all types, and state parks) by 273 percent.¹⁴) Of course, the various public agencies might not choose to set all this land aside. Nevertheless, these numbers do offer a substantial insight to the potential gains in one region.

One criticism of that analysis was that there were not, at that time and in that region, sufficient improved seedlings to satisfy the economic demand that I anticipated. Therefore, the yield gains would be smaller than projected. Nevertheless, even if there were no potential whatsoever for using improved seedlings on the public lands, sustainable harvest increases of 44 percent annually are reasonable with current technologies and price trends.

I also made a more recent estimate of the initial year impact of such a **shift to** market responsive harvesting by the US Forest Service alone for all regions of the country.¹⁵) This estimate relies on the Adams-I Jaynes TAMM model with its market responsive demand estimates, and an imputed public supply which responds to production costs. (I believe that this is the first time anyone has added this production cost feature to the Forest Service's own assessment model.) Tables 1 and 2 show the results: large

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harvest increases in the Pacific Northwest and the South/Southeast and harvest curtailment in the Rockies, general shifts from private to public harvests, a net annual harvest increase of five percent nationwide, inducing overall stumpage price decreases in the range of \$20-50 per Mbf (depending on the region) and, by implication, a substantial residual of currently used timberland which can revert to other uses, particularly in the scenic, but arid and fragile Rocky Mountains.

One caveat is that table 1 reflects only initial year production gains. Production gains may taper off in subsequent years as excess standing timber inventories are drawn down. On the other hand, production gains may also increase if the Forest Service also follows the second point above regarding financial management of existing and new stands.

Table 1: Differences between 1977 and simulated
Market Clearing Quantities and Prices

Region	Harvest levels			Total (in MMcf) actual-simulated	Stumpage price (1977\$/Mbf) actual-simulated
	% changes by Ownership				
	FI	OP	Public		
SE	-17	-5	+425	837.07-1016.73	95.06-76.75
SC	-7	-5	+183	1387.40-1541.10	104.89-83.54
RM	+25*	*	-19	861.94-832.93	30.41-50.67
PSW	-4	-14	+8	711.65-717.53	66.71-39.71
PNW-W	-34	-74	+70	2565.33-2651.30	99.04-40.28
PNW-E	-3	-35	+6	511.01-516.89	56.96-38.72

* FI and OP combined in Rocky Mountain region

FI = Forest Industry

OP = Other Private

Others have raised these same points in the past. Some have provided estimates of the potential yield increases for special areas of their particular acquaintance.[6,7,8] The Forest Service intended to respond with the Roadless Area Tradeoff Study.[9] The problem is that this study examined Forest Service management and harvest opportunities under a continuing allowable cut policy. Therefore, RATS and the Forest Service completely missed the point. There is substantial opportunity to reduce long term expected stumpage prices and to address the increasing demands for other forest resource services if only the public agencies will apply a more financially responsive timber accounting procedure and adapt production technologies accordingly.

There is also an altogether different potential for technical change. To this point, I have considered gains from implementing currently known,

currently economic technologies. Between now and the year 2030 (the final focal date of the latest RPA Assessment) there undoubtedly will be new research and new technological breakthroughs which will provide additional opportunity for productivity gains. Historically this opportunity has been small for timber in the United States. Newman observes that the rate of technical change for the southern pine industry, probably the most dynamic regional segment of the US timber industry, has been at a rate of 0.5-1.0 **percent** annually.¹¹⁰¹ Although this rate is small compared with other industries, it still supports a 27 percent increase in southern timber production for the thirty year period 1950-1980. There is a drawback here, however, that the research investments which made this technical change possible have not been efficient investments in general. Therefore, we have difficulty recommending large public research expenditures and similar rates of technical change, even for southern pine, in the near future. On the other hand, the previous pattern of research budget allocations may prevail. Even then, previous rates of technical change are not evidence of future rates. Nevertheless, they may be indicators.

Most timber production research has been of the land-saving or capital (investment time)-saving variety. This is reasonable because land and **capital**, not labor, are the predominant inputs. They have not been scarce inputs, however, so long as there have been standing old growth timber, abandoned fields converting to timber and remaining timber opportunities on less accessible sites. Research directed toward relatively plentiful inputs is unlikely to have much effect on technical change. The time when these plentiful-input options are available is disappearing but it has not fully disappeared yet. Indeed, the South is now going through another period of old field conversion and the decline of the tobacco industry suggests at least one more cycle of eventual old field harvests.

Thus, there will continue to be timber research breakthroughs but the potential for economic production gains from timber research probably remains small for the remainder of this century and beyond.¹¹¹¹ The range resource probably experiences similar good fortune, as beef demand grows more slowly and beef cattle are raised on more concentrated areas, leaving increasing areas of less-used range as reserve for future expansion.

There may be greater opportunities for productivity gains from research and new technologies applying to the other forest resource goods and services, both priced and non-priced. Certainly water does not have its equivalents of untapped inventories (undiscovered aquifers?) or old fields.

The relative scarcity of the critical inputs to recreation/wilderness and wildlife and fish is less clear. Is there an untapped margin? If not, then we may observe good possibilities for research and technological breakthroughs. I know of no empirical **assessment** of research benefits for these resources except evidence of the benefits from research investments in other areas of agriculture and non-timber forestry range from 30 to 300 percent annually.^{112,13,141}

Institutional change

The second general potential response to increasing relative **prices** and the first which approximates a demand-side response, is institutional change for those cases where consumers receive no adequate price signal. This is especially true for water **and** for all the generally non-priced services produced on forestland: recreation/wilderness, wildlife and fish. While on the topic of price **signals**, we can also reflect on a special timber case where suppliers may not have full information on existing market (price) signals.

The issue of non-priced forest resource services receives a lot of attention. Therefore, we only need to re-state it briefly. The basic problem is excess use, **use** in excess of social marginal valuation. If campers, for example, use forestland as if the price of campground access is zero, then congestion is the only deterrent to additional use. Campers use the facility as if it were free when, indeed, there may be substantial **costs** of campground management.

One possible solution is to ration permits for campground use. This will not alter expectations of increasing demand, but it will **decrease** consumption of the currently non-priced resource service. The National Park Service applies some form of permit rationing in many of its more popular facilities and the Forest Service does the same at select **sites**. A more generally recommended solution is to begin pricing **admission** and use at rates commensurate with marginal management **costs**. Two **results** would be decreased consumption from the public **lands** and a new incentive (the positive market price) for production on private forestland. Consumption from private lands indicates a corresponding and additional **decrease** in consumption from public lands. There might also be a side benefit. Revenue producing services generally receive more favorable consideration from the public budgetary authorities. Therefore, the side benefit is that there might be additional funds available for expanding

production.

It is difficult to anticipate the magnitude of potential gains from pricing recreation/wilderness, wildlife or fish. Some forms of public forestland recreation are currently priced at a minimum fee. Daniels conducted the only analysis to my knowledge which reflects on both campground supply and demand.¹¹⁵¹ For four public campgrounds in the Seeley-Swan Valley in western Montana, Daniels finds the current nominal fee close to optimal. Therefore, Daniels would argue that there is no substantial gain from improved pricing in the Seeley-Swan Valley. Can we generalize on this very specific observation? Cordell's recreation research work unit in Athens, Georgia together with Peterson's unit in Ft. Collins, Colorado is extending Daniels' question to a national scale as part of the next RPA Assessment. Eventually, Cordell and Peterson will be able to reflect further on the adjustments in consumption due to pricing public recreation use. To date, to my knowledge, no one has considered the impact on use levels of pricing wilderness, wildlife and fish experiences. The potential gains may be important.

Water use presents a different pricing problem. Water is generally priced in a three tier system, one price for industrial users, a lower price for domestic users and a lower price yet for agricultural users.^{116J} Agricultural and, sometimes, domestic **users** are charged at rates below the **market** production costs. Removing the bias from this system would decrease consumption, particularly in many arid **western** locales. This problem, however, is outside the realm of forestry. Neither foresters nor interest groups active in forestry have much influence over the rationalization of water prices.

There is also a special timber case where some *suppliers, not consumers*, receive incomplete market information. Non-industrial private forest landowners whose greatest economic activity is in some other enterprise (i.e., they are farmers or second home owners but only part-time or occasional **foresters**) have less opportunity to be fully aware of the market than do their counterpart full-time forester/industrial managers or the loggers and mill managers with whom they must negotiate their timber sales. As a result, NIPF landowners are in a poorer negotiating position, receive lower prices for their timber and offer less timber for sale.

The solution is a regular price reporting service. Timber Mart South is the only example of such a service in forestry-although there are numerous examples in agriculture. TMS operates in 38 sub-state regions through-

out the South and Southeast. Our evidence is that it may impact NIPF landowner market awareness sufficiently to expand regional harvests by perhaps two percent annually.^{117,18J} This is not a large amount. Furthermore, the similar impact in other regions is likely to be even smaller because IPF landowners contribute a smaller share to total timber production in other regions.

In conclusion, there are opportunities for institutional adjustments which will increase production (IPF timber) and decrease consumption (water, wilderness, wildlife and fish, and perhaps some recreation) of forest resource services. The opportunities in timber are small but they also cost very little. The opportunities in water are probably **outside** the sphere of forestry's influence. The opportunities for recreation are uncertain but the opportunities among other non-priced services may be greater. Furthermore, establishing a price system for them may encourage the side benefit of additional public budgetary support for the further expansion of productive capacity. **This** benefit is familiar to most other revenue generating public agency services.

Technical change in intermediate goods

This section of the paper reflects on technical change on the market demand side of forest resource goods and services. I believe that potential exists here for great responses to the problems associated with increasing relative prices. Some of the recent empirical evidence is particularly impressive and we will review it here.

First, however, consider an important restriction, Free societies and open economics believe in consumer sovereignty. Among other things, this **means** that the public interest may be well-served by sharing information which, fully assimilated, would lead to a change in patterns of final demand. Nevertheless, it is never an appropriate public service to manage final demand, to attempt to convince the public that it really would be better off with a different array of demands. This is an appropriate role for a dictator or a public servant in a centrally planned state. **It is** not the role for a public servant in the United States.^{119J}

What **does** this mean to us? It means that neither the academics nor the public employees at this conference have any business recommending manipulation of final product demands: **recreation/wilderness**, wildlife and fish. We serve to respond to public demands for **these** services as the

public expresses them-not as we might prefer to receive them. We also serve to respond to public demands for housing, paper, agricultural crops and various other final goods for which trees, water, minerals and range are all *intermediate* inputs. It is appropriate for us to develop improved means for satisfying the same final product demand but with fewer or better quality or longer lasting wood, water, mineral or range inputs. This is technical change on the demand side. Take one tree and make it go further in the production of a house. Use more gypsum as a substitute for wood or structural particleboard as a substitute for plywood or dimension lumber while producing the same quality house-as judged by the final consumer.

Enough on this important restriction. What is the potential for demand-side management to slow relative price increases for timber, water, minerals or range? **Stier**, Greber and White, and Kendrick have variously found historical rates of technical change in the neighborhood of two percent annually for the wood and wood fiber using industries.^{120,21,221} They generally found a labor-saving bias in technology which means that, for constant industrial output, the uses of roundwood and capital facilities as inputs in these industries declines at a rate somewhat slower than two percent annually. A one percent rate of roundwood-saving technical **change** means that in 72 years these industries use just half as much roundwood to produce the same volume of final product. If this rate continues, then we will only need 3/4 as much in the year 2030 as we use today in order to produce the same volume of output.

Seldon, Seldon and Newman, Bruner and Strauss and Bengston have examined public research, the partial source (with private research) of this technical change in six wood and wood fiber using industries (softwood plywood, sawmills, wood preservatives, pulp, paper, and structural particleboard).^[23,24,25,26] They find that the marginal dollar invested in public research returns approximately \$20 in social benefits. They also find social returns ranging up to 300 percent annually. **This** value of the marginal product is similar to many investigations of agricultural research but these social returns may be three times as great as in agriculture.¹²⁷¹ The difference is partly due to improved **methods** for research evaluation since the bulk of the agricultural examinations was done, but it is also partly due to the much shorter lags between **research** and implementation for the forest industries. Dissemination of results occurs much quicker, therefore research breakthroughs payoff much quicker when there are

only a few firms in an industry rather than thousands of farmers.

Finally, in a most simple, yet **most** graphic case, Bob Buckman has pointed out that research leading to truss-framed housing construction did more to reduce the demand for wood than releasing all potential forest **set-**asides from timber production can do to **increa**e supply. Presumably, the same is true for various other research breakthroughs affecting intermediate forest products.

-General rates of technical change across the entire US economy and the more specific rates for the industries using range (agriculture), water (agriculture and various other industries) and minerals (various mineral processing **industries**) display even greater historical change than does forestry.¹²⁸¹ Moreover, **there** is a multitude of evidence, beginning with **the** classic analysis by Barnell and Morse, that the relative prices, therefore the basic scarcities, of basic agricultural and mineral resources have been declining for as long as we can trace their market histories-since the early 19th century in some cases.¹²⁹¹

This past paints an optimistic prologue. It shows that we have managed quite ably with historical demand growing faster than supply. It also shows how we managed. Research has been the **SO!**orce of technical change and research in the most recent thirty years in the aggregate of all wood and wood fiber utilizing industries has been particularly rewarding. The way to continue to cope with increasing demand is to encourage research in all areas where forest resource services are intermediate inputs to final consumer goods. Particular opportunities exist where we reasonably anticipate the resource input costs will increase at the margin.

Stumpage is a prime example.^{130,311} We cannot make stumpage relatively less expensive so long as there is marginal land and standing unmanaged timber. We can invest research dollars to find technologies that extend the productivity of each board foot of stumpage. Furthermore, we can concentrate research expenditures in industries which have no reasonable substitutes in consumption. There is less opportunity to dissipate the impacts of research breakthroughs in these industries. For example, structural particleboard substitutes for plywood and oriented **strandboard** substitutes for structural particleboard but nothing yet substitutes for oriented strandboard as its quality increases or its price decreases. Therefore, oriented strandboard is a **good** candidate for research expenditures.^{132!}

Of course, a secondary benefit from reducing, or at least controlling

the expansion of demand for timber, water, range and minerals is that it leaves more residual forest resources for recreation/wilderness, wildlife and fish.

Conclusion

Let's review the major possibilities for controlling increases in the relative prices of forest produced goods and services or, if you prefer, minimizing a scenario of future consumption outpacing future productive capacity.

On the production side we can rid ourselves of the archaic public timber management strategy sometimes identified by the "allowable cut effect". The preferred alternative is a more market responsive accounting system and improved economic efficiency in timber production on the public lands. My own estimates show large potential financial and productivity gains—as well as associated environmental gains from decreasing timber production on poorer quality lands. My impression is that some public agencies (US Forest Service, Washington's Department of Natural Resources) are moving in this direction, if slowly. There is both environmental and **industry** support. The political problem may be in the Rocky Mountain region where this change in management will decrease timber production. The **industry** and many communities will object.

There may also be recreation/wilderness and wildlife and fish gains from introducing new, as yet undeveloped techniques. The Schecter-Lucas idea on trail placement is one example. It is difficult to predict the potential here. Similarly, it is difficult to predict the potential for new institutional arrangements for rationing non-market services. Pricing these services has the additional positive revenue producing feature that it may make future Congressional and Executive branch budget support easier to obtain. On the other hand, pricing still meets with environmental resistance (although not as much as it once did) and there is no empirical evidence that pricing will produce either large resource reallocation or **budgetary** gains when compared with current allocations.

The other possibilities for institutional change do not hold much greater promise. Water pricing is long overdue for improved rationalization. It is also probably beyond our capability to affect. Timber price reporting services designed to get information to non-industrial private landowners can probably create small increases in timber production-

and for very low cost. They will meet with some (probably weak) resistance from loggers and millowners who stand to lose market power to the IPF landowners.¹³³¹

The final great opportunity lies in demand-side management, in producing technological breakthroughs which save on the consumption of those forest outputs that are also as inputs to further production. This suggests research support for conserving wood, water and minerals as intermediate inputs. Available evidence points to truly great opportunities here. For example, it is not unrealistic to anticipate cutting wood and wood fiber consumption by half in the 42 years before 2030-while maintaining final output quantity and quality. Furthermore, the resulting decreases in consumption of the market-valued intermediate goods will leave more forest available to support expanding consumption of both market-valued goods and non-market resource services. The problems do not lie in convincing the industry, the environmentalists or any regional interests. Rather, they lie in convincing the public budgetary authorities of the magnitude of potential social **benefits** and demonstrating to them the appropriate public role.

References

1. In case number 2, we need not increase all forestry budgets and all inputs in general by, say, ten percent. Rather, reasonable managers would increase all budgets and all **inputs** for those currently known production **processes** which most satisfy consumer demand by, say, 20 percent and leave the budget and input levels of other production processes unchanged or decreased. As an example, for recreational fishing we know how to manage catch-and-release streams and we know how to produce more fish that actually make it to the fisherman's creel. For timber, we know how to plant and how to fertilize. Catch-and-release and planting may better satisfy consumer demands from a fixed forestland area. Therefore, advocating expanded production from these two production processes would be a wise policy. These production processes are neither new **technologies** nor are they improved (to my current knowledge) by substituting **inputs** and changing input **proportions**. Therefore, they are not the topic of this paper.

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15. S. Daniels, S. "Efficient provision of Recreation Opportunities: A Case of U. S. Forest Service Campgrounds," (PhD dissertation, Duke University: 1986. Also see Boyd and Hyde (1988), chapter 8, reference 5 above.

16. J. Hirschliefer, J. Del laven, and J. Milliman, *Water Supply: Economics, Technology, and Policy* (Chicago; University of Chicago Press: 1979).

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Commodity, or Business, Interests and the RPA Program

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For this conference, I have been assigned the task of divining and representing "commodity" interests. I am taking this as an assignment to represent "business" interests—the interests of ordinary business firms that use resources or land such as those found on the National Forests. The term "commodity interests" as it has come to be used suggests that recreation and occupancy uses of public forest lands cannot be marketed, which is clearly not the case. Further, "commodities" usually refers to products that are homogenous, such as electrolytic copper or CDX plywood. Resources as provided from forests and rangelands are distinctly heterogeneous. Thus, "business interests" is a more apt term for what is intended here.

I have defined four kinds of businesses — timber processing, ranching, ski areas or other recreation businesses, and mining (oil and gas and hardrock minerals)—as representative of business interests on forests and rangelands. Firms in each of these businesses make investments in relatively long-lived assets and each is tied to a specific location once it has made an investment. Each firm has a time horizon that may be shorter than the timber rotation age used by the Forest Service, but is long enough to amortize its investment. There is wide variation in the size of firms in each of these businesses and the markets in which they compete. The geographic scope of their operations and competition ranges from a ranger district to the nation and beyond.

Federal lands are important for some firms in each of the four businesses. But for many, federal lands have little impact or affect them only through their effect on other firms in the same business. For example, a manager of a ski area on private land in New Hampshire does not have to worry about federal ski area permit conditions, but his ski area competes with nearby ski areas, as well as areas in the West, that are wholly or partially on federal lands.

Business needs

While the four **businesses** are quite different, **firms** in each of them have some common requirements in what they want and expect relative to the resources they need. They also have some common views on the responsibilities of government with respect to them. Government acts in the marketplace in many ways, but is expected to act in ways that smooth the path for the normal and lawful conduct of business. It has a role that is different from and far larger than that of any private business. Its decisions are political, but not wholly independent of market forces. Firms in the four businesses view the RPA Program as an expression of government policy in the framework of their overall expectations for government. The following four requirements fairly describe what business wants from government and, by extension, from the RPA Program.

Predictability: reasonable assurance that government actions will not unexpectedly change the conditions surrounding the firm's operations. The marketplace is fraught with uncertainties. Firms believe that government should act in a way that reduces uncertainties, especially in those instances where government plays an active role in the market. Only in times of crisis do they expect that government should change its course substantially.

Good business climate: responsiveness to business interests. While few firms today would contend that "the business of government is business," most believe that government should view itself as a partner of business in pursuing the common good. This means listening to business views and acting generally in accord with them.

Good information: accurate and timely information for making investment and other business decisions. Business **firms** reasonably expect that the basic information from government is accurate. Government has long had a special role in providing aggregated information, in part because of the economies in having a single entity collect and disseminate census-type information.

Low costs: low-priced land or resources relative to values, and low-cost

operations. Firms believe that government should not extract monopoly profits, nor should it impose needless burdens on those using government land or resources. Further, government actions, such as environmental regulations, should not lead to unduly higher costs or higher priced resources from other lands.

Businesses and the national forests

The businesses considered here view the RPA Program mainly as it might affect actions on the National Forests. Some brief comments on each of the businesses as it relates to the National Forests are needed to set the stage for the **subsequent discussion**. There are many nuances to these relationships that cannot be covered in this brief discussion.

Many firms in the *timber business* depend heavily on National Forest timber. **But** many do not or depend on it for only a part of their needs. Most of the National Forest Timber is sold competitively and both prices and allocation among firms are determined by the usual sort of market forces. Special rules, however, often allow small firms to avoid direct competition with larger and possibly more efficient firms. In areas where there is little competition, prices may be low because of the way in which values are appraised and timber allocated.

The concentration of heavily timbered National Forests in the West means that policies that affect the flow of timber from the National Forests have important interregional impacts. The major disputes with the Forest Service have typically been over the level of harvests. Many in the timber business in the West believe there has been an implied commitment by the Forest Service to maintain timber harvest levels close to the maximum potential physical production, a commitment that increasingly is difficult to meet.

The dependence of the *ranching industry* on National Forests is regionally important in the West. Grazing permits were allocated long ago to ranches with "base properties" that can provide forage in seasons that complement National Forest grazing.¹¹ Permit prices are set administratively at levels well below what **they** would bring in competitive markets and the value of holding such permits has become built into the value of ranches that have a more or less perpetual right to the permits.¹²

The terms for grazing permits on the National **Forests** are tied politically to similar permits for grazing on federal lands managed by the Bureau of Land Management. While the original allocations were made somewhat differently and the prices are somewhat different from those on the National Forests, the BLM grazing permits are also more or less permanent and underpriced. Ranches frequently have both BLM and National Forest permits. The Western cattle and sheep industries have been very successful in maintaining the long-standing permit and price arrangements. Any attempts to change these arrangements for the National Forests have to address the BLM arrangements as well.

The *mining industry* gains access to federal lands under two distinct systems. For oil and gas and certain other minerals typically found in extensive deposits, National Forest lands are leased upon application by an interested party. Competitive bidding is used in a small proportion of the cases, where the area to be leased meets certain technical conditions. If a permit to explore is granted, the holder pays a modest annual rental and carries on exploration activities up to the life of the permit, usually ten years. If a suitable deposit is discovered, a lease is granted to the discoverer, effectively until production ceases, and the holder pays a one-eighth royalty on production. The one-eighth royalty is the same as that commonly used on private lands.

The "location" system for hardrock minerals, such as copper and gold, differs considerably.¹³¹ No permit or official notification to the Forest Service is required until "significant disturbance" of the surface is about to occur. An operating plan is filed at that time and the Forest Service has exercised limited authority to **suggest** changes in such plans. To prevent others from "jumping" a claim, the prospector is required to do annual "assessment work" on each claim (a claim is about twenty acres) and to notify the Forest Service that this work has been done. A single prospector or firm can establish an unlimited number of claims. If an economically viable ore body is discovered, the claimant can get title to both the surface and the underlying ore body on payment of a small fee. No other rentals, royalties on production, or other payments are collected either before or after the claim has been patented.

Both the leasing system and the location system are archaic. They apply to Bureau of Land Management lands as well as to the National Forests' and, as with grazing leases, policy changes for one agency are

linked politically to changes for the other. Environmental groups have tried to get these systems changed without success. Small mining firms especially have fought to keep them because they provide reasonably assured access to the large contiguous tracts of federal lands, which contain some of the most attractive potential mineral properties in the nation. The fact that the charges for access are low has been less important to **the** mineral industries than the right to access itself.

The *ski area and recreation businesses* on National **Forests** get permits that specify the uses, areas, and conditions under which the businesses can be conducted. Charges are based on an evaluation or an appraisal of an appropriate annual rental in relation to expected revenues and profits. Firms must show evidence of technical and financial competence. Competitive bidding is rarely used to allocate permits. Conditions put in the permit by the Forest Service will often determine whether the proposed operation has any chance of success.

Only some areas on the National Forests are suitable for these recreation businesses. Potential ski areas, in particular, are limited in number. **The** National Forests contain many of these potential ski areas as well as **areas** suitable for horseback trail riding and similar activities. These firms, like those in the timber and minerals industries, range from the very large, some of which are part of national corporations and well financed, to the very small.

The Program and business interests

The RPA Program is a planning document, one that business firms view mainly in terms of how it might affect decisions on the National Forests. Firms understand that plans for the individual National Forests **will** affect their interests more directly than the nationwide RPA Program. But they want to know what, if anything, the Program will do to continue or change existing arrangements and to affect land allocations on the National Forests.

Parts of the Program that deal with research and forestry programs for private lands are also of interest to some firms. But it is apparent that the Program is written mainly for the National **Forests**. Further, the research and private forest programs discussed in the Program have almost no effect on businesses other than timber.

REDIRECTING THE RPA

The response that business firms would most like to see in the Program is one that recognizes implied or *defacto* commitments of National Forest resources to these businesses. These include: providing timber and grazing at something near the maximum physical production on lands suitable for these purposes, keeping most National Forest land open for minerals prospecting, and making attractive areas for ski developments and other commercial recreation enterprises available for permits. It would be a response that assigns weight to the key business interests identified above and recognizes the particular advantages that National Forest land has in satisfying these interests.

The Program cannot be clearly characterized as pro- or antibusiness. It does not make a strong case for either business or environmental interests. It responds in some degree to the RPA Assessment, which addresses the general need for resources for the four businesses. But it also responds to about an equal degree to the environmental and dispersed recreation interests in the Assessment. The Forest Service clearly tried to balance the various interests in the Program, but in so doing, failed to present a distinctive viewpoint on how to respond to changing conditions.

The Program's description of the role that should be played by the National Forests is clearest and most meaningful for timber. The volume of National Forest timber that is to be offered for sale is projected by regions. Similar projections are made for levels of livestock grazing. Commitments in the Program for access to federal lands for mining and ski area or other commercial recreation businesses are, however, nebulous.

The potential impact of the Program on the predictability of resource outputs is greatest for timber processors. The timber industry supported passage of the Resources Planning Act because it believed it would lead to commitments by the federal government to defined timber harvest goals that would guide decisions on the individual National Forests. Projected timber sale offerings in the Program are not truly commitments, but they give a sense of Forest Service intent. Parallel projections of permitted grazing levels also have to be seen as something less than a commitment. Grazing levels are likely to continue to be determined more by politics than by analysis or appropriations.

The Program makes no real commitment of land to mining and ski area or other commercial recreation businesses. The importance assigned to minerals in the Assessment may be gratifying to miners, but decisions to withdraw land from mineral entry will have little to do with what is said in

either the Assessment or the Program. Both the **Assessment** and the Program are vague on the role of commercial recreation on the National Forests.

The Program projects no radical changes in levels of timber harvests and grazing on the National **Forests**. To this extent it recognizes the implied past commitments to business interests and the importance of these uses. On the other side, however, it also projects increasing general recreation and other uses that compete with business needs. To this extent, the Program gives little support to **business** interests.

Environmental restrictions on use of resources has been an important issue for **business interests**. These affect all four businesses, whether on federal or other lands. The effects of such restrictions on the availability of resources and the conditions that firms must meet in using **resources** receive little attention in the Program. The lack of a clear perspective on the effects of environmental restrictions adds to the uncertainties with which the projections of resource availability must be viewed.

Aside from the projections of levels of funding and, for timber and grazing, levels of resource outputs, the RPA Program provides the four businesses with very little information on which to base business decisions. The projections of funding levels, especially in view of the uncertainty implied by "high" and "low" **bounds**, are more in the nature of "wishes" rather than realistic **expectations**.

The Assessment and its supporting materials, however, are useful sources of information on the forest and resources situation. While the Assessment contains information on all of the forest and range resources, only the timber and, to a much **lesser** degree, the ranching businesses will find much information that pertains directly to their business **interests**. Information on timber resources is particularly detailed and the simulations of policy and economic options give users some sense of the **effects** of changes in relevant variables.

More information in the Assessment on resources and uses other than timber would benefit all of the businesses. On timber uses of the National Forests are increasing and, while this is not viewed favorably by most business interests, the Assessment is the logical place for them to look for information that will buttress their case for greater attention to business concerns.

Costs to the user of National Forest **resources** and operations are not addressed in the Program or in the Assessment. Yet, major issues revolve

around costs and pricing. The implications of pricing policies for levels of use are important and suggest alternatives that could well be addressed in the **Program**.^[4] Some business interests benefit from a continuation of current pricing policies and would probably oppose bringing these issues into the open. But, **business** interests on the whole would probably benefit from having these issues faced head on.

Some philosophy

The philosophical base on which the RPA Program is built is as important as the specific ways in which it treats each resource. The Program, while it covers Forest Service research and cooperative forestry activities, is basically a program for the National Forests. The overall objectives of the recommended actions reflect a short-term policy of "reducing the federal budget" and a long-term policy of "efficient management of natural resources." **The** Program also refers to the purposes for which the National Forests were established and the desire to contribute to the growth of the economy and real wealth of the nation, maintain or improve environmental quality in a **cost-effective** way, and minimize short-term disruptions in community stability.^[5]

This hodge-podge of objectives does not wholly distinguish the National Forests from other forest lands. Indeed, business representatives frequently claim similar objectives for their business operations. The real distinctions between business and National Forest goals are between the purposes of the National Forests as first stated in the 1897 Act and then in the 1960 Multiple Use Act and **businesses'** goal of maximizing returns to owners. It is at least somewhat peculiar that the purposes of the National Forests, those that might distinguish them from other forest land, are not mentioned clearly in the Program.

Those statements of objectives that appear in the Program contrast with the views of those who prepared the plan for the Green Mountain National Forest in Vermont: that this National Forest "should be managed to provide benefits that private land does not..."^[6] The **dichotomy** between this view of the role of the National Forests and the Program's implied view that the National Forests should be managed to meet much the same objectives as **other forests** is at the heart of the disputes over the Program and the forest plans.

In the Green Mountain plan, the role of the National Forest in provid-

ing "benefits that private land does not" favors wilderness, wildlife, and other nonmarketed uses. **This** is also the view of many environmental interests. But business interests have an alternative view of a special role for the National Forests.

The fact that timber, minerals, rangeland, and recreation sites are also available on private lands does not diminish the importance of National Forests for these resources. The National Forests have unique resources for the four businesses—high quality timber, potentially minable minerals and potential ski areas (both of which are scarce and occur more or **less** randomly relative to other National Forest resources), and summer grazing that makes many ranches on private land usable. In some cases—timber, some minerals, potential ski areas—the National Forests have a significant part of the total national inventory. To claim that the special role for National Forests is only to provide wilderness or wildlife overlooks their potentially vital role in helping to meet these other needs.

A business view of some alternatives

The whole burden of supplying resources to meet business needs cannot be easily shifted to private or state lands for at least two reasons. First, as just stated, the National Forests have some resources wanted in the marketplace that simply are not available on other lands in anything near the quantities demanded by the public. Markets will adjust to changes in availability of resources, but right now nearly all of the old-growth timber, which consumers value highly, is on the National Forests. Relative to private lands, the National Forests have been explored only lightly for oil and gas and they cover much of the western mineral belt. Most potential ski areas in the West are on the National Forests. And ranching in much of the West would be devastated without access to the National Forests for summer grazing.

Second, past implied and *de facto* commitments of national Forest lands and resources that have led to private investments also remain to be honored. On a national scale, private and state lands can provide at least some of the resources used by businesses. But in those **locales** where National Forests are a dominant source of resources, private or state **forests** are inadequate **substitutes**. Making **National Forest resources** unavailable means the demise of **these** kinds of businesses in these locales and the **loss** of investments, even though national markets might not suffer greatly.

Decreasing the demand for forest resources as a way of addressing the reality of limited supplies is a plausible public policy approach. Two guidelines are appropriate. First, business firms generally prefer that resource use be rationed through the marketplace. The problems in avoiding the market were amply demonstrated by the legislative and administrative approaches used to ration petroleum and natural gas products during the recent energy crisis. Trying to reduce **final** demand for consumer products, such as housing or gasoline, that depend in part on **forest** resources as a way of addressing a perceived **forest** resource shortage is hopeless. Policies directed at actions so far from the desired effect are quite likely to have unintended and unexpected costs and to be politically unpalatable.

The **Forest** Service has research projects at the Forest Products Laboratory to improve processing technology to reduce the demand for timber. Timber industry **firms** generally support such improvements in technology and government research leading to them. Parallel research to improve the efficiency of cattle and sheep in converting range forage and the recovery of minerals from **ores** and waste materials would also be supported by the ranching and mineral industries. This, however, has **been** well outside the **responsibilities** of the Forest Service.

Managing recreation use of the National Forests to balance demand with available space is also plausible. In fact, most commercial recreation enterprises on the National **Forests** tend to concentrate use. Since most of these uses do not directly substitute for dispersed recreation, however, this does not address the major problem of competition between dispersed recreation and other **uses for** forestland.

The single most effective step in adjusting the demand for forest resources to be more in concert with supplies would be for the federal government to charge market prices for all of the resources and uses of National Forests. Not only would this shift the balance of resource demands on the National Forests, but it would also open the way for private forest owners to charge market **prices** for recreation and better allocate the use of their land.⁽⁷⁾ This is impracticable as long as similar uses of nearby National Forests are available at no charge. Even if it proved to be impossible to charge market prices for some resources or uses of the National Forests (e.g., protecting gene pools of endangered species), charging for others such as wildland recreation, including hunting and fishing, would help balance demands for these uses with those for resources used and paid for by business firms.

Improving the RPA program

We have assumed that demand will grow faster than supply for all forest resources and uses. further, it is apparent that the national **Forests** cannot meet all demands for anyone resource or use, much less for all of them. We have examined the RPA Program and noted that its picture of the future is one of marginal **increments** to current federal forestry **budgets** with little change in basic policy direction. It mainly presents a program for the national forests and is limited in its views of the potential of other **forest** lands.

The timber industry was one of the strong supporters of passing the RPA Act, because it saw this as a way to gain predictability in National Forest timber **harvests**.^[8] The results have to be disappointing for the timber industry. The firms in the industry were probably less sanguine about the Program than their representatives in Washington, but they **also** must be disappointed with **its** meager results. The other businesses had less at stake, but they, (X), can have little hope that the Program in its present form will benefit them. They realize that their future will depend more on local national Forest decisions than on the sort of numbers that now come out of the national Program.

The way in which the Forest Service has conceived the Program and **its** role in selling goals for the Forest Service has much to do with **its** weakness. The Program at heart is an extended argument favoring incremental additions to Forest Service budgets. It matters little that the additions are greater for the "high bound" than for the "low bound." They present no important vision of how the Forest Service believes the nation should meet increased and changing demands for forest resources.

An excuse might be that the RPA process has gotten bogged down in the annual budget cycle. This was probably inevitable, given the way in which it is perceived by the Forest Service. Another excuse might be that this was a result of the public participation in establishing **goals** for the Program - a level of participation that may be required by the times, but provides confusing directions.

A more important cause of the failure of the RPA Program to meet the needs of business interests is that it has gotten **bogged** down in detail rather than providing the vision within which detailed decisions can be made. Rivlin has pointed to the problems of making economic policy-

"decisions are made too often, in too great detail, and reviewed by too many layers"-and concludes that, "it's time to simplify the process...and to tip the balance between substance and process back toward substance."⁹¹ Applying this advice to the Program would be at least as satisfying to business interests as the current approach.

What about the content of an improved RPA Program? Can the RPA process better respond to business needs and, at the same time, continue to be politically acceptable to other interests whose support is necessary for its survival? Two changes in the current RPA process would improve the chances of its survival and provide useful policy and program direction.

The first proposed change addresses the matter of predictability. In the most recent version, the Program, as noted earlier, is a Forest Service "wish list," one that is confused by the "high and low bounds." Few believe that the Program commits either the Forest Service or this and succeeding administrations to either the near-term or more distant program levels. Or does the Program present a likely picture of National Forest uses in the future. The Program is "incrementalist," despite the evidence in the Assessment and in everyday policy matters that significant changes in National Forest uses are likely.

National planning, as in the Program, is unlikely to lead to firm, long-term commitments by government. Greater commitment, however, could be achieved by using the Program to define broader goals, rather than budget levels, for the National Forests. The RPA process is the obvious place to face the issue of whether the National Forests should be "managed to provide benefits that private land does not." Obviously, business interests would prefer that a decision be made in favor of management for resources used by business. But even a clear policy that recognizes business interests as subordinate to producing public goods would be preferable to the current wavering in the face of interest group pressures. It would give business interests a greater sense of predictability on which they could base their own decisions.

The Program should be made just a program for the National Forests, one that would present a goal toward which policies and programs should aim. By presenting the Program as a vision of the National Forests two or three decades in the future, the immediate problems of conflicts with current budgets would be avoided. The Program has not been effective, in any case, in influencing budgets despite the high hopes that once were held. Limiting the Program to the National Forests would give the Forest

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Service an opportunity to define policy and program needs, if any, for other lands once a direction has been set for the National Forests, its major responsibility. As it is now, other lands are given short shrift in the Program and program needs relative to those for the National Forests are unclear.

A second change would be to have the Program present a clear description of the external and implicit costs and benefits associated with the National Forests and the goal for them. What are the National Forests costing the public? What are the benefits that the public receives from them? The 1985 Program presents some estimates of the annual **direct costs** of National Forest management and the direct and implicit revenues by major resource. This is only part of the story, of course.

Business interests realize that significant external costs, and probably less substantial external benefits, are associated with their activities. They believe the same is true of National Forest activities. They suspect, further, that a clear explanation and presentation of these external costs and benefits, as well as the implicit **costs** of holding the National Forests, would justify some reallocations of resources in their favor.

One part of such an analysis, possibly in the Assessment, should show how all ordinary uses of the National Forests—timber, minerals, dispersed recreation, hunting, and so on—would compete on the basis of relative values as **expressed** in a competitive market. What would be learned from such an approach? First of all, establishing market value charges for those **uses** of National Forests that are now provided at no charge would reduce the quantity of each use that is demanded. It would also increase the area allocated to timber production and harvesting in some parts of the country and decrease this area in other parts.

The value to business firms of this kind of information would extend well beyond the **RPA** process. Obviously, such information would be used in arguing in favor of business positions on a variety of **issues** because it is consistent with the kinds of market rules under which businesses operate. But it would also help the Forest Service guide its activities and argue its positions on such **issues** as below-cost timber sales in ways that might well benefit business interests.

These proposals for change in the Program, if implemented, could go a long way toward reducing not only the **costs**—economic, social, and political—of holding and managing the National Forests, but **also** of the **RPA process**. This process has become a burden that threatens itself, as well as the support that is needed for continued public ownership and

management of the National **Forests**. The **RPA** Program could, with some change, help chart a course for the National **Forests** that would meet the basic needs of business. It is not doing this now.

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RPA Program Options: The Environmentalist Perspective

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Authors of the “player” discussion papers have been asked to address the relative merits of four possible responses to the RPA Assessment from the perspective of a particular player in the RPA drama — in my case, environmental groups. While this paper attempts to reflect as accurately as possible what the author believes to be the basic attitudes and objectives of environmental groups — an ambiguous collection at best — the paper also suggests ways in which the views of *all* forest interests might be accommodated. Some of these may not be acceptable to some environmentalists.

This paper reflects a basic view that each of the four responses — an emphasis on supply of forest and rangeland goods and services by either the federal government, state governments, or the private sector, or reduced demand — are appropriate for particular forest and range resources, uses, and values. The challenge is to match provision of the various forest resources, uses, and values with the appropriate provider — federal agencies, states, or private non-industrial or forest industry landowners. That there are particularly appropriate roles for each of these providers is the central theme of this paper.

Environmental groups: who are they?

The environmental movement is not monolithic. For example, the Natural Resources Council of America, the national umbrella association of environmental groups, includes professional societies like the Society of American Foresters; national organizations like the National Wildlife Federation, the Audubon Society, Nature Conservancy, and Sierra Club; and regional groups like the Appalachian Mountain Club and Georgia Conservancy.

Broadly defined, members of environmental organizations generally

are concerned with the amenity resources and values of forests and rangelands -wildlife, outdoor recreation, streams and lakes, and scenery. Under the amenity standard rally backpackers, hunters, birders, trailriders, off-road vehicle enthusiasts, and recreational vehicle tourists.

Obviously, these groups have widely different interests and concerns which can be, and often are, in conflict. Some advocate preservation of wildland with minimum management both for recreation use and to provide ecological services - maintenance of water and air quality, gene pools, and so forth. Others favor fairly active management to provide habitats for huntable species. Some like roads through the forests, others abhor them. Some use developed campgrounds, others prefer to hike to remote wild areas to pitch their tents. Some see the forests primarily as a place for active recreation, others prize them for existence values and the ecological services they provide.

Moreover, there are national, regional, and local environmental groups and each level views the world through its own prism. **National** organizations often address issues in philosophical terms, while regional and local groups are concerned about what actually happens on the ground in a specific national forest, or even on a prized parcel of land. Sometimes local interests see eye-to-eye with regional and national groups, in other instances they do not. But beware of stereotypes. While environmental groups may be composed of individuals who hold certain core values and have primary interests in certain activities, in real life people do many things outdoors, often in combination on a single forest visit, or in different seasons. Similarly, an individual may belong to several groups, with somewhat different primary interests. Individuals and **organizations** occupy space along a continuum of interests and activities and even discontinuous points on the continuum.

Both diversity and commonalty should be kept in mind when considering the preferences of environmental groups and a RPA Program that responds to their interests. For purposes of this conference, this paper generally will speak from the position of groups more interested in wilderness and dispersed recreation in the national forests, and the maintenance of high quality wildlife habitats. Nationally, these groups are well organized and vocal and are involved, in varying degrees, in influencing executive branch and Congressional decisions on forest and rangeland resources.

Their positions on issues are rooted in two overarching principals:

First, the national forests should provide public goods and services for which they are especially suited because of their size and the fact that they are publicly owned. Basically, this means that they should provide opportunities and services which will not be adequately supplied by private forests and rangelands either because of an insufficient land-base or because economic incentives are absent.

Second, the fundamental ecological integrity of the national forests should be maintained, and enhanced whenever possible. Ecosystem functions should not be impaired, and they should be maintained and managed as reservoirs of species and genetic diversity.

These two points provide the philosophical basis for advocating reduced timber harvests on the national forests, maintenance of old-growth habitats, minimum roading, and reduced emphasis on highly-developed recreation facilities, among other things.

The assessment is central finding

There has been general satisfaction with the analysis and findings of the Assessments. Nonetheless, some environmental groups challenge the basic finding of past **Assessments** that the demand for **all** forest and rangeland resources is rising faster than supplies. They have made the point, for example, that the amount of roaded recreation on the national forests is already more than adequate to satisfy any foreseeable demand. In other cases, demand may be artificial rather than actual. For example, **the** beef industry sought to maintain a high demand for traditional well-marbled beef long after the public had turned to leaner **cuts**. Some might say that this could be addressed by an **RPA** Program "reduction of demand" alternative. But the difference between eliminating an artificial stimulus and reducing demand through sacrifice and encouraging changes in consumer habits and preferences is more than semantics.

Three dimensions for building an RPA program

The RPA Program should be built in three dimensions. One dimension must consider the various uses/activities/values that take place or are present on forest and rangeland. The second dimension is that of land ownership (or deliverers - federal, state, private). Uses should be **matched** with the ownership most suited and appropriate for that use. The third

dimension deals with landowner assistance and research programs that increase the productivity of forest and rangelands for all uses and values, and encourage sound stewardship across all ownerships.

To keep analysis to a manageable scale, this paper will concentrate on timber, range, and recreation and wildlife. This should be sufficient to illustrate the principle of matching a use with the appropriate response. To reflect the differing interests of environmental organizations, broadly defined, it is necessary to break recreation use into dispersed and intensive categories, and wildlife into those favoring early successional habitats and those requiring mature vegetation.

Similarly, if the full range of opportunities for the provision of all goods and services associated with forest and rangelands are to be adequately considered, we must keep in mind that there is a range of landownerships, each especially suited to providing specific forest and rangeland goods and services. There are at least four classes of ownerships of forest and rangeland: (1) industrial forestland (some rangeland could also be classified as industrial); (2) non-industrial private lands; (3) non-federal public land (state, county, and municipal forest and parks); and (4) federal lands. **The** federal lands consist mainly of national forests and parks and Bureau of Land Management public domain, although areas managed by the Corps of Engineers, the Fish and Wildlife Service, and the Tennessee Valley Authority, contribute substantially to the supply of forest or rangeland resources in some regions, as do Indian tribal lands.

Regions of the country vary considerably in the proportion of forest and rangeland in these various ownership categories. For this reason, even a **national** program must address *regional* forest and rangeland attributes and opportunities.

Here, then, is how environmental groups might develop a preferred RPA iProgram alternative based on this analysis.

Timber

Environmentalists generally favor decreased harvests on federal **forest land and** increased production on private lands. But timber production on non-federal public lands, and problems inherent in increasing harvests on private lands need to be addressed.

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Federal Response

Indisputably, environmental **groups** favor decreased timber harvests on the national forests. The Wilderness **Society**, for example, has called for phased reduction from the present 11 billion board feet (hbO to about 6 bbf.¹¹¹ Environmentalists also oppose **high** harvest ralCs on BLM **land** because this involves cutting old-growth on the **O & C lands**. However, some environmentalist analysts have inferred that some areas in the national forests might be managed *more* intensively for timber **produc-**tion.¹²¹ An environmentalist preferred Program would call for a significant cut in timber production on federal lands, concentrating occurring harvests on sites of high productivity and low environmental sensitivity and where recreation values are low or uses are compatible with intensive limber management.

State Response

State-owned forests arc concentrated in the West and **Northeast**. Generally, they arc managed somewhat more intensively than the national forests. Some state constitutions require that the state **forests** be managed primarily to return revenue for support of educational institutions, and this **leads** to very intensive management.

National environmental organizations have not focused on timber programs on non-federal public lands as much as they have on programs involving national forests and **BLM** lands, but one suspects that they hold a basic belief that no public lands should be managed as tree farms. Local environmental groups generally have shown little dissatisfaction with current management direction of the state forests, although a few years ago, environmentalists in Washington state challenged the rate of cutting on state forests there.

State forests in the East **could** sustain a higher rate of **harvests**, since growth far exceeds removals. Because states also tend to respond to the demands of deer hunters for early-successional habitat, moderately intensive management is consistent with overall state wildlife objectives. Increased timber production on state **lands** - so long as this is not translated into plantation management - would be acceptable to environmentalists since it might reduce timber **demands** on the national [orests and encourage their management for **longer** rotations and [or wildlife requiring mature vegetation and minimum human disturbance. However, the size and distribution of state forests vis-a-vis federal **lands** in a state or region

could influence environmentalists' attitudes toward management of state forests. Environmentalists might be far more concerned about state forest management if state forests constituted the only or major public lands in a region.

In a few states, county forest ownership is significant. These lands are managed relatively intensively for timber. In these areas, local sentiment appears to favor intensive management for economic and wildlife objectives. At the national and regional levels, environmentalists probably would acquiesce to intensive management of county and municipal forest lands, particularly where county forest production can be used to leverage reduced harvests from nearby national forests.

Industry

Though not immune to the influence of national policy, industry largely manages its lands outside the influence of national, regional, and local environmental organizations (though most companies make their lands accessible for recreation as a local public relations gesture). On industry land, the trend is toward intensive management of highly productive sites and disposal of lands where productivity does not justify investments.^{13J} Environmentalists generally favor intensified management of industry lands, since it might lessen industry's hunger for national forest timber. There is little the RPA Program can do in a direct way to stimulate investments in timber production on industry land, although it can do it indirectly, inasmuch as federal decisions on levels of harvest from the national forests influence stumpage prices which in turn stimulate or depress investments in timber management by the private sector.

Change in federal tax policy is another possibility; the RPA Program might explore tax policies which would provide incentives to industry for timberland investment. Just how environmentalists would view actions to encourage industry investment in forest management is not known, but if they were receptive the opportunities for stimulating an industry-environmentalist dialogue are intriguing.

Non-Industrial Private Forests (NIPF)

Like the forestry community generally, environmentalists look to IPF lands to play an increasingly significant role in satisfying national and regional demands for timber. Environmentalists are particularly interested in increasing NIPF production to compensate for reductions of harvests on

the national forests. Difficulties in stimulating timber management on NIPF lands are well known, and expectations held for this major component of the nation's commercial forest base land may not be realistic - at least in the short-term. Still, environmentalists favor the encouragement of timber production on IPF lands through technical assistance and financial incentives. Moreover, reduction of harvests on the national forests and limits on selling timber below cost should increase stumpage prices and stimulate **investments** on both non-industrial and industrial forest lands.

Reduction in demand

Environmentalists intuitively would support the demand-reduction response as it applies to longer use and re-use of timber and fiber. This, after all, is consistent with the fundamental conservation philosophy. They probably would be wary of substituting non-renewable - such as aluminum and plastic - for timber-based products. Because of higher energy requirements and increased potential for air and water pollution, substitution of non-renewable resources for lumber and fiber are not in the interests of environmental quality and resources conservation, and would be favored only selectively, if at all.

The environmentalist strategy, in sum, calls for major reductions in harvests from federal public lands, and varying degrees of increased timber production by other ownerships to satisfy demand. Several points should be kept in mind when considering such a strategy. First, it would work to the disadvantage of forest products industries in the West that do not have their own land base and where federal forests dominate the commercial timberland base. It would work to the advantage of industry in the **South** and East where non-federal forestland predominates. Additionally, it probably would accelerate the movement of industry from the **Northwest** to the South and East.

There are some potential environmental problems as well. Intensified management on private lands - especially conversion from hardwoods to conifers - could reduce or eliminate some wildlife habitats of local importance. A few years ago, wildlife groups successfully challenged a Weyerhaeuser Company plan to convert large acreages of its holdings in Oklahoma from hardwoods to pine. Moreover, few eastern states have effective **forest practices** acts; thus timber production would be transferred from the national forests which do have environmental **standards** for management, to lands subject to less environmental control. Finally, to **the**

extent that increased domestic stumpage prices encourage import of **less** expensive foreign timber, the nation's balance of payments could suffer, with adverse effects on the national economy.

Range

Forest Service grazing programs play a relatively minor role in overall livestock production, although it is of local significance in some areas. Forest Service lands generally are in better condition and not subjected to the environmental damage that occurs on BLM's public domain and some state **rangeland**.^[4] However, range grazing does conflict with recreation values in some national **forest** areas. There can be no doubt that range grazing in the West has severely damaged riparian ecosystems. Environmentalists have advocated increasing public lands grazing fees, assuming that that would decrease use of the public forest and rangelands by livestock. They also advocate stronger environmental controls over livestock operations and greater investment in riparian protection and rehabilitation. Further, they point out that livestock operators who use the **public** lands contribute relatively little to the nation's total supply of red meat.

Issues associated with **livestock** operations on the **western** public lands, and grazing **fees**, were argued at length two years ago in a series of workshops sponsored by the Congressional **Research** Service. Generally, environmentalists advocated:

- Significant reductions in **grazing** on federal lands, by reducing **AUMs** and increasing the grazing fee to a realistic level.
- Stronger environmental requirements on livestock operators.
- Increased funding for rangeland riparian ecosystem protection.
- Encouragement of livestock production on private lands in the South to compensate for reductions in the West. As one environmentalist put it, "If you're talking preserving the cattlemen's lifestyles, invest in the West; if you're talking livestock production, invest in the South."

The South is not the ultimate solution however; much of the land is **highly** productive for other forest and agricultural **uses**, and competition for **land** for agriculture and urban development intense.¹⁵¹ To the extent that grazing is incompatible with other **uses**, other uses are likely to prevail because economic returns are greater. In the South, grazing tends to take place on lands of low productivity for agricultural use and as a secondary use of some forest land. While there are opportunities to increase grazing

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in the South, most of the **increase** in livestock production will **occur** through intensified management, combining **grazing** with other uses. This, too, has its **limits**.

There is little available information **on** whether **state-owned** land in the West is capable of sustaining increased grazing. One **suspects** that for most of the West, state-owned range is in about the same condition, and suffers the same problems, **as** BLM lands. The reduction of demand response is a real possibility - and is already occurring.¹⁶¹ Even the beef industry **admits** that per capita consumption of beef is not likely to increase significantly. Just how far the public's demand for red meat will fall - or can be pushed - is unknown. Environmentalists are not terribly concerned with maintaining high levels of red meat production **and** are willing to let prices rise and the marketplace prevail.

Outdoor recreation

Many different recreational activities take place on **forests** and rangelands. Because of the variety of **activities**, recreation provides the best opportunity for demonstrating how different **uses** which require different kinds of land and **facilities** and have different degrees of compatibility with other uses, can be distributed among different ownerships.

For analytical purposes, recreation must be broken into at least **two** categories in order to determine the appropriate response: dispersed recreation **and** intensive recreation. **For** purposes of this paper, **dispersed** recreation is considered to be those activities that require fairly large expanses of relatively undisturbed land; access is by foot, horseback, or canoe; and facilities are minimal. Dispersed recreation is but one use or value of wilderness. Intensive recreation occurs where substantial numbers of people occupy a relatively small area (e.g., a campground or swimming lake), **access** is by mechanical means, and facilities - including roads - are substantial. Which deliverers are most capable of **responding** to demands for each of these categories of recreation?

Dispersed Recreation

Federal Response. By definition, dispersed recreation requires a large **area** of land or **water**. In **most** regions of the country, **federal** forests, parks, and, in the West, BLM lands **offer** the most - or only - **opportunities** for dispersed recreation. **Federal lands**, and thus opportunities, are far greater

in the West than in the East. Overall, this argues for increased federal attention to dispersed recreation opportunities, and wilderness designation to preserve the values of undisturbed areas, including recreation values.

State Response. Few states have forests or state parks of the size of the large federal holdings. There are opportunities for increased dispersed recreation on state forest lands in the upper Lake States (Minnesota, Wisconsin, Michigan) and some areas of the Northeast (Pennsylvania and New York), but overall, the ability of states to provide dispersed recreation is limited.

Private sector. Few private holdings are large enough to satisfy dispersed recreation needs, and those that are, generally are owned by the forest products industry and managed for timber. Industry land, unlike public land, is generally unsuitable for dispersed recreation because of extensive roading and timber harvesting.

Reduced Demand. There would appear to be no public benefit in discouraging dispersed recreation, although there is evidence that the demand is leveling off as the population ages. There are opportunities to transfer demand by distributing dispersed recreation use so as to avoid environmental damage through overuse of sensitive ecosystems, and so provide more satisfying experiences.

A Special Word About Wilderness. Wilderness is an important use/value of the federal lands, and a use for which these lands are uniquely suited. While some states have established wilderness systems, and some additional land might be managed at near-wilderness standards, the federal lands will provide the bulk of designated wilderness.

Intensive Recreation

There appears to be a high demand for some kinds of intensive recreation - campgrounds with electrical hookups, downhill ski areas, picnic areas, lakeside marinas, and roads for pleasure driving (which should be distinguished from primitive forest roads for access to backcountry areas). Motorized or mechanical recreation (e.g., trailbikes) also may be increasing. Opportunities for increasing the supply of intensive recreation is almost the mirror image of those for dispersed recreation.

Federal Response. With some exceptions, intensive recreation is not emphasized on federal forests and rangelands. Forest campgrounds tend toward the more primitive (e.g., pit toilets, no electrical hookups), and

there seems to be a sustained demand for this kind of camping experience. While moderately-developed campgrounds may be appropriate in some areas, intensive recreation should not be a high priority for the national **forests**. The same is true of BLM lands.

The great national Parks, like Yosemite, Yellowstone, Mount Rainier, and the Grand Canyon, traditionally have had concessionaire-operated hotels and intensively-developed campgrounds. Indeed, many people choose the national parks because, like the popular hotel chain, they are confident there will be no surprises - facilities **will** be top rate. Smaller, more recreation-oriented units of the National Park System have emphasized relatively intensive recreation use. But even in the national parks, there should be no further expansion of intensely developed facilities. Some now in existence might appropriately be phased out, with **greater** reliance on private sector providers.

State Response. Intensive recreation generally is incompatible with the timber goals of state forestland, where recreation **opportunities** are similar to those on the national forests. State parks, on the other hand, traditionally have featured intensive recreation, and the trend appears to be accelerating. West Virginia, for example, features a developed attraction at each of its state parks, an attempt to turn them into destination **resorts**. [In some states, the state parks are becoming important elements in **aggressive** tourism campaigns. To the extent that intensive recreation in state parks **reduces** the pressure for developed facilities on federal **forests** and parklands, it would be encouraged by environmentalists.

Private Sector Response. Because there is a greater **willingness to** pay for high quality **facilities** and fee collection **is** easier and cost-effective, the provision of intensive recreation appears ideally suited to the private sector. Indeed, one implicit reason for raising federal campground **fees** is to avoid undercutting nearby private **campgrounds**. The possibility (of financial return might expand opportunities to increase private provision of some other kinds of recreation as well; many farmers in the south supplement their incomes by leasing their land to hunting clubs. In the upper Lake States, commercial interests have joined with local snowmobile clubs to provide snowmobile trails, with hotels and restaurants profiting through the snowmobilers' business. Opportunities for increasing some **kinds** of recreation use on private land would **appear promising if there is** a commensurate financial benefit to the landowner.

Reduced Demand. There may be good reason, now or in the future, to

try to reduce the demand for some **kinds** of intensive recreation in some regions. Downhill skiing, which **often** is dependent on national forestland for ski slopes, is a case in point. In some parts of the country, it appears that downhill skiing development has reached or is near the saturation point. Ski slopes affect the scenic qualities of the national forests, and the seasonal influx of skiers and attendant needs for roads and water and sewer systems has stressed local communities.¹⁷ It may be necessary to recognize **that** in some areas the capacity for this popular activity has been reached.

Wildlife

As noted earlier, for purposes of determining what wildlife resources and uses can best be accommodated by the various land ownerships, it is useful to divide wildlife into those species which favor early successional habitats and **those** which require mature or undisturbed forests. Admittedly, this is an oversimplification, since species require different habitats for different purposes (feeding, breeding, cover) and at different times in their life cycles. Even so, by generalizing in this way one can begin to determine which landownership classes are most likely to satisfy the habitat needs of species requiring **early** successional vegetation and those, including many rare and endangered species, which require mature timber and minimum human disturbance.

Ordinarily, the early successional habitats will be provided on those landownerships which practice moderate to intensive timber management; specifically state **forests**, other non-federal public lands, non-industrial and industrial private forest land. In the East, these ownerships comprise **the** bulk of forest land. With early successional habitat provided in abundance on other ownerships, the national **forests** should emphasize management to maintain mature **habitats** which are not likely to be **provided** elsewhere. This is consistent with the environmentalist position on timber described earlier.

The situation is different in the West, where the majority of forestland is in federal ownership. and consideration must be given to multiple needs. In the West. it is appropriate for the national **forests** to provide both mature and early-successional habitats in a mix that takes into account what is available locally and regionally on land in other ownerships. Even so, it is the mature habitats that are most in peril. and environmentalists are

likely to press for national forest **management** that emphasizes mature, relatively undisturbed forests.

*Assistance to state and **private** forestry and research*

Environmental groups have paid relatively little attention to the Forest Service's programs of assistance to states and small forest landowners and programs of research. While they favor action to encourage timber production on private lands, environmentalists have not given priority to state **and** private forestry programs and appropriations. Likewise, national environmental groups never have made a significant effort to influence Forest Service research, though some local groups have monitored **specific** projects in which they were interested. A few years ago, Washington state conservationists provided critical support for Jerry Franklin's research on the ecology of old growth ecosystems in the Pacific Northwest

The lack of environmentalist attention to these two key **Forest** Service activities is regrettable. The **Forest** Service's state and private forestry assistance programs provide an important counterpoint to management of the national Forest System; a decrease in commercial timber production on the national **forests** might be compensated for by increased production on state and NIPF lands. The **Forest** Service research program emphasizes timber, and it appears that non-timber research has suffered disproportionately in budget cutbacks.

State forestry agencies, by and large, are facing the same kinds of budget pressure as the Forest Service. The agencies with which I am familiar look to the Forest Service as an important source of funds to supplement state legislative appropriations, especially for forest **resource** planning. Without Forest Service financial and technical **support** it is questionable whether some states would have prepared comprehensive state forest resource plans. One can argue that if these activities are of high state priority, then the states should be willing to pay for them. The counter argument runs that state forestry activities have social, economic, and environmental consequences with national implications, and thus the federal government rightfully should bear a portion of the cost.

Forest **products** industries appear to be increasing technical assistance to private landowners, and it is **possible** that this will continue. Whether industry's **efforts** would offset reductions in federal assistance, and whether broader societal interests would be served by a reliance on

industry, is, from the environmentalist perspective, questionable.

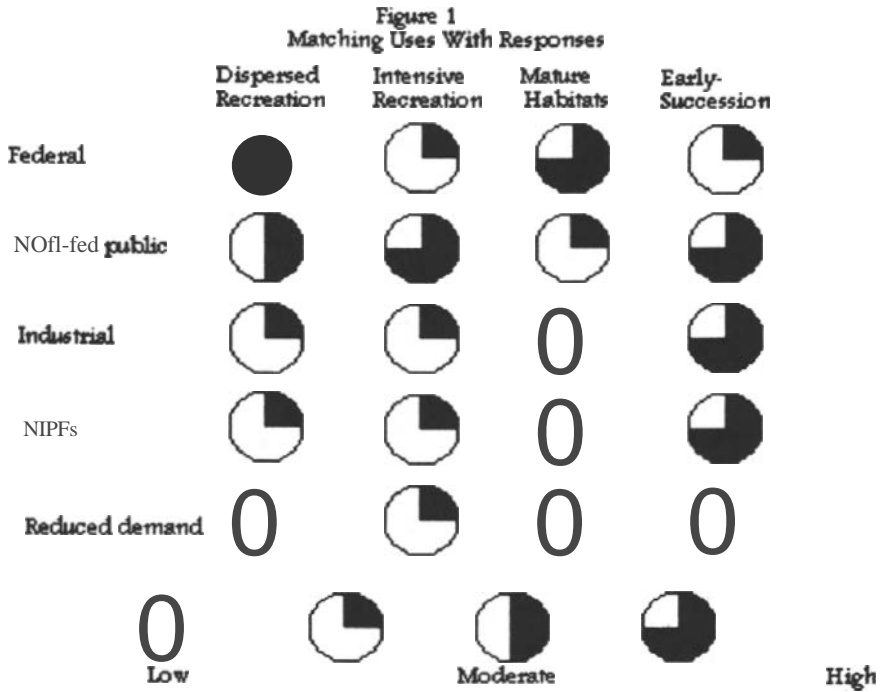
The Forest Service boasts that it operates the world's largest forestry research program. At the state level, research generally is conducted by land **grant** colleges, which are closely tied to the Forest Service's program. State governors and legislatures appear to be primarily interested in timber production and marketing. States might **be** willing to increase support for research aimed at increasing timber production, but it is doubtful whether it would do the same for recreation, or studies of general forest ecology. Nor can industry be counted on to take **the** lead in research. When timber markets collapsed in the early 1980s, some companies made significant reductions in their research programs.

In sum, environmentalists would (or should) support increased emphasis and funding for state and private forestry and increased funding for research, with greater emphasis on recreation, general forest ecology, ways of integrating non-commodity resources into timber management on **IPFs**, and ways of mitigating the adverse impacts of timber harvests on both public and private lands.

Conclusion

The Forest Service has indicated that it plans to orient the program toward the achievement of a limited number of broad societal goals.¹⁸¹ Linking the Program to broad social goals should make it far more relevant and useful to decision-makers. Forests are not managed for the edification of foresters; management presumably is aimed at satisfying social, economic, and environmental objectives important to the American people. By directing its forest resources plan toward achievement of a few broad social objectives, Michigan's forest management division has been successful in winning increased support from the governor and state legislature. One reason Congress has not paid much attention to the RPA Program is that it is not perceived as being relevant to the day-to-day social and economic (and even environmental) issues demanding attention.⁽⁹⁾

This paper has sketched a theoretical approach to applying the four responses prescribed by the organizers of this symposium to the provision of the various forest and range resources, uses, and values. Once goals have been established, a simple matrix illustrates how analysis **might** proceed (Figure 1).



Such a matrix might serve as a guide to the development of alternatives under the different "strategies" (I prefer to call them benchmarks) around which the Forest Service plans to develop alternatives for the 1990 Program.

If it was determined, for example, that more timber was required in the interest of greater economic growth and diversity, then ownerships should be analyzed to determine which can most appropriately increase production given agency missions, private landowner objectives, environmental and economic considerations, and regional ownership distribution. The same would be true of allocating investments in outdoor recreation to achieve the human health and wellness goal. From this, it is possible to identify the appropriate roles for the National Forest System and craft a responsive program for forest Service assistance to state and private forestry and research. Thus, Program alternatives could be constructed around the achievement of each goal compatibly with the others. Analysis of possible ways to allocate resources, uses, and values should integrate

goals within the alternatives, mixing and matching different combinations of resources, uses, and values with different responses.

The Program should not require all **sectors** to emphasize production of the same **kinds of outputs**. This was a major flaw in the construction of alternatives for the 1985 Program. For example, under the high-commodity production alternative, the national forest System, State and Private Forestry and Research **all** were dedicated to maximizing commodities. Likewise, under the high amenity alternative, all three activities were directed toward achievement of amenities. It is reasonable to assume that private forests and some national forest lands might be managed for intensive timber production, thus meeting the commodity objectives, while other lands might emphasize amenity values to the degree required to **meet** amenity objectives. All sectors should not be expected to contribute equally to the delivery of a specific resource, use, or value.

By crafting a Program which seeks to both allocate resources, uses, and values **among** different ownerships **and** to meet broad social goals, it could be that **outputs** of all forest and rangeland goods and services could be increased significantly. The result would be a win-win situation for disparate forestry interests - and the American people.

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A State Economic Perspective on 1990 RPA Program Alternatives

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The activities of the U.S. Forest Service have important effects on states, their citizens, communities, and industries. In many western states particularly, major portions of the area within state boundaries is managed by the Forest Service, and resource industries can depend heavily on resource supplies from national forestlands. In other states, Forest Service assistance to resource production from state and private lands can have important economic effects. The elaborate and multifaceted planning activities undertaken by the Forest Service at district, forest, region, and national levels confront states with numerous opportunities to attempt to influence Forest Service decisions. One such **opportunity** is **the** preparation every five years of a national program under authority of the 1974 Resources Planning Act (RPA).

The purpose of this paper is to discuss how states might be expected to express their economic interests within the RPA process. It will particularly discuss a series of hypothetical options for responding to assumed increased demand for all resources supplied from our nation's forests. These options include increasing supplies from national forest system lands, from state or private lands, or decreasing demand for these resources. **The** recommendations suggested in this paper do not necessarily reflect the actual preferences of the state of Washington for the 1990 RPA Program.

The analysis in this paper assumes that there will be no major changes in the RPA or in the U.S. Forest Service's other major statutes, such as the Multiple Use and Sustained Yield Act or the statutory limits on log exports from national forest system lands. It is also assumed that there will be no major realignments of ownership between different federal agencies, or between the federal government, the states, and private parties. Relaxation of these assumptions could change the recommendations contained in this paper.

The varied nature of state interests

States, like the federal government, are complex political entities made up of many diverse constituencies. A state's most general economic interest in natural resource management is to realize a high level of income by the state and its citizens from the use of natural resources, either on lands within the state or by industries located within the state. Financial **benefits** to state government itself from natural resource use include tax revenue from property taxes, business activity taxes, excise taxes, income taxes, and sales taxes; from rents, royalties, or payments for state owned natural resource assets; and from federal payments derived from use of federally owned assets. The relative importance of these sources of revenue depends on a state's tax structure, the amount of state or federally owned land, the importance of various resource industry sectors within the state, and other factors. States also seek to control state expenses related to natural **resource** use.

Beyond the limited perspective of the **state** treasury, states also express general economic development policies seeking to provide economic benefits to state citizens. There may be one or more of a number of alternative economic development policy directions, such as diversifying economic activity to provide greater long term stability of employment opportunities, improving the profitability of traditionally important industries through taxing policies or other means, stimulating new investment from outside the state through favorable taxing or regulatory **measures**, improving the geographic distribution of employment opportunities, and improving educational institutions, infrastructure, or other basic support systems for economic development.

Not all these policy options are mutually consistent. A policy that's good for one economic interest within a state may not be good for another. The objective of state governments to raise tax revenues **conflicts**, no less than in the federal arena, with profitable business activity, and may discourage siting of attractive new industrial facilities. The state as a resource owner has views concerning resource prices which can be at odds with the views of in-state manufacturers purchasing state owned resources. Different industries, for example tourism and timber, may be competing for the same resource base. General economic **development** strategies may seek to save declining rural industries, or may alternatively try to bring new industries to depressed areas, or assist unemployed

workers to relocate and seek employment elsewhere. Specific economic development projects which provide short term economic gains may be argued against if they are viewed as jeopardizing "quality-of-life" attributes significant in attracting new industry over the long term.

A state may not even be singlemindedly in favor of federal expenditures within **the** slate, such as for small landowner cost-sharing programs. A state's political temperament on **the** general subject of federal taxation and spending may color **its** view of the parochial gain to the state of a federal spending program, especially if federal dollars come with strings attached.

Besides the variety of economic interests and beliefs within a state, different states and different regions have clearly competing interests in federal resource policy. These differences are based on the importance, both comparatively and absolutely, of various resource uses in a state, such as timber, grazing, recreation, etc.; on the relative importance of federal, state, and private resource ownership; on the markets on which states are dependent, both domestic and export; on **the** different tax structures of the states; and on the demographic differences of states, such as the importance of urban versus rural populations and industries.

Finally, the federal policy direction advocated by a state's political leaders is certainly not determined solely by the economic interests of the state. Other state concerns, such as the maintenance of traditional lifestyles or the protection of environmental amenities are likely to figure significantly into **the** state's recommendations to a federal agency such **as** the U.S. Forest Service.

The preceding discussion has been intended to show that there is no monolithic "state economic development perspective" on forest resource supply issues likely to **be** consistently or universally expressed by **state** political leaders. Instead, U.S. Forest Service officials are likely to hear a variety of different state perspectives on **different** issues at different times, depending on who is speaking. In addition, **there** may be very important differences between the interests of state government and those of local governments. Forest resource supply shifts that may be insignificant at the state level, in a state with a predominantly urban service economy, may be of drastic importance to an individual county or town heavily dependent on a forest resource industry for local employment and taxes.

General economic development perspectives of states

With the foregoing variations in states' economic development perspectives kept dearly in mind, there **are certainly** some general **statements** that can be made about states' views on alternative **sources** of increased supply to respond to demands for forest resources. States can generally be expected to favor policies which increase the value of forest lands to states and/or which reduce the prices or increase the availability or quality of resources needed by important industries within the state. States will also favor policies which reduce the need for state expenditures or which increase federal expenditures in the state (unless outweighed by a conservative view of federal fiscal policy, as noted above). An individual state will favor policies which contribute to the general economic development strategies of that state, whether it be providing old growth timber to dependent rural sawmills, attracting new investment through ski area development, or recognizing the need for economic diversity by balancing competing resource uses.

Federal proposals to increase **forest** resource supplies from national forests, state lands, or private lands, or to try to **stimulate** reductions in demand, would be important from the general economic perspective of states. However, there are limits on the practicality of such broad proposals. Resource capabilities of national forestlands limit **the** ability of **those** lands to sustain major **increases** in production of all resources, particularly in some regions. Much greater range forage production **is** unlikely from national forests on the Pacific coast or in the **East**, for example, while increases in timber supplies cannot be large on Rocky mountain and arid West national forests. Likewise, state owned lands are of such limited extent nationally and in specific regions, that they cannot be expected to provide major increases in forest resource **supplies**. While private lands in many regions are a promising source of increased **supplies** for some resources such **as** timber, their ability to supply **ski** area sites and primitive recreation opportunities is limited.

For some resources in some regions, major choices do appear to be possible, such as greater emphasis on public versus private lands for increased timber supplies in the South, for increased hunting and fishing opportunities in **several** regions including the **Pacific** Southwest, for increased water supplies in the Rockies, and for increased water quality protection in the East. In other cases the real opportunities to increase

resource supplies lie only on one ownership or the other. Even where choices are evident, the choices may not be the Forest Service's to make. The Service's ability to stimulate a shift of resource production, minerals for example, from national forest to private lands may not be large. And its ability to directly reduce demand for forage or developed recreation opportunities appears to be quite limited.

Increasing resource supplies from national forest system lands

In general, states would favor increased federal investment in productive management of national forest lands, or would oppose decreased investment, where important industries are dependent on resource supplies from national forest lands. In many cases this economic dependency results not just from locational factors, but from the national forests' lands being physically most suitable to produce certain resources of high quality and quantity. Old growth timber production from Pacific coast national forests is an example, as is dispersed recreation opportunities in the Intermountain region.

The disadvantages of increased expenditures on national forestlands, from a general state perspective, include a possibility, given limited federal dollars, that this would result in lower funding of state and private forestry programs and research, which may be more important to many states than investments in national forest lands. This would especially be viewed as a problem where national forest lands are not best suited to sustain increases in high value resource uses, such as recreation opportunities near urban areas. Additionally, increasing supplies of marketable commodities from national forestlands may reduce the price which the state as a landowner, or which private landowners could receive for products supplied from their lands. For example, prices of stumpage on state owned land, and resulting state revenue, may be sensitive to major changes in quantity of stumpage available from nearby national forests, if both are flowing to the same market.

States may welcome the national forests' supplying a full range of resource uses as a social policy, in furtherance of the Forest Service's broadly supported multiple use mission. This may even ease political pressure on state and private lands to supply multiple uses contrary to the management objectives of those lands.

However, simultaneously increasing supplies of economically impor-

tant competing resources may reduce the quality of one or both, or necessitate spending excessive money and time in planning to resolve conflicts. States would not welcome an elevated level of political conflict among advocates of competing resource **uses** on national **forest lands** for this in turn would disrupt state-level forest resource discussions to which those same interests are a **party**. Inflamed polarization concerning forest management policy serves no jurisdiction's interest.

Finally, if dramatic increases in commodity supplies from national **forests** serve to accentuate the boom-bust tendencies of local rural economies, states may experience greater demand for social service expenditures.

Increasing resource supplies from state lands

To the extent this strategy could be implemented it could be a substantial benefit to those states which have major forest land holdings, for the resulting increase in value of the land would provide greater state revenue. The value of forest resources to industries using them may also be increased if state lands possess critical advantages over federal lands, or if there are few or no available federal lands in the state. Advantages of state lands may include lack of export restrictions for stumps, nearness to **ports** or mills, fewer environmental **restrictions**, or fewer limits on developments such as condominiums near ski areas. Most states would also welcome the increases in State and Private Forestry expenditures such a strategy seems to imply.

To the extent there is important competition among different resource uses, this strategy simply shifts the political repercussions to the state level. This could be seen as an advantage or disadvantage by the states. Perhaps state political processes may be better able to resolve local resource conflicts. For one thing, state lands may have a narrower mission than national forest lands. Increases in outputs of resource uses to which those lands are widely understood to be dedicated may be more acceptable. At the least, state officials would have more control over the outcomes of resource conflicts important to the state.

However, if an emphasis on federal investments on state lands results in decreased investments on national **forest system** lands, this would not be seen as economically beneficial by states with significant national forest lands or whose major industries are dependent on national forest lands.

Some local industries may be hurt by higher resource prices, particularly if state resources can flow to broader markets, or those industries could suffer from being forced to shift to less preferred or less familiar sources of supply.

More fundamentally, state lands may not be able to respond adequately to demand for higher resource outputs, due to legal constraints. These may limit the type of resource which the state land can supply, either commodity or non-commodity. In the case of renewable commodity resources, state **lands** may already be producing at the maximum sustainable rate. In general this strategy is likely to be supported by states only if combined with other strategies having more widely shared benefits.

Increasing resource supplies from private lands

Private **lands** may be better suited than national forest lands to provide increased supplies of a number of important commodity **resources** including timber, forage, minerals, **and** developed recreation sites. If this results in reduced **costs** or improved quality or marketability of forest products, the value of resource industries to states may be enhanced. Tax revenue may increase as well as state employment opportunities. Private parties operating on a profit motive may be more sensitive to what **markets** are really demanding. At the same time, if commodities are emphasized on lands where profit is an accepted management objective, **and** national **forests** emphasize amenity resources, political conflict may be reduced.

However, this strategy is not without pitfalls for state governments **and** state economic interests. As with **shifts** of production to state **lands**, some resource users may suffer from higher **prices**, unfamiliar sources of supply, or variable quality. Compared to national forestlands, private **lands**, like state lands, may not be capable of responding to demands for increased supplies. In many regions of the country, private timber lands are poorly **stocked** with commercial species or are in very young age classes. Non-industrial landowners may have objectives incompatible with commercial timber production, including conversion to more intensive land uses. These will be especially **troublesome** problems if proposals to increase production from private lands are linked to decreased production from suitable federal lands. **From** the state government perspective, difficult legislative actions may be required to provide financial incentives to entice small landowners into resource production, such as tax incentives. finan-

cial assistance or authority to charge fees for traditionally free forest uses. If private land shifts into and out of resource production, tensions may be created with neighbors, leading to demands on states for increased regulatory authority and enforcement **efforts**.

Reducing demand for forest resources

Generally, this strategy would not be favored by states unless substitute **products** are more economically important to the state than the product being displaced. For example, increased use of particle board may increase the value of some forestlands growing timber not suitable for saw timber **markets**. Substitution may **also** reduce consumer prices for products consumed within a state. And reduced demand may prevent any production on lands where there would be a high rate of resource use conflicts.

However, state economic development goals are generally to increase rather than decrease the market for the state's resources. **Reduced** demand causes prices to fall. While this may be good for consumers, it is a serious drawback for producers. Substitutes used as intermediate production factors, even when cheaper than traditional forest outputs, may be of poorer quality or less predictably available.

Desirable strategies/or individual forest resources

Each of the general options for responding to increased **forest** resource demands has important advantages and disadvantages from the state perspective. One is clearly superior in itself. The most important consideration in a given state's preference for Resources Planning Act Program alternatives is likely to be the ways in which each alternative balances competition for forest resources among those resource uses most economically important to the state. Creative ways to reduce these conflicts are crucial in extending resource supplies, or at least reducing costs. States can be expected to favor a program strategy built as much as possible on locally developed plans, whether national forest plans or state forest resource plans. It is in these planning **efforts** that state and local influence is likely to be strongest, and in which state interests are best balanced with broad national **goals**.

The following discussion presents strategies for each important forest resource which could be favored by the states. These proposals are highly

dependent on the quality of available information concerning resource capabilities and demands on various ownerships. Information has been gathered from the 1985 RPA Program EIS and the 1984 RPA Assessment update.!) Better information could lead to different proposals.

Timber

The general strategy is first to take pains to protect all forest resources including timber from losses due to fire, insects, and disease; second to work to increase markets, recognizing the benefits of this strategy to manufacturers, log brokers, states, and the federal treasury; third to increase supply only on the best timber growing sites having the least conflict with other resources, near good markets, or where purchasers are most dependent on current sources of supply; fourth to avoid flooding the market with timber in an effort to reduce consumer prices, recognizing that modest increases in consumer prices reflect economic gains for resource owners, and fifth to seriously recognize that there are economically important competing resource uses even on the best timber growing sites, and that creative problem resolution is crucial.

The National Association of State Foresters has recently stated in Congressional testimony that forest pest management and suppression should be given more emphasis on national forest lands as well as state and private lands.!)2) In addition, NASF has strongly recommended retaining a strong cooperative fire protection program, arguing that the benefits in avoided resource losses on all ownerships far outweigh the costs. The best way to extend supplies of timber and other resources is to avoid catastrophic losses.

NASF has also recommended a new marketing and industrial development initiative within the Forest Service's Forest Management and Utilization Program. The intention is to improve the competitiveness of U.S. forest products producers in domestic and export markets, and to assist in reducing the U.S. trade deficit for forest products.!)2) Increasing exports, from the Pacific coast particularly, can help raise prices enough to keep producers operating even as their timber supply costs rise.

A major shift of increased timber production to state-owned lands is not feasible in most regions where state lands are lacking in sufficient area, are already producing at full sustainable harvest rates, or have constraints due to non-timber objectives. Increased state timber production could be counted on only to address very small scale market imbalances. However,

states will favor federal policies which support high stumpage prices from state lands, such as the ability to export sawlogs from state lands.

States are likely to support federal policies to increase timber production from the most physically capable and economically feasible private lands. Such an emphasis should not, however, be in place of harvests from better national forest lands, and should not attempt to displace higher valued uses of private land, such as residential uses or grazing.

States are strong supporters of increased funding for forest research. As pointed out by both NASF and the Society of American Foresters, research is important for reducing insect and disease and fire losses, increasing wood utilization, improving international marketing, and resolving competition between timber production and other forest resource uses.¹²¹¹³¹

Range

For the national forest system, range rehabilitation is the most important priority. In general, increased production and increased grazing should be a long term rather than short term goal for these lands. Meanwhile, other ownerships are better suited to increase forage production, and Forest Service policy should seek to stimulate shifts to other ownerships. In the arid West, range rehabilitation on national forestlands can be combined with needed watershed protection measures on those same lands. National forest range programs should probably not be viewed as a money-making endeavor from the federal treasury standpoint. However, they have important local economic benefits to states.

Water Supply

Providing steady flows of good quality water is a vital national forest value from a state economic perspective, especially where poor water quality or excessive or insufficient water flows act as a major constraint on economic activity important to states.

Analysis of the advantages of watershed improvement investments on national forest lands must also take account of the downstream benefits of reduced drinking water treatment expenditures and reduced expenditures to repair damage from flooding or mudslides.

State efforts to increase water conservation, water transfers, and water re-use should also be supported by the Forest Service and other federal agencies. As legal questions surrounding these strategies are resolved,

they offer the best hope in the future of increasing the value of water supplies in the West.

Developed Recreation

The Forest Service should promote use of national forest land for development of ski **areas** or developed water recreation areas where national forest land has favorable physical and/or economic characteristics compared to other existing or potential sites and where developed recreation has a high economic value compared to alternative **uses** of the national forest lands. Analysis of development possibilities on national **forest** land should take into account the potential for increasing the value of adjacent state or private land which could accommodate **support** facilities or **condominium** development. A state's position on intensive development will also depend on the potential need for increased state and local expenditures on sewage **facilities**, road repairs and other infrastructure needs.

Development on state or private lands would be preferable where those sites are physically better situated, located closer to urban population centers, or where more intensive development and thus a higher valued use of the land, and higher direct economic returns to the state are possible. States will strongly support continued federal funding of state and local recreation facilities through the Land and Water Conservation Fund or a successor fund such as has been recommended by the President's Commission for the American Outdoors.

Minerals

States will support increased availability of the most valuable mineral resources on national forestlands. States can be expected to be sensitive to the potential conflict between mineral development and other forest resource uses economically important to a region. The potential social disadvantages of boom/bust mineral development in rural areas will also be important to states.

Dispersed Recreation/Fishing and Hunting/Wilderness

In the case of **wilderness** or other major reservations of **forest land** with mature timber or other important economic values, states may favor letting Congress **decide** the **issue**, since a **state's** Congressional delegation will have a major role. **These** are explicitly political decisions probably best made by a political body, rather than a bureaucracy. In states where

wilderness bills have been passed, states can be expected to encourage the Forest Service to take full but economically sound advantage of Congressional "release" language, to continue economic use of areas not designated as wilderness. Other major reservations of forest land, such as spotted owl habitat in the Pacific Northwest for example, is also most likely to be best decided in an explicitly political decision-making forum.

Other forms of dispersed recreation are important uses of national forest system **lands** in all regions, and are generally compatible with most other uses of these **lands**. Prevalence of dispersed recreation opportunities can be an important element of the attractiveness of a region to new industry.

Regional preferences

Regional differences in states' views are likely to be most important in determining a state's position on federal forest policy. What does the preceding discussion **suggest** about various regions' preferences for increased resource outputs from federal, state, or private lands?

Pacific Northwest and Alaska

The preferred strategy in this region is likely to be one of continuing stable levels of timber supply from national forest lands. Harvest of old growth timber should continue at about current levels with no dramatic increases to reduce consumer prices or decreases to provide major new pristine habitat or wilderness protection. This region **has** the most valuable timber resources on national forest lands, representing a value to the federal treasury and state industry, especially where local mills are dependent on national forest supplies. In these cases, long term sustainability of harvests, not a short term glut is what's needed. The long term approach on national forest **lands** also prevents prices for state-owned stumpage from being depressed. In this region, recreation, wilderness, and habitat areas are important and are currently well provided, needing only marginal additions. The main challenge will be maintaining high timber production while supporting the region's economically important commercial fishing industry as well as sport and tribal fisheries, by providing quality anadromous fisheries habitat **and** fish **enhancement facilities**. **Commercial fishing** is especially important in Alaska. Water resource **policies** giving priority to in-stream recreational **uses** are likely to be favored as well, along with

increased outputs of dispersed recreation opportunities on national forest, state, and private lands.

California

As with the Pacific Northwest, stable timber supply levels from national forest lands, neither sharply increasing or decreasing, are likely to be preferred, along with increased development of snow and water-based recreation facilities on federal lands and increased dispersed recreation opportunities on all ownerships.

Intermountain

A preferred strategy by states in this region is likely to be one of continued stable supplies of timber and grazing from national forests at about current levels, increased investment in range rehabilitation and watershed protection, and increases in dispersed recreation opportunities on federal, state, and private **lands**.

Southwest

States in this region are likely to prefer increases in dispersed and water-based developed recreation opportunities and watershed protection on national forest lands over increases in timber production from those lands. Increased range rehabilitation is also likely to be supported. Coordination of activities with those on other federal lands is an important part of a preferred strategy in this region and the Intermountain region.

Rocky Mountain

Stability in national forest timber supplies in areas with dependent communities is likely to be supported by states in this region, even though costs may exceed **benefits** from the federal perspective. Current levels of grazing outputs and support for increased outputs from private lands should also be preferred, along with increased development of snow-based recreation facilities on federal lands. Increased availability of mineral resources from national forest lands is also likely to be strongly favored here.

Northeast

States in this region are likely to support increased investment in timber production from state and private lands and increased dispersed

and developed recreation opportunities from national forest lands. State forestlands in the Lakes States particularly would benefit from investments enabling conversion to more desirable timber species.

Southeast

In this region, states are likely to strongly favor continued and increased federal support for limber production on private **lands**. Increased forage production from private lands is also possible in this region. Watershed protection and dispersed recreation are likely to be favored uses of national forestland, along with current levels of **timber** production. **The** USDA Conservation Reserve Program is supported as a means of both improving watersheds and increasing timber production on private lands.

Advantages and disadvantages

The principle advantages of the program strategy discussed here are that it encourages increases in forest resource supplies on those **lands** physically and economically best suited to produce those resources, while explicitly recognizing the competition among economically important resource users. This strategy would openly involve state as well as federal political institutions in the resolution of these critical resource problems at a regional level. This strategy does attempt to use federal investments **on** both national forest and private land to overcome critical **constraints** to long term **increases** in resource **supplies** in **response** to rising market prices. **I**(owever, it **is** ultimately willing to let markets determine prices, and does not attempt to **depress** consumer prices to **the** detriment of producers. The broad federal program direction, as part of this strategy, is **sensitive** to the economic advantages and disadvantages for states and local **areas**.

The strategy **has** several important disadvantages:

- From the standpoint of federal budget **writers**, it does require increased expenditures in some Forest Service programs, such as State and Private Forestry and research. It also calls for increased **spending** in non-IJFSFS programs such as the Land and Water Conservation Fund. To the extent this strategy reflects diverse regional preferences rather than a **swEEPing** national vision, it may not **generate strong** political support for necessary budget levels.
- In the eyes of the Forest Service, these recommendations

may appear to have very high information requirements: information on local economics and market conditions and the comparative profitability of different resource uses on different ownerships. The strategy also implies some loss of control over decisions by the Forest Service bureaucracy in favor of greater influence by state and local officials, and greater time spent in cooperative planning.

- From the state perspective, as has been mentioned, increasing supplies from private lands may require difficult decisions on legal or financial incentives, increased regulations, fees for traditionally free forest uses, etc. The strategy also implies a greater state role in solving resource use competition problems on national forestlands, a position some state officials may not welcome.

Potential resolution of disadvantages

The proposed strategy has several features which could help moderate fiscal skepticism. For one thing, an explicit investment analysis, based on the physical and economic characteristics of land in different ownerships and different regions should provide a basis for assuring budget writers that only the most promising investments are being proposed. Emphasizing the economic benefits to resource owners, including the federal government, should also make the proposal attractive. If states are given more influence over the key decisions on competing resource uses, state Congressional delegations may see themselves as having a bigger stake in advocating appropriations to implement those solutions.

If funding levels are significantly less than the Forest Service would desire, as has consistently been the case since the enactment of RPA, the strategy presented here could be followed. The more explicit investment analysis should permit current funds to be reallocated to a combination of the most economically promising short term and long term programs, by region. Greater Forest Service budget flexibility might help. It may also be possible to provide Congress with information showing the relationship between Forest Service funding trends and various external indices, so that continued delay of adequate funding can be highlighted and the consequences for achieving agreed on goals can be better understood. One should expect the Forest Service to escape a general belt tightening, but

diminishing opportunities for future economic growth should be visible to budget writers.

Lack of information is another **difficult** problem. However, a great deal of the **necessary** information certainly exists already and needs mainly to be assembled in a usable format. Forest Service staff resources may be more effectively allocated to conducting objective technical and economic analysis if they are freed from the full responsibility of searching for equitable resolution of political problems. Shifting some of that responsibility to state officials could help. This strategy requires a more permeable Forest Service, or more permeable portions of the Forest Service. But **the** advantages of a collaborative approach to problem solving may be **worth** the organizational stress.

Collaborative problem solving is **the** key to the resource competition explicitly acknowledged in this strategy. An example of collaborative problem solving at the state level exists in the recently completed landmark **agreements** on forestry regulation in Washington State known as the Timber/Fish/Wildlife Agreement or **T/F/W|A|**. This agreement **replaces** fixed regulatory standards with a more flexible "adaptive management" approach. The agreement among traditional opponents was possible because several criteria were met: 1) all sides were frustrated with the impending regulatory outcome, in which all **interests** had participated but over which no interest felt in control; 2) a critical level of trust had developed among several key interest group leaders as a **result** of collaboration on other **issues**; 3) the **parties** agreed to use technical information collaboratively to find solutions rather than competitively to support **positions**; 4) the focus was on mutual support for bottom line needs; 5) creative **opportunities** were sought to enhance rather than just defend resource **values**; 6) **discussion** and resolution took place outside of formal environmental review or law making **procedures** and 7) agreements were formalized under the authority of existing legally accountable government bodies.

Adaptive management is a particularly powerful approach to natural resource disputes because it does not depend on perfect information, nor does it require a final commitment by the **parties**. Instead, a commitment is made to a carefully designed monitoring program keyed to improving knowledge **over time**. In addition, **the parties agree to changes** in approach where indicated by improved knowledge.

Finally, difficulties in states' financial and legal **abilities** to stimulate

and control increased resource production from private forestlands could perhaps be addressed by a combination of federal assistance and oversight and independent evaluation of states' performance. Information on the most workable mechanisms for stimulating private production could be made available to states as could assistance with state planning which would then lead to necessary legal or administrative changes. Financial incentives could be provided through the State **and** Private Forestry Program. This could, if carefully targeted, be a better use of limited federal **funds** than the less profitable investments in national forest system lands. States' progress toward implementing necessary measures could be monitored by the Forest Service, by NASF, by SAF, or some other organization, enabling Congress to chart and evaluate state **efforts** and results.

RPA process needs

The RPA Program strategy suggested in this paper could be summarized as a combination of pursuing economic efficiency, seen from the perspective of a state/federal partnership, and aggregating local plans. Developing and promoting this strategy could be assisted by certain improvements in the RPA Assessment information and RPA Program alternative development.

Improved information is needed in the Assessment on regional forest resource capabilities on all ownerships. This recommendation **has** also been made by the recent Belmont House RPA Workshop convened by the Conservation Foundation.¹⁵¹ Much of this information should be available from national forest plans. To the extent possible, economic **evaluations** should be included indicating in some way the net economic value of different resource uses on federal, state and private lands. Displaying the varying capabilities of forestlands to supply different resource uses would assist readers in drawing conclusions about the best resource use combinations in each region. This display would also clearly point out the competition among different forest uses at different levels of production, and the relative advantages and disadvantages of increasing production on different ownerships.

The general tone of the Assessment could reasonably be adjusted **away** from the implicit **assumption** that **increases** in **consumer prices** for **forest** products are in all **cases** bad and need to be countered by increases in supply. Instead, the Assessment should recognize basic principles of

market equilibrium and acknowledge the economic perspective of producers, including federal lands.

An important function of the Assessment should be to identify strategic policy issues. These are critical **constraints** on or opportunities for achieving the nation's long term forest land management **goals**. These could relate to market trends, budget constraints, organizational capabilities, technology, information availability, demographics, political pressures, and competition among resource uses. Strategic issues may be national or regional.

The RPA Program, rather than being an exercise in comprehensive planning, should propose alternative **approaches** to resolving the strategic policy issues. The Program should explain how each alternative addresses the most critical issues identified in the **Assessment**. Alternatives should differ both in the budget level required, and in the policy direction relative to strategic issues.

Program alternatives reflecting a few alternative budget levels, especially increments below current levels, would enable OMB and Congress to explicitly consider the results of realistic budget proposals. Alternative approaches to resolving strategic policy issues would allow Congress, interest groups, and states to explicitly consider needed resolution of key issues, especially the need for political decisions by Congress. **These** Congressional decisions could also be used as management guidance within the Forest Service, making the RPA process and Program more meaningful for subsequent Forest Service management.

Conclusion

While there are difficulties clearly defining a state economic development perspective on RPA, states have been active participants in the RPA process. Future state effort depends on the states' expectation that improvements in the Program will have meaningful results in Congressional budgeting and Forest Service management. To the extent states continue to participate, this paper has attempted to show the varied but coherent policy preferences states may express. Broad economic efficiency and greater state political involvement are the general characteristics of the **anticipated** preferences.

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Improving the Linkage Between the RPA Assessment Findings and the RPA Program: The View from the Office of Management and Budget

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The development of federal policies and programs regarding the management of America's forest and range resources involves more than just the Forest Service and the Congress. The Office of Management and Budget (OMB), a staff agency located within the Executive Office of the President, plays a central role in the functioning of the federal land management agencies through its fiscal and legislative clearance, program coordination and development and budget preparation. Though many have a general impression of OMB as the fiscal conscience of the government, or the "abominable no-man" as it has been called, OMB as an institution remains an enigma even to many "insiders" in federal resource policy-making. The cloak which seems to cover OMB is largely of its own making; the agency does not invite scrutiny from the outside world and it has taken effective measures to avoid having the substance of its budget and policy negotiations with the agencies and departments widely known.

Historical context

The predecessor of OMB, the former Bureau of the Budget (BOB), came into being in response to the need for debt management and the coordination of agency budget requests through the Executive. Prior to 1921, agency budgets were submitted directly to the Department of the Treasury and aggregated with little modification for **use** by Congress. **The President** played a **very** limited role in the formulation of a national budget. In 1912, President **Taft's** Commission on Economy and Efficiency recommended that a national executive budget be developed "whereby the executive may be made responsible for getting before the

country a definite, well-considered, comprehensive program."¹² The Congress was well aware of the recent string of budget deficits (a new phenomenon at that time) and, perhaps recognizing its own inability or unwillingness to deal effectively with such allocation decisions, permitted much of its near-total Constitutional authority over budget development to be gradually assumed by the President.¹³ The Budget and Accounting Act of 1921 denied federal agencies independent influence on the budget decisions of Congress by specifically empowering the new Bureau of the Budget to "assemble, correlate, revise, reduce or increase the estimates of the several departments or establishments" and to make detailed administrative studies to "secure greater economy and efficiency in the conduct of public service."¹⁴

Just as the fundamental values of today's Forest Service were largely shaped by the agency's first Chief, Gifford Pinchot, the basic values at OMB remain much the same as when they were set out by the agency's first Director, Charles G. Dawes. Dawes asserted that the budget bureau should maintain the highest standards of professionalism and remain impartial, non-political and non-partisan, a view subsequently referred to as the doctrine of "neutral competence." Dawes saw a strict (if naive) dichotomy between policy-making and administration- "only a non-political staff could do a good managerial job for a political chief executive, and . . . the best way to let the technicians make their useful professional contribution is to keep them thoroughly subordinated to political authority."¹⁵ The BOB professional staff would be concerned simply with economy and efficiency in routine government business, "workers in the stoke-hole **who** had nothing to do with the steering of the ship."¹⁶ Dawes also stressed that BOB must serve first as a staff agency to the President, not the various departments and bureaus in the Executive Branch- "the effectiveness of the budget machinery depends upon its independence of departments and its complete dependence upon the President."¹⁷ Similarly, BOB loyalty was to the Office of the President, not to the partisan efforts of any current or preceding Administration. As such, the budget bureau viewed themselves as the elite of the civil service, the American equivalent to the respected British civil service cadre at Whitehall. It was said that if a Martian army marched on **the** Capitol, everyone in Washington would flee the hills except the budget bureau staff, which would **stay behind and** prepare for an orderly transition in government.¹⁸

However, during the Nixon Administration, the professional image of

the bureau was badly tarnished by politicization. The agency had always walked a tightrope between overextending its responsibilities into the political and operating levels, and overly narrowing its role and viewpoint through concentration on routine details. Either extreme would severely damage both its professional credibility and its usefulness to the President. The budget director might at times become the Presidential point-man on issues, but the bureau itself could not be seen as a source of partisan support. In 1971, the former BOB was replaced by an Office of Management and Budget (OMB) and a new Domestic Policy Council. In Nixon's words, "... the creation of the OMB represents far more than a mere change of name for the Bureau of the Budget. It represents a basic change in concept and emphasis, reflecting the broader management needs of the **Office** of the President."¹⁹ Under Nixon, OMB became known as the Office of Meddling and Bumbling for its widespread interference in the internal management processes of the agencies and departments. The report of President Ford's transition team (1974) found that OMB was "too involved in departmental processes and limiting the departments' ability to come up with innovative ideas." OMB had become "an advocate of policy **rather** than a politically neutral analytic tool . . . imposing **budgetary** decisions on other federal departments and agencies that were based on political considerations rather than the economic program approved by Congress."¹¹⁰

Congress' reassertion of its Constitutional authority over budgeting through the 1974 Congressional Budget and Impoundment Control Act was largely a response to such widespread abuses by the Nixon Administration. James T. Lynn, President Ford's budget director and **the** first requiring Senate confirmation, took pains to remove the taint of politicization from OMB, symbolically moving his office from the White House back to the old Executive Office **Building** where it had been prior to 1971. It was in this context, and at this difficult juncture in OMB's history, that the RPA legislation came up for consideration. However, OMB's resistance to the RPA legislation, and its continuing difficulty with the implementation of RPA, are rooted not in the politicization of the institution by one Administration or another, but in the enduring values and perspectives of OMB as an organization and an impartial staff agency to the President.

*Economic efficiency and **the** role of **the** budget examiner*

The OMB budget examiner assigned to oversee the **activities** of a given agency must act, in **turn**, as both inquisitor and advocate. True to the intent of the 1921 Budget and Accounting Act, the President (and thus OMB) takes the most comprehensive view of federal spending priorities of any player in any branch of the government. In serving the President, OMB must balance priorities among all the federal agencies, from national defense and foreign aid programs to highways and social welfare programs. All programs, including forest resource management, must take their places in the grand sweep of federal responsibilities. As more *de facto* budget authority has come to reside in the President, OMB has played an increasingly critical role in balancing federal spending priorities while keeping the grand total within accepted deficit limits. With the establishment of the Congressional Budget Office and the Budget Committees in each house by the 1974 budget reform act, Congress now has at least some institution for looking at the overall federal budget. Though the Budget Committees provide guidelines to the myriad appropriations subcommittees (organized generally along the lines of the **agencies** they oversee), there is still no institution that can offer the type of detailed investigation, analysis and recommendations long offered by OMB.

In conducting the preliminary review of an agency's budget **request**, the budget examiner must represent OMB's fundamental perspectives and values, i.e., economy and efficiency, in pressing for the justification of **continuing** programs as well as new or expanding programs. In the role of the inquisitor, the examiner must **press** such **questions** as: What is the real public demand for this good or service? Is there a legislative or executive mandate that the federal government attempt to meet this demand rather than leaving it to state/local governments or the private sector? Is the proposed program and funding level the most cost-effective means by which the stated objectives can be achieved? The first instinct of the budget examiner is to look for an opportunity to *not* approve a new initiative. However, OMB realizes that, in the **words** of one budget examiner, "there are many things that need to be done, and we want to do the right thing."¹¹ But it is the responsibility of the examiner to **press hard and be** certain that any new initiative **is** well justified and that adequate analysis has been done to document and support that justification.

These justifications, and supporting analysis, become critically important when the examiner must present the agency's budget to the division chief, and when it in turn must be **presented** to the Executive Associate Director for Budget and to the politically-appointed Deputy Director and Director before being made a part of the President's Budget. Thus, it is in the agency's best interest for the budget examiner to have the best possible supporting analysis for **its** budget proposal. The examiner is the agency's only *de facto* advocate in OMB's internal negotiations on what will constitute the President's Budget. If an adequate justification is not at hand, the budget examiner will seldom advocate funding a program or, if he or she **does** push it, the program will most likely be turned down (an examiner must be careful that his or her concerns for an agency's interests **do** not appear to supercede his loyalty to OMB; examiners may be periodically rotated to overseeing different agencies to avoid such "going native").

In theory, the RPA Assessment and Program should provide just the sort of information OMB **needs** from the Forest Service in order to justify its programs. Earlier national-level program documents (e.g., the Resource Development Program 119611, "**RPAR**" late 60s and the Environmental Program for the Future 119741) were seen as efforts to raise the visibility (and funding prospects) of Forest Service programs, primarily with the Congressional appropriations committees. These were regarded by OMB as no more than program promotion devices lacking any real analytical justification for the increased **budgets** that were called for. When the concept of RPA was being developed, it appeared to be just what OMB was looking for from the **Forest** Service. The RPA Assessment document, to be prepared on a ten-year cycle, would provide a comprehensive examination of the national renewable **resource** demand and supply situations and the Forest Service's production possibilities and **resource** capabilities. Such a document would presumably provide just the detailed analytical basis needed to justify Forest Service funding requests.

However, RPA also required the preparation of a Program document which would respond to the needs and opportunities identified in the **Assessment** by establishing a set of 50-year **resource** output goals **and** setting more detailed resource objectives and funding targets for the five years covered by each new Program. In submitting a new five-year Program **to the Congress, the President** is **required** by RPA to **accompany** it with a Statement of Policy, which essentially **represents** the President's commitment to implementing the new Program. With each subsequent

annual budget proposal, the President must indicate where the proposed budget deviates from the budget targets in the RPA Program and the reasons justifying the deviations. Finally, **RPA** requires the **Forest Service** to prepare an Annual Report, which must include a comparison of the actual resource management accomplishments for the year with the resource output objectives for that year as indicated in the Program.

OMB's primary responsibility is to the President and his need for flexibility in responding to shifting budget needs and priorities. OMB disliked even the implicit **constraints** on the President for setting Forest Service funding at whatever level he deemed necessary given the other federal **responsibilities** at the moment. In particular, OMB did not like the Presidential accountability to Congress implied in the requirement for a Statement of Policy laying out the President's commitment to funding the Program over its five year lifetime. Also troublesome was the potential for Presidential embarrassment in the requirement that each annual budget show deviations from the Program and the reasons therefor. Similarly, any significant deviations from the Program that appeared in the Annual Report could be portrayed as the President's lack of commitment to conservation or his inability to **carry** out his own natural resource policy and programs.

In Congressional testimony, OMB opposed these features of the **RPA** bill but, interestingly, did not oppose the underlying purpose and thrust of the legislation. The reporting requirements remained intact in the final bill, however, and OMB recommended a Presidential veto. For reasons described in the background brief, President Ford signed the RPA despite the veto recommendation, but OMB authored the caveat that went along **with** the signing: ". . . certain provisions of this act disturb me, **especially** those provisions relating to Presidential discretion in formulating annual budget requests for our nation's **forestry** programs1121

RPA implementation

In the view of officials at **OMB**, **RPA** implementation by the Forest Service over the past decade has confirmed their forebodings for Presidential embarrassment while disappointing them in its failure to provide a sound analytical basis to justify **Forest Service** programs. Though not **exactly** inspiring the **Presidential** humiliation and remorse of, say, **the Iran-Contra** affair, the vast deviations between recent **RPA** Programs and subsequent President's **Budgets** have been noted across the spectrum of Forest

Service constituent groups. The Assessment, while better regarded than the Program, has become so predictable in its conclusions that "anyone who read the last one already knows what the next one will say." Moreover, the Program is felt to have degenerated to little more than another agency promotion device without adequate analysis to support its budget recommendations. In the words of a former examiner of Forest Service budgets, "it's the same old good news/bad news pitch. The bad news is that demand is climbing out of Sight for every renewable resource the Forest Service deals with. The good news is that all they need is another billion dollars of someone else's money to catch up with it."

A more specific criticism of the **Program** development process is that, rather than utilize a straightforward marginal analysis approach, the Forest Service calls for large incremental increases, "doing the economic analysis after the fact" to show that benefits would be increased with large increases in funding. OMB officials assert that, for many Forest Service programs, nearly the same incremental benefits could be obtained at much lower incremental cost. In their view, the Forest Service preemptively calls for large incremental increases rather than plotting out even generalized marginal cost and marginal benefit curves to determine their intersection at some optimal level of output. It is felt that Program alternatives always shoot way beyond this point of intersection and that lesser increments are not adequately evaluated.

It is widely presumed that OMB has little regard for **resources** that do not produce monetary returns to the Treasury. Officials there assert that the public value of non-market forest resources is clearly recognized and is given due consideration in reviewing **Forest** Service funding proposals for multiple-use management. What OMB has more difficulty accepting is the methodology by which the Forest Service imputes dollar values for these resources. One particular criticism is that the Forest service tends not to factor out consumer surplus and thus arrives at **prices** for non-market resource outputs that are not analytically comparable to market prices for timber, mineral and range resources.

In reviewing Forest Service programs, OMB **does** not look for a positive benefit/cost ratio as much as it seeks a positive ratio of *marginal benefits* (MB) to *marginal costs* (Me) for market resources as well as non-market **resources**. Over the **past** five years, for instance, OMB has repeatedly turned down proposals from the Secretary of Agriculture for **major** increases in timber harvesting on the national forests. Even though much

of the increased harvesting would have taken place in the relatively profitable Pacific Northwest and California forests, it was OMB's determination that the additional costs associated with higher harvest levels far exceeded even longer-term **benefits**. Similarly, while OMB recognizes the tremendous public value of recreation on the national forests (more than twice the recreation use of the National Park System), it is far from clear to them that those benefits, primarily from dispersed non-developed recreation, can be significantly increased through any reasonable increase in recreation expenditures. OMB has supported Forest Service **efforts** to amend **the** Land and Water Conservation Act so as to permit the charging of fees at less developed recreation sites, and feels that anywhere a Forest Service campground can be shown to pay for itself one should be constructed without delay.

Contrary to popular **belief**, OMB docs attempt to consider the value of longer term **investments** in natural resource management. But program **expenditures** must be justified in one of two ways: (1) **the** program must be shown to be currently economically viable when capital **investments** such as **roads** and facilities are amortized over a reasonable period of time, or (2) the program must be shown to be facing rising real **prices** or **values** such that, although the program may not currently be "profitable," it can be shown that **investments** are needed now to provide a program that will be economically viable in the reasonably near future. In regard to the current debate over below-cost timber sales, for example, OMB has **no** problem with investing in a road network that will produce negative cash flows over the short term but will permit a longer-term positive cash flow once access is in place. On the other hand, OMB feels there are many areas in which further timber investments are clearly not justified, even when supposed multiple use benefits are factored in. OMB officials have pointed out that they do not support getting into long-term unprofitable situations for the sake of objectives such as "community stability" which lack any legislative or executive mandate.

A general view at OMB is that it cannot advocate unprofitable public or private investment. **Despite** the findings of the Assessment, OMB is not convinced that the **Forest** Service State and Private **Forestry** (S&PF) program is using public money wisely in regard to encouraging sound **investments**. In their view, timber simply is not as economically scarce as the Forest Service claims or else investments would pay better than they do. Questions of equitable benefit distribution arise as well. For instance, in

direct assistance programs, are the benefits being distributed appropriately **among** the American people or is this a "public investment for private gain"? To OMB, the answer is doubtful, even considering the effect of a greater timber supply from private **lands** in reducing **consumer** prices for wood **products**.

*Improving the **linkage** between the assessment and the program*

*Possibilities for a greater **reliance** on federal **resources** to **meet** the needs and opportunities identified in the Assessment*

The dichotomy between policy and administration is seldom as clearly defined as former BOH director Dawes once asserted. Although OMB is theoretically not a policy-making institution officials there regularly grapple with such policy questions as "What is the appropriate federal role in meeting national demand for renewable resource goods and services and in promoting investment in resource production on state and private **lands**?" OMB input on such questions is both direct, through recommendations taken up through the Executive Office of the President, and indirect, through the screening and evaluation of Forest Service budget justifications. People at the political levels of OMB may **work** with the Department to determine how agency **efforts** can be made more consistent with the current Administration's policies of reducing the size and scope of the federal bureaucracy (including land and asset ownership) and scaling back on federal spending at the state and local levels.

For other **reasons** as well, this is not the most auspicious point in history to propose a major expansion of federal spending on natural resource management. The urgency of dealing with the budget deficit, with or without Gramm-Rudman, will continue to work against the initiation of new programs or significant real-term increases in spending on existing programs. The necessity of budget cutbacks will require the prioritization of existing programs and the further reduction of programs that cannot be justified as precisely as others. **These** will be programs with the smallest -MEI-Me ratio, i.e., the least marginal loss in **benefits** for the greatest marginal decrease in costs. Without the constraint of Gramm-Rudman a sort of **triage** can be performed, allowing the least **viable** programs to die out while maintaining the most viable programs at more fully **operative** levels.

Policy differences between this Administration and the next notwithstanding, there will be few opportunities in the near future to significantly expand federal resource programs beyond what now exists. Beyond this Administration, there may not be the policy emphasis on the reduction of the federal role in the states, but OMB will still be evaluating budget requests in terms of economy and efficiency and, most likely, in the context of budget deficits at least as large and as urgent as today's. Further along, we may get the deficit more under control, but the opportunities to expand budgets in real terms will remain extremely limited. Current trends for spending on the non-discretionary portion of the federal budget suggest that competition for any newly available budget resources will be intense. Measures to permit a greater reliance on federal lands to meet expanding resource needs will have to pass the same test of economy and efficiency in an increasingly restrictive and competitive budget environment. In planning to best meet the resource demands of the nation, the opportunities to rely even more heavily on federal resources should not be presumed.

Possibilities for a greater reliance on state lands and on industrial and non-industrial private forest lands

There are basically three types of measures that can be taken to encourage investment and more intensive management on state and private forest lands: (1) direct federal assistance such as cost-sharing and forestry incentives, (2) indirect federal assistance such as favorable tax treatment for investments in future forest productivity, and (3) information and technical assistance. As a general rule, OMB does not support either of the first two approaches but, of the two, finds indirect assistance the least objectionable. As noted above, OMB takes a dim view of "public investment for private gain," and it makes little difference whether it is done through increased federal outlays or decreased federal revenue. There is a strong belief in market solutions, that the federal government should not go any further than it already has in favoring one kind of private commercial investment over another.

OMB has always been against the philosophy of direct federal assistance to private forest landowners. The feeling is that if the prospective rate of return for more intensive forest management is not sufficient to encourage private investment, then the federal government should not intervene to boost the rate of return beyond the level at which the market actually

values the products. OMB has attempted for several years running to entirely eliminate the S&PF program from the Forest Service budget. This is due in part to the fundamental inconsistency of S&PF activities with OMB's market solution approach, and in part the fact that the states are collectively running a \$63 billion budget surplus while the federal government is running a \$200+ billion budget deficit. The prevailing attitude is, if it makes sense to the states to subsidize private forest landowners, then let them pay for it themselves.

OMB is only slightly less critical of indirect federal assistance through such measures as favorable tax treatments. The 1982 tax reform bill's reforestation tax credit for non-industrial private landowners was strongly resisted by OMB as an unnecessary and inappropriate reduction of federal revenues. They also favored more recent efforts by the Treasury Department to revoke capital-gains tax treatment for certain industrial and non-industrial private forest management investments such as roads. Interestingly, OMB passively favored tariffs on Canadian lumber imports; to the extent that Canadian subsidization could be shown to have already disturbed the market, tariffs were seen as an acceptable way of restoring a "level playing field."

Recognizing the variety of reasons for outputs from non-industrial private forestlands being perhaps lower than is economically optimal (and showing that their response to state and private forestry initiatives is not always negative), OMB strongly advocates an increased effort to educate landowners about what economic opportunities do exist. OMB's perception is that the landowners' lack of information regarding timber markets and markets for such things as hunting leases and camping permits is, in itself, a market imperfection. So to the extent that outputs from state and private lands can be enhanced by removing such market imperfections, OMB is all in favor. If the future supply and demand situation for timber is expected to cause significant real-term increases in stumpage prices (N.B., the 1984 RPA Assessment Update and the Southern Timber Study) then landowners should be apprised that immediate investments in forest management are likely to yield significantly higher rates of return than current price trends would suggest. If extension foresters could show landowners the financial advantages to more intensive timber management (increasing rates of return, tax advantages for the present and future through tax deferrals and estate planning) officials at OMB predict that a great many more landowners would take notice than now do. If the

Program contained **specific** proposals for improving the education of forest landowners, for instance through a clearinghouse for forest resource financial/economic information or a forum for information exchange, it would likely receive strong support from OMB.

Addressing the Assessment findings by reducing demands for forest resources

The clearest way to actively reduce demand for forest resources is to either find substitutes or achieve greater processing and use efficiencies through technological advances. Demand might also be reduced by changes in consumer tastes. For example, there are indications that, **as** the population ages and becomes more urban-oriented, the demand for certain types of outdoor recreation will grow much more slowly than projected in recent Assessments. Again, it is OMB's assertion that the most efficient and economical federal action is to let the markets, both economic and political, find their own equilibrium. As the costs of raw materials **and** labor have increased, technology has permitted the fabrication of more wood products from fewer trees and fewer man-hours. More substitution is also taking place, although many who generally oppose the cutting of trees are thinking twice about the added energy and pollution costs **to society of alternatives** such as substituting aluminum studs for wooden in housing and commercial construction. These effects are already happening without federal marketplace interventions promoting one commercial enterprise over another.

Such considerations are of direct relevance when looking over the Forest Service **research** program. OMB considers much of the **research** done by the Forest Service to be a public good. A great deal of land and resource management research is needed for managing federal lands, and the usefulness of this **research** to private land management **is** a valuable side benefit. **A** certain amount of wood products **processing** and end-use research also **serves** the public in increasing the efficiency and usefulness of products from small- to **medium-sized** processors who would not otherwise conduct the research themselves. To a considerable extent, lower total cost to a large number of firms distributes **benefits** broadly to the public.

Research that **benefits** a relatively few large firms, such as the major wood products corporations, is more **questionable**, however. Technological advances in such areas as sawmill recovery, reconstituted board prod-

ucts and truss structures benefit the public from a resource use efficiency standpoint, in effect **stretching** the existing supply of raw materials and presumably reducing the competition **for** forest resources between commodity and amenity users. evertheless, **such** research tends to **concentrate** significant commercial **benefits** on a relatively few large processors. To the extent that such research should continue to be conducted by the Forest Service. more should **be** shifted to a cooperative agreement approach wherein the major beneficiaries share in the cost of conducting the research.

Conclusion

With improved economic analysis underpinning the Program alternatives as well as the Assessment. **RPA** can still turn out to be extremely useful to the Forest Service in justifying **its** program funding requests and gaining OMB approval for budget proposals. The Assessment **is** generally well supported, although OMB will probably continue to view **its** demand projections with some skepticism. What will really make the difference to OMB will **be** a more complete and more credible marginal analysis to support the specifics of the Program. showing in each instance that the Forest Service program in question is operating as close as possible to the optimal marginal cost/marginal benefit intersection.

OMB will continue to depend heavily on the market to bring renewable resource supplies from all ownerships more in line with prevailing and projected resource demands. The fundamental values of OMB, economy and efficiency, will continue to be the primary **guidelines** in evaluating federal renewable resource management programs. Such considerations, combined with the need to balance overall budget priorities in an increasingly **restrictive** and competitive budget environment, will severely limit prospects for increasing the federal role in the production of most forest resources. Federal **measures** to increase **outputs** from state and private **lands** should **be** limited to educating landowners so that they can respond to the best available market information without interference from governmental market distortions. Reductions in the demand for most forest resources will come primarily from substitution, enhanced efficiency through technological advances or through **changes** in consumer **tastes**. Much of the **lands** management research conducted by the **Forest** Service can be **considered** a public good, but the responSibility for research with

direct commercial applications will be shifted increasingly to those elements of the private sector to which the benefits accrue most.

The **Forest** Service is generally well regarded at OMB as one of the most competent and effective agencies in the federal government. **Forest** Service programs are popular, and the can-do attitude of Forest Service personnel has permitted the agency to accomplish an increasingly difficult management task despite declining budget **resources**. The RPA provides a workable framework for analytically justifying its programs to OMB's satisfaction, but a shallow and poorly documented agency promotion approach is neither useful nor effective. The RPA process is essentially a continuing and interactive policy analysis process; it does not serve the agency's interests, with OMB or with the **Congressional** appropriations committees, to attempt to force decisions with dire predictions and an incomplete analysis of the available options. Both OMB and the Congress need the collective professional judgment of the **Forest** Service to **best** determine the optimal balance of program funding given not only the **long** term resource management goals of RPA, but current budgetary limitations and any overarching policy considerations. Such difficult decisions must be made with each and every year's appropriations, with or without the interactive policy analysis and professional judgment of the Forest Service. Through **its** structuring of the Program, the Forest Service must decide whether or not it will be an active and useful player in these deliberations. The **RPA** can be, **as** intended by **its** authors, the key to guiding annual **budget** decisions on the basis of integrated, long-term resource management goals, or it **can** continue to decline in **its** usefulness until it is no longer relevant to those decisions.

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Planning Against Analysis: Forest service Implementation of the Resources Planning Act of 1974

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The RPA was needed to legitimize the planning process that the Forest Service had implemented less formally.

- Chief of the Forest Service [1 J]

Planning is not so much a subject for the social scientist as for the theologian.

- Aaron Wildavsky [2]

The Resources Planning Act of 1974 (RPA) mandated one of the nation's most ambitious efforts to incorporate expert knowledge into policy debates. The law requires the Secretary of Agriculture, with the assistance of the Forest Service, to submit to Congress one report every ten years assessing supply and demand for the nation's renewable resources, and another report every five years laying out multiyear program proposals for the agency. The president is to submit to Congress a statement of policy expressing intentions regarding the issues raised. This process has gone through three cycles, designated as the 1975, 1980, and 1985 RPA exercises, and the Forest Service is now preparing for the 1990 exercise. This conference has been convened to evaluate experience with the RPA Program and to recommend any necessary changes in its design or implementation.

This conference is not the first occasion when RPA has been reassessed. Over the years, many suggestions for RPA's improvement have been made, some of them repeatedly. Yet only a very limited number of

these suggestions have produced change in the RPA process. Lest this conference become just another interesting but ineffective exercise, it is important that **the** focus be not just on what to keep and what to change in RPA, but also on **the** organizational and political context that **has** made RPA what it is and will determine which changes are possible. The tendency has been to examine RPA only as an exercise in forestry or economics. But fundamentally, RPA is an exercise in institutional management, and to fully understand and evaluate it, insight in **LO organizational** and political processes is essential.

Social scientists emphasize that legislation is only the **first** and sometimes not the most **important** influence on how a policy is carried out.¹³¹ Organizational and political pressures have a major bearing on the policy's success or failure. Since the Forest **Service** has the greatest role in implementation of RPA, **that** agency's organizational processes and the political forces **that** work upon it are key influences on RPA.

The literature on implementation has focused largely on substantive programs, not examining the performance of government in carrying out the planning and analysis that are also a part of its responsibilities. Especially in recent decades, government agencies have been assigned such duties as benefit-cost analysis, regulatory review, environmental impact assessment, and program budgeting. Here, too, government can succeed or fail, but assessing success or failure can be somewhat more complicated than with other government tasks because the product is not as identifiable as a good or service.

Planning and analysis tend to have aspirations that are not always compatible.¹⁴ This paper suggests that Forest Service implementation of RPA as a national planning exercise has proved inhospitable to RPA's potential as an exercise in policy analysis. Analysis is the effort to understand something by separating it into its constituent parts. A common model for the analysis of policies is to define a problem, select criteria for evaluating it, layout alternatives, predict and value outcomes, and recommend a course of action.¹⁵ Of course, the field of policy analysis encompasses considerable diversity. Some analyses are broad-ranging research efforts; others are narrowly focused and short term. But the general model of policy analysis has been one of striving for understanding of the present through consideration of policies **other** than **those** currently in place. This aspiration can be seen in the language of the Resources Planning Act and in the rhetoric that has accompanied its implementation. Not all policy

analysts live up to their ideal; too often they have less impact on institutions than these institutions have upon them, so that their analysis only echoes the status quo and discourages efforts to consider **its** alternatives. But the policy analysis ideal remains.

A plan, on the other hand, is a method or scheme of action. **I**he emphasis is on decision, not understanding. Like policy analysis, the field of planning encompasses considerable diversity. For example, many urban planners have adopted a more flexible, focused approach than that practiced by federal land management agencies. **T**he fleXible, focused approach can also be found in **parts** of the Forest Service, but at the agency's national level, the more characteristic type is the comprehensive planning conducted under the Resources Planning Act. In other organizations, comprehensive planning has rarely lived up to **its** name. To be truly comprehensive is virtually impossible, and many plans, once formalized, are not heeded, with decisions being made more informally.¹⁶¹

Organizational and political context

The Forest Service is deeply marked both by **its** internal structure and culture and by its external political context.¹⁷¹ The Forest Service leadership exerts considerable authority, and throughout the agency's history, it has initiated large-scale nationwide planning efforts. Long before 1905, when the **F**orest Service acquired the national forests and **its** current name, it was publishing assessments of timber supply and demand. **I**he Copeland Report (1933) emphasized the variety of resources, including not only timber and range, but recreation, wildlife, and watersheds.¹⁸¹ **T**he leadership increased such efforts in the 1970s, convinced of the value of considering the interaction of different resources, linking current program outputs to **assessments** of long term supply and demand for them, and examining future choices in terms of alternatives. The Resources Planning Act of **1974** pulled together and institutionalized many earlier efforts. The internal change was not great; the chief at the time observed that the **RPA** legislation legitimized a process that the agency had already implemented less formally (see epigraph). In recent years, the leadership has channeled considerable resources into the RPA effort. It has singled out the RPA staff in Washington, D.C. for frequent **praise**, and by granting promotions and favorable assignments to veterans of this staff, has increased that staWs prestige and power within the agency.

Within the Forest Service, informal culture is also an important influence. Many agency personnel share a distaste for partisan politics, and a faith in science, technical skill, and comprehensive planning. The RPA process resonates with these values, with **its** emphasis that Program recommendations should be based not on presidential or congressional initiative, but rather on a Forest Service-led planning effort that begins with an assessment of **resources** and their uses and that bases the choice on a comparison among alternatives.

These agency values have always been somewhat general in their implications for policy, leaving room for other organizational and **political** influences. Forest Service cultural faith in technical knowledge has not always recognized the limits that stem from inadequate knowledge or from the inherently political character of some questions. As is characteristic of an organization with such high morale and internal cohesion, **Forest** Service employees are proud of what they **do** and tend not to see much point in exploring proposals that would reduce the agency's responsibilities or **its** size.^{19J}

Yet nothing is unanimous in the Forest Service. The agency has significant occupational diversity, with some occupations having subcultures quite distinct from the agencywide culture. Some Forest Service economists and planners, and some line managers, are unhappy with how RPA has been implemented and marketed, seeing it as having been taken over by peers who are more politicians than analysts, and by accountants who do not understand what analysis can contribute.

Forest Service implementation of RPA is also importantly affected by the political context. In Gifford Pinchot's day, presidents had relatively little to do with the appropriations process. Pinchot had relatively free rein in dealing with Congress in each appropriations year, and did not see the need for detailed multiyear spending proposals. However, **Congress** was more involved in specific funding questions than Pinchot liked, and to establish a more stable and unconstrained funding base, he secured, and then lost, authority for the Forest Service to keep all of the **revenues** received in its operations. This step would have made the agency into a government corporation that would be far less dependent on annual appropriations than it turned out to be.^{110I}

A unified annual federal budget was required by law after 1921, and as newer agencies joined in the competition for funds, presidential **admini-**strations and their budget examiners began to challenge the **traditional**

freedom of the Forest Service in relaying **its** funding requests to Congress. As a result, the Forest Service leadership began a search that continues to this day for means to communicate budget **needs** to Congress, free of the constraints that accompany preparation of the president's annual budget. The hope was to strengthen the case for long-term investments and thus be able to compete in the **appropriations** process with programs whose **benefits** are more immediate or dramatic. The Forest Service and other **agencies** **sought** ways to marshal technical arguments on their behalf. One approach was to document the effects of past spending patterns. **For example**, one influential 1949 report showed that postwar spending reductions had led to a falloff in timber sale offerings and an increase in fire losses.¹¹¹

Another, more frequent strategy was to propose multiyear programs for future spending. The out-years in these proposals were developed outside of the annual budget process but would then be cited when the budget year came around. Multiyear spending proposals were a part of the Copeland report (933), Operation Outdoors (957), Program for the National **Forests (1959)**, Development Program for the National Forests 0% O, and Environmental Program **for the Future (1974)**¹¹². What was new in the Resources Planning Act was that the Forest Service leadership now had more authority to state **its** own budget preferences directly to Congress and the public, unhindered by the budgetary review of presidential administrations. In this privilege the Forest Service is almost unique; the legislation would probably have been vetoed had it not been for the unusual circumstances surrounding the resignation and pardon of **President Nixon**.¹¹³

The application of economic analysis to Forest Service budget and policy questions also had important origins in the external political context, emerging in the late 1960s when planning-programming-budgeting systems (PPBS) were required throughout the federal government. When the requirement was dropped in 1971 the Forest Service carried on the analyses, although, because the agency was now in total control, PPBS' **stance** for trimming or changing programs was replaced by a more affirmative attitude.

RPA implementation so far

The aspirations of the Resources Planning Act were and remain cn-

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tirely legitimate. Debates on Forest Service activities can benefit from thinking that ranges across all resources, looks far into the future, and considers alternatives. As implemented, however, RPA has been disappointing in its analytical returns. The reasons are several and complex, but overall it would seem that the pressures on RPA to serve as a comprehensive plan for the Forest Service have foreshortened the process, discouraging thorough and penetrating analysis.

One difficulty with RPA is inherent in its being a single integrated plan that is periodically revised. Claims that RPA is an iterative process are true in only the most limited sense. At best, changes in RPA methods come every five years, in accordance with the program development cycle. However, true flexibility would allow rethinking to occur much more often. If a well-managed corporation discovers that its strategic plan is faulty, it is likely to change the plan immediately.[14] There is no inherent reason why clear thinking about the Forest Service will best take place in a concentrated effort once every five years. Studies of decision-making processes in many types of organizations have emphasized that there is rationality in a more flexible process that concentrates analytical effort on particular topics when needed, revising decisions if and as necessary. The RPA process has tended to discourage emergence of a more rolling process for decision. For example, when in 1983 the regional plans called for in the RPA regulations began to reassess the 1980 Recommended Program, the leadership explicitly forbade them to do so. The leadership's desire not to disavow an existing RPA recommended program has sometimes led to spend some called-for appropriations despite the fact that the passage of time has rendered them unnecessary.

RPA's emphasis on the long-term also has had its price. A long time-horizon and the projection of future plans illuminate some questions, but can distract from others. The long rotation necessary to grow mature trees is not as characteristic of many other resource uses, and most National Forests do not have a major commercial timber sales program. Some of the key issues facing the Forest Service have less to do with the far future than with the present. Thoughtful scrutiny of present policies should be the starting point for any real analysis and planning. The tendency in RPA has been to plan now for all future needs, with virtually no conception of what decisions are best left for the next year, the next decade, or the next generation. 'The task of planning should be to make currently needed decisions, not to lock in future decisions.

The tendency of RPA's comprehensive approach to spread analytical effort evenly has had the drawback that some topics have received too little scrutiny and some too much. An aspiration of comprehensive planning is to gather all relevant physical and socioeconomic data and to consider an exhaustive range of possibilities. However, studies of the implementation of actual planning efforts in diverse settings have shown that rarely is the data thus developed sufficient for decision-making. In fact, comprehensiveness can be a barrier to rational analysis when it discourages information-gathering and thought from concentrating on those topics that most need attention. It is important to be systematic, but a truly systematic approach recognizes that some problems require more attention than others.

More focused forest Service analytical efforts that have been done outside RPA have had a thoughtfulness and penetration that generally has been lacking in RPA. Examples include the Timber Harvest Scheduling Issues Study (1976), the various reports done as a part of the National Productivity Improvement Study (1982-84), the National Administrative Review (1984), and The South's fourth Forest (1988). The monumental effort that has gone into the three successive RPA exercises almost certainly would have produced greater returns if it had been divided into more frequent and specific policy analyses such as these.

RPA's emphasis on physical-biological and socioeconomic data also has tended to limit the analyses. The basis for spending proposals is thin, and after each RPA exercise, the Forest Service has repeatedly met **some targets** despite having received less funding than the RPA Program had **estimated** that these targets would require.¹¹⁵¹ Much of the data found in the **Assessment** is on natural **resource** supply and demand; little information is presented on Forest Service programs themselves. One would never know from scrutinizing the RPA documents that much of the **Forest Service** budget goes not to on-the-ground management but to planning and other overhead functions. Yet the **Resources Planning Act** specifically requires that RPA **analyses** and recommendations cover staff and spending.

The silences in RPA have kept the exercise from contributing to public discussion of some key policy issues faced by the Forest Service. For example, none of the RPA **exercises** to date has directly addressed the issue of below-cost timber sales, a **topic** which has **steadily** become more controversial. The 1980 RPA Program document, for example, set **these** sales aside from analysis as being an "irrevocable commitment."¹¹⁶¹ Not

one of the RPA exercises has discussed opportunities and issues surrounding possible administrative economics in the Forest Service, despite the fact that such economics have actually been adopted in recent years. There was no hint in RPA documents at the unease felt by many Forest Service personnel that the large spending increases of the 1970s were posing difficulties.¹¹⁷¹ The 1985 RPA did not draw upon or mention several recent studies—known outside the agency—of needed administrative economics. One of the RPA exercises has directly examined the obvious question of how Forest Service spending and personnel should be apportioned among the forest Service branches for Research, State and Private Forestry, and National Forests. In fact, nowhere in the 1975, 1980, or 1985 RPA exercises has the Forest Service leadership's preferred recommendation envisioned a significant cut in budget or staff for any activity, region, or administrative unit. RPA advocates blamed the administration for the fact that the 1985 Recommended Program's low bound contemplated levels lower in some cases than those found in any of the alternatives. However, this shortfall was also an indictment of the alternatives themselves. For the analysis to be complete, it should have included an alternative that considered such reductions in spending. After the final RPA documents were released, even critics of the low bound proposals found them useful for analysis in a way that the previous alternatives had not been.¹¹⁸¹

Advocates of RPA as currently implemented speak as if policy recommendations can be deduced from the physical-biological and socioeconomic data of the RPA assessment. Such a view does not reckon with the extent to which policy choices require value choices that data alone cannot supply. Contrary to frequent claims that the RPA recommended program should be "based on" the assessment, this connection can only be a rather general one which a wide range of other possible sets of recommendations could also satisfy. For example, many of the published parts of RPA make it seem that the future increases in demand for timber found by the 1975 and 1980 Assessments and the 1985 update imply the need for more timber sales and hence more timber growth from the National Forests. But this recommendation is not the only one deducible from these Assessment data. An internal Forest Service review team that critiqued the 1985 RPA exercise observed: "an alternative to increased timber growing productivity is to let real timber prices rise in the future as a result of greater increases in demand than supply." There is nothing in the RPA Assessment that

makes this alternative any less responsive to the assessment's findings than the alternative of increasing timber growing productivity.

Another distraction from policy analysis has been RPA's fixation on budget choices. When policy disagreements are addressed in a budgeting framework, the effort is to please everyone—often by increasing budgets across the board. Sometimes a budget increase is the appropriate solution. But when priorities must be set, simply increasing everyone's budget amounts to throwing money at a problem. Budgeting poses many but not all of the key policy issues. Although resources interact, they are not so tightly interwoven that budgetarily, they must rise or fall together. Increased timber spending implies the need for more fisheries spending, but increased fisheries spending does not as directly imply a need for more timber spending. Some resources have an inverse relationship, such as conflicts between wilderness and timber, or grazing and wildlife. Whether to remove old growth is more a policy question than a budget question; in fact, such removal involves irreversibilities that cannot simply be mitigated by spending more for recreation or wildlife.

In the aftermath of the 1980 and 1985 RPA exercises, RPA advocates have sought to have the budget figures in the Recommended Program stated as a point estimate rather than as a range that includes an upper and lower bound. In the fuss it has been forgotten that the 1975 RPA Recommended Program, too, was expressed as a range—but one whose low bound was substantially higher than existing Forest Service spending. The objection now is that presidential administrations in the 1980 and 1985 RPA exercises have introduced a low bound that contemplates no increase in Forest Service spending. The appropriate size of the range is open to debate, but having a range makes good sense. The idea of making a point estimate so far into the future flies in the face of the well-understood weaknesses of long-term forecasting.

RPA analyses so far have avoided options that would require a change in law, despite the fact that many of the most interesting and important changes in Forest Service activities would require such a change. There are no legal barriers to carrying out such an analysis; had there been such a barrier, many laws regarding Forest Service responsibilities would not exist, because the agency proposed them and supplied supporting analysis. In fact, the agency may even be required to consider some options that would involve a change in law. The regulations for implementing the National Environmental Policy Act—a law which the Forest Service has

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invoked in designating the RPA Program document as an environmental impact statement—requires that at least one nonstructural alternative be considered; this provision arguably **would** require an RPA alternative involving no major road construction or timber removals.^{120J}

Another barrier to analysis in the RPA as so far conducted has been the insistence **that** each alternative include policy questions that are present in several regions. The problem is that, because of the diversity of the National Forests, **the** key issue in a region may not be present in many, or any other regions. If they were unevenly enough spread, RPA could completely miss the leading issues in every region. In fact, one of the biggest policy questions facing the National Forests today is whether their management should vary more from one region to another. For example, should timber sales be reduced in **the** Rockies and Southwest where they do not pay for themselves in direct revenues received? Should recreation be made the dominant use of the eastern National Forests? Should the existing allocation of dollars and personnel among regions **be** altered? With rare exceptions, RPA analyses have avoided such **questions**.

On some policy questions, RPA has been not obstructive, but simply irrelevant; analysis has proceeded **outside** the RPA framework. The nationwide character of the RPA alternative" hampers **efforts** to mix and match policy options on an issue-by-issue basis. A Forest Service internal team that was convened to critique the 1985 RPA process warned that the alternatives

defined a rather narrow range of **choices** that quickly **seemed** out of date and unresponsive in an environment of rapidly changing budget and policy issues. 'Inc alternatives often **did** not **present** any significant contrast in direction or outlook to bring the agency's program into focus or **to** stimulate discussion of possible re-directions.

In the last decade, most of the important policy changes that have been adopted in the National Forests received little prior discussion in the RPA process. The replacement of **the** old" 10 a.m. policy" of fire protection with a more selective and thrifty approach in the late 1970s was greatly aided by **studies** conducted in the agency's Office of Policy Analysis. **Emerging** changes in management practices regarding herbicides and sensitive wild-life species were not discussed in the RPA process; in fact, the RPA analyses assumed rather unrealistically that no change would occur. The past decade's dramatic increase in use of volunteers in managing the National

Forests has never been addressed in RPA. Although wilderness questions are **discussed** in the RPA documents, much of the analysis and political strategy **that** helped produce the congressional compromises of the 1980s stemmed from more focused efforts starting with **the** various **RARE** (roadless area review and evaluation) efforts,

Many unresolved National Forest policy issues that are currently debated have also received little attention in RPA. **For** example, timber sales that cost more to prepare and administer than the revenues they bring in have received little analysis there, even though presidential budgeters have questioned them for years as have environmental critics and members of Congress. RPA documents have not examined the gains in efficiency and environmental quality that could result from a reduction in timber sales and roadbuilding in some National Forests. RPA analyses have explored in depth neither the industry proposal to depart from even flow in timber harvest scheduling, nor the environmental groups' proposal to preserve old **growth** forests; these issues have received greater analysis at the National Forest level, where some managers have chosen to **address** them in land management plans. Major proposals in **the** 1980s to sell some National Forestland and to obtain some National Forestland by exchange with other agencies were hotly debated in the 1980s, but have received no mention in any RPA documents. Debates over **the** fees charged for grazing rights on **National Forest** lands have never been **addressed** in the RPA process. The **ongoing** debate over the proper role of **Forest Service** employees in law enforcement has not been addressed. Changes in **forest** taxation **that** could dramatically alter practices on private and public timberlands have also received no discussion in the RPA process.¹²¹¹

It is no coincidence that RPA sidesteps most of the **touchiest** policy issues faced by the Forest Service. Strong organizational and political pressures discourage the examination of some questions and the emergence of some conclusions. In fact, the very notion that RPA should examine policy **issues** has never gained broad acceptance in **the Forest Service**. When the General Accounting Office and others criticized the 1975 RPA exercise for lacking discussion of policy issues, a set of policy issues was examined as a part of the 1980 RPA exercise.¹²²¹ Several quite novel issues were analyzed, including one to make recreation the **dominant** use of the eastern **National Forests**, and one to make **the Forest Service** into a government corporation. The studies proved controversial **internally**, and ultimately received very little mention in the 1980 RPA docu-

ments. An internal Forest Service review team that was formed to critique the 1980 RPA concluded flatly that "the treatment of policy issues in the 1980 program does not respond to what GAO apparently intended in its recommendation that there be a discussion of issues."¹²³¹ **Nevertheless**, the 1985 RPA exercise did not have an issues effort, and was criticized for this omission by outside observers as well as internally. The 1990 RPA exercise will examine several options not covered in the 1985 exercise, among them **harvesting** only economic timber, establishing **fees** for recreational users, and not entering any areas still unroaded when the current forest **plans** have been implemented after the next 10-15 years. Otherwise, however, the 1990 RPA apparently will not have anything approaching, let alone exceeding, the issues effort of the 1980 RPA.

Despite official Forest Service enthusiasm for the RPA process, its weaknesses as policy analysis are well recognized within the **agency**. In fact, one survey found that Forest Service employees place less faith in RPA analyses than **does** the general public.¹²⁴¹ Forest Service economists and other **analysts** can be particularly harsh in their appraisals of RPA. One **lament** that "a lot of good policy analysis was done that didn't see the light of day." Internal Forest Service evaluations have in some **cases** been more severe than criticisms from outside observers. For example, one **Forest** Service review team that was created to evaluate the 1980 RPA found "almost unanimous agreement by respondents that input data was not accurate, data was arbitrarily changed, valid updates to data were not known, and control over data was lost during processing."¹²⁵¹

However, Forest Service self-criticism on RPA has generally not been shared with **outsiders**, whether experts, Congress, or the public. In unusually strong language, the 1980 Society of American **Foresters** task force on the RPA process lamented:

Executive agency tradition, it appears, calls for downplaying technical data and methodological problems and presenting **results** in the best light possible. **As** a result many of the **difficulties**, anomalies, and problems are simply not acknowledged or discussed in the **Assessment** and Program documents even though they are well known to **Forest** Service analysts.¹²⁶¹

The task force warned that these deficiencies in RPA were a "critical matter for congressional and administrative review."

The **Forest Service** leadership has held to its version of the RPA **process**

in part as a means to resist some of the policy preferences of presidential administrations. This resistance is understandable to the extent that it helps maintain the agency's bipartisan support on Capitol Hill. But the Forest Service may also be ignoring useful criticisms of the RPA process. A 1985 memorandum to the chief from Assistant Secretary John Crowell contained some criticisms that were not so different from those being made within the Forest Service:

The document is unrecognizable when compared with the requirements prescribed for the Program by Section 4 of RPA.... Over a year ago, I had expressed to you my concerns that the entire RPA process was being unduly complicated, was unnecessarily expensive, and was leading to a product which would be virtually useless. That view is confirmed by the document which is now before us.¹²⁷¹

Limited expert scrutiny of the RPA process

Surprisingly, the scrutiny of RPA by outsiders has frequently been less penetrating than internal - and unpublicized - Forest Service analyses. Forest Service discouragement of external criticism of RPA has something to do with the general lack of far-reaching outside evaluations. When the agency sponsored evaluations of the 1975 RPA effort by ten schools of forestry, the conclusions were generally so negative that the Forest Service has not continued the arrangement. There have been no protests from the schools of forestry, whose relief was almost audible at not having to be at loggerheads with the Forest Service leadership over RPA. Forest Service-sponsored reviews of the 1980 and 1985 RPA exercises have been less extensive and more sympathetic than those for the 1975 exercise.¹²⁸¹

Not that evaluations of RPA must be sponsored by the Forest Service; it is remarkable how few scholars, independent of Forest Service support, have chosen to explore RPA data and analyses in detail. Few academic economists, even those in the forestry schools, have assessed the economic arguments made in RPA. Economists lean toward research output more elegant and less practical than will come from commenting on an agency's exercise in planning and analysis. Many economists, especially those in departments of economics or agricultural economics, are entirely unaware of the RPA process, and some that are aware of it profess to regard RPA analyses as being too poorly conceived to be worth comment.

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Organizations, too, have generally not subjected the RPA process to continuous expert review. Industry and environmental groups that have followed RPA have not attempted to evaluate RPA as a whole, but rather have selectively attacked or defended the **parts** that **most** deeply affect their own policy preferences. Even organizations whose charter gives them greater interest in the **entire** RPA process have not kept watch continuously and in depth. It was typical that although a GAO report warned that the 1980 RPA exercise included too little examination of policy issues to satisfy the requirements of the Resources Planning Act, no similar GAO report was conducted on the 1985 exercise - even though that exercise had far less discussion of issues. One of the most penetrating evaluations of RPA economic analyses **was** done under contract to a Senate committee regarding the **1980 RPA** exercise, but the evaluation **was** not followed up regarding the **1985 RPA** exercise.¹²⁹¹ Although the Society of American Foresters formed task forces to evaluate the 1980 and 1985 RPA exercises, not a single member of the 1980 task force was reappointed to the **1985 task** force. It is incredible that despite a galaxy of talent available in the schools of forestry and two lengthy task force efforts, the Society of American Foresters concluded in 1987 that Forest Service computer modeling used for preparing the Program report has not been validated by any reviewers outside the agency. The SAF task force that was formed to evaluate the **1985 RPA** exercise found that documentation had improved **little** in the intervening years:

It is not possible to provide any **specific** criticism of **ADVE: 'I'**, for the task force is unaware of anyone outside of the **Forest Service** who is knowledgeable about the quality of the data used in **ADVE: 'I'**, the internal workings of the program packages, and the assumptions that underlie it.¹³⁰¹

Although the Forest Service benefits in the short run from the relative lack of outside scrutiny regarding its implementation of RPA, in the long run the agency is bound to suffer. RPA's success in Congress rests on its credibility as a technically accurate portrayal of the data and issues. This credibility has been weakened by RPA's failure to gain acceptance from expert observers. Congressional support for the RPA process has steadily declined since the law was passed. It is true that in **1980** a Senate subcommittee **issued** a "white paper" praising **Forest Service** performance on RPA and, that Congress as a whole subsequently amended the **president's 1980 RPA** statement of policy in a way that was **favorable** to the agency.

However this outcome was less indicative of a groundswell of support than of the presence on the subcommittee staff at that time of two Forest Service employees who helped prepare the white paper and also may have helped draft the amended statement of policy.¹³¹ Probably a better indication of congressional sentiment today is that no member of Congress tried to amend the 1985 RPA statement of policy, despite the fact that it was less favorable to the Forest Service than the 1980 statement of policy had been that was subsequently amended. Another indication of congressional disillusionment was that in 1987 and 1988 for the first time, appropriations language limited to \$500,000 the funds available to the Forest Service for its Washington office RPA staff.

Conclusion

Has the Forest Service succeeded or failed at implementing the Resources Planning Act? To ask that question is to realize the special problems of implementing planning and analysis. Planning and analysis are not a traditional good or service, but rather a procedure for addressing questions of public policy and management. Implementing them involves a great deal of subjectivity, and it is not always easy to **say** what is a success and what is a failure. Reasonable people can differ on the verdict. Certainly there are people - and not just in the Forest Service - who regard RPA so far as a resounding success, or at least as having considerably more positive than negative **aspects**. But there are others - some of them in the Forest Service - who are disappointed and frustrated with the RPA process.

The RPA process has made **some** clearly positive contributions to public debates concerning the Forest Service. It has improved our knowledge of resource supply and demand, the costs and **results** of program actions, and the interactions and long-run implications of resource **decisions**. But this paper **suggests** that the RPA's positive impact has been hampered because **its** planning aspects have too often overwhelmed its analytical **aspects**. RPA efforts have missed some opportunities to make an analytical contribution, and sometimes discouraged thoughtful analysis, obscuring the full range of choices available. RPA's quest for comprehensiveness, which produces quite elegant results in some cases, on balance has **discouraged** the rational discussion that it was meant to promote.

Any consideration of what to do with the national forests must examine not only biological and economic data, but also social and political

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considerations. It is a mistake to create a dichotomy between recommendations that are said to be factually based and those said to be politically inspired. All recommendations have a political dimension; those that claim not to usually have one hidden somewhere. **Although RPA** is presented as a neutral **scientific** bulwark against political influences, they still exist in it. An issue more fundamental for **RPA** than how to respond to a situation of increased demand is rather, what do the American people want from the National **Forests** and from other activities of the **Forest Service**?

The power of unconstrained analysis can be seen in experience with the Resources Conservation Act of 1977 (RCA), which established for the nation's soil conservation **programs** a planning and analysis exercise similar in theory to RPA.¹³²¹ At the **outset**, the **RCA** process was the captive of the Soil Conservation Service. However, unlike the Forest Service, the Soil Conservation Service was unable to maintain its hold; protest from other agencies and from congressional committees opened up the **process**.

Of all the analyses done for RCA found their way into the official **documents** but in contrast to the RPA experience, these analyses were not silenced, gaining wide influence and helping produce in the farm bill of 1985 such major innovations as the conservation reserve program, the sodbuster and swampbuster provisions, and conservation compliance. The Soil Conservation Service has a major role in **these** new **programs** - programs that would hardly have been considered if that agency had been allowed to dominate RCA as the Forest Service has dominated RPA.

The RPA process needs to be retooled; a better balance between planning and analysis is needed. To the extent that the Resources **Planning** Act itself is a barrier to this effort, then amendment or even repeal would be indicated.¹³³¹ Some of the pro-spending language in that law is a bit embarrassing in the current period of budgetary restraint. But virtually all the needed improvements can be made within the framework of the existing law. Much more attention should be given to policy issues; some that have not yet been addressed are mentioned above. Greater humility is needed in recognizing the difficulties of forecasting the future and laying out specific long-range plans. More effort needs to go into drawing lessons from the experience of current and past policies; a useful model is the **1949** Forest Service study of the implications of past **funding** trends.

Budget emphasis needs to be rethought. There is no harm in **laying** out how the Forest Service would spend greatly increased appropriations, but with the budget now well over \$2 billion, it is not unreasonable to expect

from RPA more guidance on how to spend more effectively the existing level of funding. RPA is unlikely ever to end the fluctuations and near-term perspective in Forest Service appropriations that are a common feature of democratic politics. If the Forest Service **finds** itself unable to live with the current funding arrangement, serious consideration should be paid to proposing a self-supporting status for the agency such as that **desired** by Gifford Pinchot; a start toward analyzing the question was made in the policy issue effort of the 1980 RPA exercise.

Forest Service implementation of the Resources Planning **Act** has generally protected the status quo. Within any organization, the effort to **establish** priorities among various activities faces stubborn resistance. Past writings on implementation have **stressed** the importance of adapting a policy to political **circumstances**. The **present** case, however, is a vivid reminder that, when planning and analysis are what is being **implemented**, adapting to political **circumstances** can actually constrain public debate.

The Forest Service has not discharged **its** mandate to implement the **Resources** Planning Act as an unfettered inquiry into the choices it faces. The agency has long prided **itself** on being in the eye of the political storm, mediating among **pressures** from all sides. However, in **its** implementation of RPA, the Forest Service has **often** seemed just another claimant for more spending; the Treasury is treated as an inexhaustible **resource**, and analysis is used mainly as a tool for advocacy. The Forest Service **needs** to be reminded that RPA is a public trust. At heart, the law's purpose is not to **benefit** the Forest Service, but to aid public **discussion** about the Forest Service. Forest service obligations to foster a no-holds-barred debate about **its** responsibilities must override any desire to promote a particular set of policies. Certainly the Forest Service leadership should state the case for **its** preferred recommendations; but it must not allow the **suppression** of policy options that are unpopular in the agency or with **outside** supporters.

The interests of the Forest Service would not be harmed by a more probing, unconstrained RPA process. Studying a **policy** option is not the same **as** adopting it. Support for most existing Forest Service policies and **spending** patterns is strong enough to survive the analysis of their alternatives. **And** some **needed changes** in Forest Service responsibilities will always initially be **regarded** as heretical within the agency; many policies now widely accepted in the Forest Service were initially favored **there** only by a beleaguered minority. This minority needs nourishment from an effort like RPA and the scrutiny from outside experts that should go along with

the process.

Past experience with RPA is not a promising omen for significant change. An original theory behind RPA was that each new cycle would learn from the previous ones. Unfortunately, the record of improvement is mixed. The **good parts** of one cycle frequently are not carried over into the next one, and later RPA cycles have repeated some earlier mistakes and committed new ones. **Efforts** to strengthen the analytical aspects of RPA are unlikely to succeed so long as they conflict with the organizational **and** political context.

But disappointment with **Forest** Service implementation of RPA is quite consistent with admiration for other **aspects** of the **Forest** Service. I am convinced that the behavior of the Forest Service in this **case** is not typical of **its** behavior in other activities. If any organization is capable of the self-improvement called for here, it is the **Forest** Service. The **stakes** have never been higher.

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2. Aaron Wildavsky, "If Planning is Everything, Maybe it's **Nothing**," *Policy Sciences* 4 (1973): 153.
3. For a classic **account** on implementation, along with a **detailed** bibliography of more recent works, **see** Jeffrey **Pressman** and Aaron Wildavsky, *Implementation* (Berkeley, CA: University of California **Press**, 3d ed., 1983).
4. For a useful comparison, **see**: Duncan McRae **and** **Rachelle** Alterman, "Planning and Policy **Analysis**: Converging or Diverging **Trends**?" *Journal of the American Planning Association*, vol. 49, no. 2 (Spring 1983): 20X-215.
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8. The Copeland report was printed as a congressional document: U.S. Senate, 73rd Congress, 1st Session, *A National Plan for American Forestry* (2 vols., 1933), Sen. Doc. 12.

9. A report prepared for the Forest Service leadership in the late 1970s warned that many personnel saw planning and management, and even the agency's mission, as being the "justification of a budget appropriation in an attempt to get top dollar rather than the true purpose or proper management of the land and resources." Memorandum from Deputy Chief for the National Forest System to Washington Office staff, "Forest Service Management Model," (April 6, 1977), p. 3.

10. See E. Louise Peffer, *The Closing of the Public Domain: Disposal and Reservation Policies, 1900-1950* (Stanford, CA: Stanford University Press, 1951), ch. 5.

11. The study warned that "the appropriation level has not been sufficient to handle the workloads involved in the protection and management of the values produced on the national forests." IForest Service, USDA, National Forest Budget Study (July 29, 1949) p. 211. This study based its figures on the Forest Service workload measurement and planning system. Adopted in 1932, this system survived for years after it ceased to be very useful for internal management. The system survived in part because, as in this early case, the numbers that it generated could be cited in congressional appropriations debates to show a relation between funding requests and promised results.

12. The Copeland report included spending proposals for the following twenty years. Operation Outdoors included 5-year construction proposals. A Program for the National **Forests** (1959) laid out projects and spending for four decades, with particular detail— including breakdowns by state— on the first dozen years. In every fiscal year from **1961** to **1967**, the Forest Service referred to the targets in proposing its budget to the Agriculture Department and the president. A participant recalls that "when **President Kennedy** took **office** in **1961**, the **Forest Service** dusted off the '59 program, revising, updating and shortening it." The program "pointedly made no reference to **its** predecessor." [Edward C. Craft, "Congress and the **Forest Service**, 1950-1962," Interviewed by Amelia Fry (sponsored by Resources for the Future), Regional Oral History **Office**, University of California, 1975, p. 16, part 1.1 The final version of "Environmental Program for the Future," (draft, 1974) was never completed because the first RPA exercise had begun.

13. For an early account of the **circumstances** surrounding President Ford's signing of the Resources Planning Act, see: Christopher K. Leman, "Resource Assessment and Program Development: An Evaluation of Forest Service Experience Under the **Resources** Planning Act, with Lessons for Other Natural **Resources** Agencies." Discussion Paper Series, Office of Policy Analysis, U.S. Department of the Interior (August 1980), p: 7.

14. For a classic discussion of corporate planning, see George Steiner, *Top Management Planning* (New York: MacMillan, **1969**), pp, 17- 18.

15. Ross W. Gorte, "The **Forest Service's** 1980 RPA Program: Comparison with Accomplishment," Congressional **Research Service**, **Report** no. **86-111 R** (September 22, **1986**).

16. A 1980 report by the author observed: "Internal analyses showed that in some regions the Forest Service is in effect subsidizing timber producers. Yet the RPA public reports covered up this fact with questionable assumptions and methods. It was left to the Natural **Resources** Defense Council to document the subsidies. By not facing such issues, RPA needlessly strengthens the hand of **critics** of the **Forest Service**." Leman, "Resource Assessment and Program Development," p. 1031.

17. In interviews with the author, a former deputy chief recalls that "we were having real operational problems" in spending the money, and a former associate chief says that the years of increasing **budgets** "had led to some poor management practices and substantial waste... The **Forest Service** had **lost its** trim look."

18. Society of American Foresters, Renewable Resources Planning Act Task Force, "Special **Report: Comments** on the Recommended Forest and Rangeland Renewable Resources Planning Act Program, 1985-2030" (Washington. 1987).

19. RPA efforts have not been consistent on this point. The 1985 Recommended Program proposes recreational user fees that would require a change in legislation.

20. Following NEPA has also introduced some complications that lengthen the RPA program document and make it more difficult to understand. A **Forest Service** review team formed to critique the 1985 RPA effort warned that "following NEPA standards may have discouraged rather than facilitated public understanding and participation in the RPA process," ["Critique of the 1985 RPA Process"]

21. In view of these **constraints** in the RPA analyses, it is interesting that the **Forest Service** leadership has fought the **efforts** of presidential administrations to constrain the levels of budget and personnel for the out-years of the RPA recommended Program. Budgetary and personnel limitations are probably a firmer fixture in today's federal scene than some of the "irrevocable" policy constraints that have been introduced into the RPA analyses.

22. IJ. S. General Accounting Office, *How to Improve U.S. Forest Service Reports on Forest Resources*. PAD-77-29 (977).

23. "RPA Critique," 10 **parts**, (1980). Emphasis in original.

24. Ben W. Twight and Fremont J. Lyden, "The Effectiveness of Public Involvement in Goal and Program Analysis Required by the Resources Planning Act." Report to the Forest Service, Research Grant No. 13-1136; and **First** Supplement to the above report. Two of the Forest Service study teams that were formed to evaluate the 1985 RPA also warned that many employees were disillusioned with RPA ["RPA Critique"].

25. "RPA Critique." 1980. One analyst recalls, "That was an unfair criticism-it was part of the guerilla warfare **against** those of us **who** wanted RPA to be done right" However accurate was the self-criticism contained in the internal report, it obviously contrasted with **Forest Service** defense of RPA at the same time in **its** negotiations with the administration and several months later when Congress endorsed the effort.

26. Society of **American** Foresters, "The RPA Process- 1980, **Report** of the Task Force on RPA Implementation" (April 1981), p. 2.

27. "RPA Recommended Program," memorandum from Assistant Sec-

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retary John Crowell to Chid Max Peterson Qanuary 7, 1985), p. 2.

28. More recent Forest Service-sponsored overviews of RPA include: U. S. Forest Service, *A Citizen's Guide to the Forest and Rangeland Renewable Resources Planning Act*. FS-365; Charles E. Hewell and Thomas E. Hamilton, *Forests in Demand: Conflicts and Solwions* (Boston: Auburn House, 1982); Gerald Stairs and Thomas E. Hamilton, cds., *The R/A Process: Moving Along the Learning Curve*, Center for Resource and Environmental Policy Research, School of Forestry and Environmental Studies, Duke University, (Durham. NC, 1982); the report of the first "Belmont House Conference" convened by the Conservation Foundation; and Conservation Foundation, "Improving the RPA Program and the Process: Final Report of the Second Belmont House Workshop on RPA," (1987). Although providing useful background, and quite penetrating analysis in some cases, rarely do these publications explore RPA data and analyses in enough detail to constitute evaluations.

29. Resource Management Associates, "An Evaluation of the Draft RPA Assessment and Alternative Policy Directions:" Submitted to the Committee on Energy and atural Resources, U.S. Senate (January 28, 1980). This report warned that "it is difficult to glean from these data any sense of direction as to the probable impacts of a given policy alternative, and comparison" of alternatives on the basis of these data would unfortunately seem to be meaningless." (p. 33).

30. Society of American Foresters, *Renewable Resources Planning Act* Task Force, "Special Report: Comments on the Recommended Forest and Rangeland Renewable Resources Planning Act Program, 1985-2030" (1987). In response to the concerns of the task force, the Society of American Foresters adopted the official position that "The RPA process would be improved if there were increased involvement by knowledgeable and interested forestry professionals outside the Forest Service in developing technical review of Program documents." "Recommendations for Improvements to the 1990 Forest and Rangeland Renewable Resources Planning Act Process and Law," *Journal of Forestry*, vol. 86, no. 3 (1988): 58.1

31. Sen. John Melcher, UA White Paper: The Forest and Rangeland Renewable Resources Planning Act," *Congressional Record* (August 5, 1980), pp. S10815-10819. The 1980 White Paper was issued before release of the full details of the recommended Program or its technical document.

32. For an account of the RCA process, see: Christopher K. Leman,

"Political Dilemmas in Evaluating and Budgeting Soil Conservation Programs: The RCA Process," in Harold Halcrow, Melvin Cotner, and Earl Heady, eds., *Soil Conservation Policy, Institutions, and Incentives* (Ankeny, Iowa: Soil Conservation Society of America, 1982). The author is preparing a study analyzing the subsequent impact of analyses that were done in the RCA process but were not fully reported on in the official documents.

33. Richard W. Behan, "RPA/NFMA: Time to Punt," *Journal of Forestry* vol. 79, no. 12(1981): 802-805.

The Forest and Rangeland Renewable Resources Planning Act: Congressional Staff Perspectives on Alternative Responses to the Assessment and Implementation of the Planning Process

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To place things in perspective, one must keep in mind that matters other than natural resources often have a higher priority to most members of Congress. Reducing the federal deficit, improving the balance of trade, and resolving foreign policy problems, not to mention reelection, are more pressing concerns for most members of Congress. As a result, strategies for addressing natural resource demands that also address these other, more pressing concerns, are more likely to get attention.

It is unfortunate, but true, that the situation would likely be different if a crisis related to natural resource issues were receiving public attention. Clearly, if a shortage of timber in the **United States** resulting in substantially greater lumber and paper **prices** were feared, the chances of allracting congressional attention would be much improved. However, since such crises do not appear imminent, it seems safe to say that a response to alternative ways of meeting natural resource demands for most congressmen and senators is likely to be mild in comparison to other issues of the day.

Understanding the environment in which congressional decisions are made has worked to the advantage of those who seek changes in the way in which the Forest Service responds to resource demands. Some groups, such as those who have argued for reductions in timber sales on national **forests** where program outlays are alleged to exceed returns, have clearly capitalized on overriding congressional concern for reducing the budget deficit. Strategies to reduce or eliminate federal timber sales where they are not "profitable" do appeal to many members of Congress. Whether or not

this strategy will result in dramatic changes in the federal timber sales program remains to be seen.

Given the current congressional miridset as it relates to domestic programs, certain things can be taken for granted. The Forest Service, like any other federal agency, may have fewer dollars with which to operate in the future than it has had in the past. . Nevertheless, the Forest Service, like every other federal agency, will be asked to do more even if they have less to do it with. That is, there will be more wilderness to manage, more endangered species to protect, more insect and disease outbreaks to check, and more recreation needs to be met. Therefore, the Forest Service will have to be more innovative in **its** approaches to addressing both new and traditional needs including meeting demand for timber, recreation, range, and other resources.

Congressional views on alternative responses

While Congress, as a whole, probably has only a passing concern with Forest Service programs - at least **until** it appears that these programs are contributing to the national debt or affecting **some** other national priority - ' there clearly are members representing specific states or regions of the **country** who pay careful attention to Forest Service programs. Any changes in the status quo are certain to generate criticism or draw praise from these members. The political interests and needs of these individuals will always be at play and may run counter to broader congressional concerns.

Given the amount of federal land in the Western states, representatives from this region, particularly those representing rural areas, are very much interested in decisions affecting resource supplies. The reasons are clear. How these lands are managed will have an important **effect** on dependent **industries** - whether timber, livestock, or recreation-based. This translates into employment in the affected industries and ultimately into **votes**. Aside from the effects on employment, revenues from the sale of commodities from these lands also translates directly into revenues for the **affected** states and counties. For some Western counties, the 25 percent payment (50 percent in the O&C counties) is a significant portion of their roads and school budget. Matters **affecting these payments have** important political ramifications at the state and local level. This, too, translates into votes. Given the relationship between timber sales and employment in

certain Western counties and the relationship between timber revenues and budgets for roads and schools, Western senators and representatives are bound to have a keen interest in changes in the manner in which national demand for renewable resources are met.

In the Eastern states, interest in and concern for the manner in which Forest Service programs are designed to address national natural resource demands varies. This is probably a result of the limited role that the agency has played in promoting non-federal sources (Le., state or private lands) for timber and other resources, and the lack of a clear link between increased private supplies of natural resources and benefits to state and local interests. For significant timber producing states, such as **Alabama** and Georgia, promoting private timber supplies might generate some employment and tax revenue benefits. However, since the political benefits of increased timber supplies from private lands in the East are not nearly as great as **the** negative ramifications of reducing federal timber supplies in the West, the matter has not generated as much attention in the past. On the other hand, the use of public lands for recreation in the East and South, where public lands are less abundant, is a matter of increasing congressional interest.

Clearly, this is an oversimplification of the political forces at play *in* natural resource decisions. Also, it is clearly a mistake to attempt to broadly characterize the views of members of Congress. The only "truth" when it comes to members of Congress is that each is unique, and the decisions they make are clearly their own. evertheless, with this as background, we have attempted to offer the following "likely" responses to changes in the manner in which the resource demands identified in the RPA Assessment, specifically the demand for timber, might be met.

Increasing Suppltes From Federal Lands

One would expect general support for such a proposal from individuals representing states with a substantial amount of their land base in federal ownership. For example, an increase in the timber sale program from federal lands would likely result in increased employment and, as a result, would be perceived to promote community stability. Providing timber revenues increase with the sale program, county receipts would also increase, ensuring local political support. Although one might speculate that individuals representing other regions of the country dependent on private supplies of timber would object to increasing federal timber

supplies because of the competitive advantage provided, this opposition has not been strong in the past.

The scenario might differ somewhat if increased emphasis were placed on noncommodity resource supplies from Federal lands at the expense of supplies of commodity resources like timber. If employment in recreation and tourism-based industries were to benefit, then political opposition to such a scenario might be muted somewhat. However, given the effects on timber-based employment and county revenues, the outcry would probably be great. Once again, if other regions of the country that are more dependent on private timber supplies were to benefit from this approach, then more political support from these regions might be forthcoming. However, this has not generally been the case.

Increasing Supplies from State Lands

We question if this is a viable option for meeting projected resource demands, particularly as they relate to timber and recreation. However, if supplies of certain resources from state lands were sufficient to serve as a substitute for federal supplies, then clearly those individuals who represent big federal-land states would raise serious objections. The reason would be impacts on county receipts. This would be particularly true in those states, such as Washington, where state lands are managed in trust for specific purposes. There, increased timber harvests from state lands would benefit the particular trust, while potential beneficiaries of a federal timber sale program would suffer.

Increasing Private Resource Supplies

If this response is offered as a substitute for federal supplies of timber, representatives of large federal-land states are likely to raise the most serious objections. Again, employment, community impacts, and county revenues would be the reason. However, if such a scenario were offered as a supplement to federal timber supplies - such as maintaining current timber harvest levels off federal lands, where sustainable, but promoting greater private supply to meet projected added demand - there might be greater political appeal. Under such a scenario, theoretically, county revenues would remain approximately stable. Additionally, since industry employment would not be affected by the source of timber but rather by the quantity available, employment and community impacts should be minimal. Such a scenario might actually enhance employment oppor-

ties if conflicts between timber supply and noncommodity based employment (e.g., recreation and tourism) were minimized and the federal role in providing recreation opportunities were to increase. Tied to a program to obtain greater receipts from recreationists on federal lands, which would be shared with the counties, such a scenario might have broader appeal. The problem, however, remains one of obtaining enough private timber to meet projected increases in demand - a question which is still under investigation by the Forest Service in the Intermountain region and the Pacific Northwest.

If increased private timber supplies were to be advocated as a response to the RPA Assessment, one must question if a related increase in the Forest Service's State and Private Forestry (S&PF) program would also result. If so, **traditional** congressional supporters of the S&PF program would be more likely to support this scenario. It is also fair to assume that a proposed increase in private timber supplies from one region, such as the Southeast, over federal timber supplies, would create division within the industry ranks and within the ranks of their congressional supporters. This is not unlike the scenario that developed as the Federal Timber Contract Payment Modification Act evolved, as timber interests in the Southeast fought "too **generous**" a relief program for their competitors in the Northwest.

Decreasing Resource Demand

Clearly such a response to the Assessment, as it relates to timber, would be opposed by those individuals who represent timber producing states. That is, of course, unless those same states were to be the **beneficiaries** of whatever substitutes were identified for wood products. Increased utilization of wood products is the most likely technological change to occur in the near future that could serve to reduce the demand for timber from private or public forests while, at the same time, meeting projected increases in the demand for wood products. However, the 1985 RPA Program projected that future federal timber harvests would have to increase to respond to "new technologies".

Implementation of the RPA process

The RPA Process and Products

The Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended), established a framework to guide the development

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of plans and budgets for the management of the Nation's forests and rangelands. The RPA planning process consists of three major steps.

First, a Resource Assessment is to be prepared by the Forest Service to determine the status of the Nation's forest and rangeland resources as well as current and projected demand for the commodity and noncommodity products of these resources. The first RPA Assessment was prepared in 1975 and revised in 1979. The Assessment is to be updated "each tenth year thereafter".

Second, based upon this Assessment, the USDA Forest Service is to prepare a Program which charts a course of action for forest Service activities such as timber sale preparation and recreation management in the National Forest System, private land owner assistance and land protection through the State and Private Forestry program, and the agency's research program. The RPA Program is to be developed in accordance with principles set forth in the Multiple-Use Sustained Yield Act and the National Environmental Policy Act, and is to be updated every five years. The Program is to cover at least each of the four fiscal decades that follow.

Third, RPA directs the President to transmit a Statement of Policy to the Congress at the beginning of each session of Congress accompanying the Program update and the Assessment. The Congress then has 90 legislative days following receipt of these documents to amend, modify, or approve the Statement of Policy. Either House may adopt a resolution, reported by the appropriate committee of jurisdiction, disapproving the Statement. In addition, the Congress may revise or modify the Statement of Policy, and the revised Statement is to be used by the President in framing budget requests.

On an annual basis, section B(b) of RPA requires that the President display "in qualitative and quantitative terms" the extent to which the requested funds for Forest Service activities are consistent with the programs and policies contained in the approved RPA Program (16 U.S.C. 16(6)). Where differences between the President's request and the RPA Program exist, the President is to explain the reason for these differences.

For Congress' use in monitoring agency expenditures and activities, RPA directs the Forest Service to prepare an annual report. Section B(c) of RPA, as amended 16 U.S.C. 16(6), requires that the report "set forth progress in implementing the Program ... , together with accomplishments of the Program as they relate to the objectives of the Assessment." Objectives and accomplishments are to be reported in qualitative and quantitative

tive terms, including both environmental benefits and economic factors. The Forest and Rangeland **Renewable** Resources Planning Act was amended by the National Forest Management Act (NFMA) in 1976 to link the development of the national Program of management **goals and** objectives to the resources **demands** and capabilities of individual units of the National Forest System. The land management planning process created by NFMA provided for "bottom-up" feedback to aid in the development of the RPA program, which in turn could provide "top-down" guidance to forest managers attempting to balance both national and local concerns.

The 1975 and 1980 RPA Programs

The 1975 RPA Program, completed soon after establishment of the act, outlined an agenda of renewable resources management needs for the period 1977-2020.

The 1980 RPA Program **was** transmitted to the Congress with the President's Statement of Policy on June 27, 1980, approximately six months following the delivery date required by the RPA statute. The Program identified a range of options for guiding the activities of the Forest Service consisting of high and low bound recommendations.

The Senate Subcommittee on Environment, Soil Conservation, and Forestry of the Committee on Appropriations, which took the congressional lead in reviewing the 1980 RPA documents, indicated that the 1980 program would not respond adequately to projected resource demands. Subcommittee Chairman Melcher **noted** that, the low bound of the program assumes that investments in forest and rangeland will be deferred for the next five years, notwithstanding the **demands** of those lands as identified in the Assessment."(2)

The Senate responded to the 1980 RPA Program and Statement of Policy by declaring the high bound alternative, with **some** modifications, to be the Statement of Policy that should guide Forest Service activities and budget requests. This revised Statement of Policy was enacted into law as an amendment to the FY 1981 Interior Appropriations Act on November 14, 1980.(3)

The 1985 RPA Program

On January 10, 1984, the USDA Forest Service issued a **Draft Environmental Impact Statement (DEIS)** for the 1985 RPA Program. The **DEIS** included nine alternatives but did not identify a preferred Program.

The final 1985 RPA Program and Statement of Policy were to be presented to the Congress in January, 1985. However, it was not until the Subcommittee on Forests, Family Farms, and Energy of the House Agriculture Committee had scheduled an oversight hearing to review the 1985 RPA Program, that the Statement of Policy and Program were transmitted to the Congress on September 19, 1986 - 21 months after the delivery date designated by the RPA legislation.

The recommended 1985 RPA Program consisted of two alternative levels of investment in National Forest System, State and Private Forestry, and Research programs through the year 2030 - a "high" and "low" bound. In general, the difference between these levels was that the low bound would defer investments in resource programs, while the high bound would make more substantive investments in these resources and begin to make them sooner.

The Statement of Policy accompanying the 1985 Program provided no sense of specific objectives for Forest Service activities and offered little if any guidance for the development of budget requests for the remainder of the program period. In fact, the objective of the low bound element of the 1985 RPA Program - to defer investments in Forest Service programs in the short run - is essentially similar to the direction provided by the low bound of the 1980 RPA Program that was rejected by the Congress.

Neither the 99th nor the 100th Congress responded to the President's Statement of Policy in accordance with the timeframe provided by the law. Therefore, in accordance with section 8(a) of RPA, the Forest Service should now be operating under the guidance provided by the President's Statement of Policy.

Has the RPA Process Met Congressional Needs?

The RPA planning process is intended to provide the Congress (and others) with (1) knowledge of where we are and where we are headed in relation to natural resource supplies and demands, (2) some sense of what the national goals and objectives for managing these resources should be, and (3) information to help Congress understand what needs to be done in the short term and what cost would be involved in achieving these goals and objectives. In addition, RPA should provide a framework for judging how annual budget requests would help (or hinder) the Forest Service's ability to meet management goals, and a yardstick - an annual report - to measure the agency's performance in attaining the previously agreed upon

goals. Although **the** planning process may have provided other benefits to the agency (e.g., in promoting a multidisciplinary approach to forest planning), previous RPA products have not lived up to Congress' expectations.

The Assessment is an exception. In general, this document has provided a reasonable benchmark of **the** status of the Nation's renewable natural resources. Discussions of most resources in the Assessment document have been sufficiently complete to give some indication of where, as a Nation, we stand. This is especially true for resources associated with the National Forest System and, in particular, for commodity resources on the **forests**. Where the Assessment has failed, however, is to provide a more complete picture of the forest and rangeland resources on state and private lands and a report on the status of nontimber resources. Clearly, Congress intended that the resource Assessment should take this information into account even though the Forest Service manages only a small percentage of the Nation's forest and rangelands and the majority of Forest Service receipts come from timber. This information is essential if one is to view national forest resources in perspective and to determine how much timber, forage, recreation, etc. **that** the national forests must produce in contrast to outputs on private lands. Additionally, the Assessment has been subject to some criticism regarding the projections made for the demand for various goods and services from forests and rangelands. While one should not assume that the Forest Service's capability to predict the future should be any better than that of any other prognosticator, it does seem reasonable to expect that the agency clearly explain **the** assumptions that underlie any future projections. In this regard, the Assessment's demand projections could stand some improvement.

Where the RPA process has really fallen short has been in the manner in which the periodic Program has been developed and presented to Congress, and, as a result, the lack of utility that the Program has had for the authorizing and appropriations committees that require the information. A number of factors are involved.

The first is **timing**. Not one of the preceding RPA Programs has been **presented** to the Congress in time to provide for its consideration as a budgeting guide for the first year of the five-year Program. As a result, any actions taken by the Congress to **accept**, modify, or reject the Statement of Policy (and associated Program) would have no bearing on the first year's budget. Starting the Program review process out of sync with the **budget**

cycle tends to diminish the Program's importance. The use of high and low bound should provide some latitude to respond to changing conditions over time, but by the second year of the Program, some data is already old. Delivering the Program at the beginning of the year would correct this problem.

Another timing issue has to do with lack of congruence between the RPA cycle (five and ten years) and the political cycles of the Congress (two, four, and six years) and the Presidency (four years). It is obviously difficult for a new administration to accept and implement a Program that was developed by a prior administration. (Given the relative stability of the Congress, this is less of a concern.) If the RPA Program is to serve as a strategic planning document, then it might be advantageous to time its delivery to Congress with the cycle of Congressional or presidential elections. While some people might **argue** that such timing would "politicize" the planning process, in fact, it would only recognize the political reality already affecting the Forest Service's planning activities.

A second concern regarding the Program is the *format* in which it is presented to the Congress. The 1980 and 1985 Programs have been presented as high and low bounds within which almost any course of action could be justified. This means of preparing and presenting the RPA Program fails to provide the Congress with a clear, professional recommendation for how the forests should be managed. This "anything goes" format tends to be self-defeating for the agency since it fails to elicit sufficient interest in the Congress to warrant a thorough review of the document and an appropriate response. The Congress is much more likely to respond to a proposed course of action.

The reasons why the RPA Program is presented in this manner are fairly well understood. Administration goals of reducing the federal **deficit** and the Forest Service's aim of improving natural resources are often in conflict. Additionally, the President's Office of Management and Budget is not likely to sign off on a Program that appears to bind the President to specific appropriation requests in future years. OMB objects to having its hands tied in this way. The high/low bound approach has been offered **as** the only way of reconciling these widely divergent views. The result, however, is of **little** use to the Congress as it would be to a forest supervisor if he or she were **presented the** document **and** told to implement it. So long as the RPA Program is presented as an Administration document rather than a Forest Service product, this situation will persist. **A**

high/low bound could only be acceptable if each alternative **represents** a meaningful approach to implementing Forest Service programs.

A third problem with the RPA Program is its *lack of clear **relevance to the findings of the Assessment***. This **has** been a significant failing in prior RPA Programs. If, in theory, the RPA Program **is** to be drafted to respond to the Assessment, then it should be immediately apparent how it would do so. Unfortunately, neither the 1980 nor the 1985 program fully responded to either the 1979 **Assessment** or the 1984 Supplement. Although former Forest Service Chief Peterson testified before the Subcommittee on Forests, Family Farms, and Energy of the House Committee on Agriculture in 1985 that "the one we submitted [the High Round Program] was a responsible reaction to the Assessment", only 60 percent of the identified soil and water improvement needs would be met **by** the end of the **planning** period if this scenario were **implemented**. The ramifications of failing to fully meet this **resource** management objective were equally unclear. The Program should, at a minimum, enable congressional observers and others to understand, in strategic terms, what long range **resource** problems or situations exist (or are forecast) and what the agency recommends be done to address the identified problems. For example, if Southern pine reforestation rates are a concern, then the Program should say so **and** indicate what needs to be done to address it.

Finally, the Program **documents** of past RPA planning efforts have ***failed** to demonstrate how the activities of the National Forest System, Research, and State and **Private** Forestry segments of the **agency** would function together to **achieve whatever** aims the Program provides*. Each of these activities are addressed in the program **documents**. However, what is lacking are quantifiable goals and related linkages between Forest Service programs that might indicate how each affects the **other**. For example, if reductions in federal timber sales were to occur in an area, would there be corresponding increases in support to State and Private Forestry programs to make up the differences in timber supply? If **cuts** in Federal pest control programs were anticipated, would increased research toward alternative means of limiting **pest** damage to forests be warranted? Unfortunately, the Program **documents** fail to offer a sense that the agency's programs are sufficiently linked so as to be headed toward the same common goals. Part of the **problem has been** a lack of sufficient critical attention to the types of problems posed for the RPA process by the Research and State and Private Forestry programs and the difficulty of how

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to reform those programs, if needed, to address problem areas. For example, if regeneration rates on private lands are inadequate, what should be done by the federal government and at what cost? The RPA Program should help answer such questions.

Other elements of the RPA process have been poorly prepared or ignored, further reducing the use of these documents for the Congress. *This concern applies specifically to the lack of relevance of the RPA Program to the President's annual budget and the inadequacies of the Forest Service's Annual Report.*

Specifically, section 8(b) requires the President to provide to the Congress the rationale for requesting less funds or recommending different policies than those approved by the Congress in accordance with the President's Statement of Policy. Differences between these levels and policies are to be expressed in quantitative and qualitative terms in conjunction with the proposed budget.

Section 8(c) directs the Secretary to prepare an annual report "that will aid Congress in its oversight responsibilities and improve the accountability of agency expenditures and activities." This yardstick is intended to assist the Congress in monitoring progress made by the agency in implementing the RPA Program.

Neither the provisions of section 8(b) nor section 8(c) of RPA have been adequately fulfilled. With regard to budget requests, until FY 1985 the Forest Service did display the RPA recommended level of funding for each line item of the budget in the agency's Budget Explanatory Notes. However, since that time, this information has been moved to the back of the Notes as the dissimilarities between the annual budget request and the RPA funding level have grown. Some Members have not objected because as the RPA data and the budget became more and more disparate, dropping the comparisons reduced initial attention to the levels proposed by the annual budget.

Although the Forest Service's annual report is to serve as an evaluation tool, it has been inadequate in this regard. Due to changes in the categories reported and in the measures of outputs, costs, and benefits used, the ability to track accomplishments, over time, in relation to the 1980 Program has been limited. In fact, more recent annual reports have failed to display many of the RPA recommended costs and outputs for use in comparing actual levels of funding and accomplishments with the 1980 Program. A recent Congressional Research Service evaluation of the Forest Service's

performance in relation to **the** 1980 RPA Program concluded that, "the Annual Reports are currently not very useful in evaluating the achievement of **the** RPA program."(4)

Congress has also failed to fulfill **its** role in the RPA process. Past administrations have presented inadequate materials to the Congress without strong objection from either the authorizing or appropriations committees. This trend will likely continue.

Part of the reason for **the** lack of congressional attention to RPA has to do with the problems that any Congress has with establishing clear and consistent policies over time. The congressional authors of RPA and their staffs are no longer on the scene and, with few exceptions, their successors have felt less wed to the **planning** process. Members are much more interested in short-term problems, particularly in resolving crises which can be addressed in a short period of time and for which they receive some credit. In addition, Members tend to pay greater heed to local or regional issues than to issues of national concern. They therefore tend to focus on regional matters (e.g., national forest timber supplies) more than on broader concerns.

Other matters in recent years have diverted congressional attention from planning issues. The period 1981-86 saw most states involved in wilderness debates, which diverted away from RPA the limited amount of time that the committees had to spend on forestry matters.

It is important to note that, *to date, no Assessment has projected any serious crisis in natural resource supplies in the foreseeable future.* Ironically, this has served to generate greater disinterest in RPA **rather** than to substantiate the benefits of planning for the future. Since no crises are pending, "no response" may be the appropriate Congressional response. Given the time constraints Members of Congress must contend with, they generally do not to allocate time to matters that do not demand immediate attention. Where some disastrous implications from failing to act are known, Congress is more likely to intercede. Probably the best evidence of this are the events that led to the development of RPA itself!

*How can the RPA **Process** Be Made More Useful to the **Congress**?*

Clearly, the most important improvements in the RPA process will need to be made in the manner in which the Program document is prepared and presented to **the** Congress.

First, the Program should offer a concise response to the **problems**

clearly identified in the Assessment that demand some form of action. If no particular action is required, then the Program could say so. In addition, the Program should ensure that projected public demand for the goods and services provided by the nation's forestlands can be met in a manner that is reasonably efficient and ensures that the future productivity of these lands is not hindered. Of course, this provides a great deal of latitude in preparing the Program. For example, if timber demand is projected to increase this could be met through greater harvest on the national forests or through fewer sales of public timber and greater emphasis on private supplies of timber. From a Program standpoint, this might mean less **support** for the timber sale program on the national forests and more **support** for State and Private Forestry efforts. Other means might be identified to achieve the timber supply goal. However, what is critical is that the objectives which the Program is intended to achieve be responsive to the Assessment, and that immediate or projected crises are spelled out and appropriate **responses** proposed.

Second, the Program document should be developed with the intent of meeting the goals defined by the Assessment in a cost-effective and efficient manner, but *should not necessarily be* constrained by the budget. That does not mean that the Program should ignore existing fiscal exigencies. However, it is critical that the budget not drive the Program. The budget recommendations that accompany the Program are not absolute values that must be provided annually. Instead, they should be estimates of funding requirements that reflect professional judgments of what resources will be needed to implement the recommended Program. The value of these estimates is that they provide benchmarks that can be used to evaluate annual budget requests and the tradeoffs associated with not fully funding specific activities.

The President's Statement of Policy is the document that should **respond** to other fiscal and social concerns that may affect the nation's **budget** priorities. Only if the **Program** is able to look beyond immediate **fiscal** concerns can the public and the Congress understand the tradeoffs associated with providing more or less funding than is recommended. If it is not possible to issue an RPA Program which is not budget constrained, then it might be more appropriate to eliminate any budget recommendations from the RPA Program **prepared by the Forest Service, and** to allow the Office of Management and Budget to incorporate funding recommendations into the President's Statement of Policy. This approach might

provide the Forest Service with greater latitude to respond to the Assessment rather than to Administration spending policies.

Finally, it is desirable that the RPA Program include *one, single recommended course of action* to guide Forest Service research, protection, and **management** activities. This Program should provide the Congress with the Forest Service's professional view of what should be done to respond to the Assessment and provide a clear picture of where the agency intends to head in the future. Only in this way can the Congress be expected to offer a reasonable response to the Program document and **fulfill its** obligations in conjunction with the RPA process.

The single recommended course of action (or point estimate) could be implemented in a variety of ways. For example, while total funding levels for national forest management could be stated as a range, individual program elements (such as trail construction) could be stated as a point estimate. Also, current or near current timeframes could be stated as a point estimate, while outyears could more appropriately be stated as a range. As time changes conditions, it is appropriate that plans become broad to accommodate those changes.

To further improve RPA for the use of the Congress, the President's annual budget request should include, as the law **directs**, a quantitative and qualitative description of how the budget differs from the RPA recommendation and why. Most importantly, there should be **some** explanation of what a given level of funding will buy, and what Congress is getting or giving up if it should choose to fund programs above or below the RPA level.

Finally, the annual report should be thought of as it was intended - an evaluation tool to track the agency's performance in relation to the RPA Program. To be used in this manner, the annual report should include the same categories of reporting, and the same **units** of measure for each category. In addition, this information should be reported in the same manner each year, over time. For example, if timber outputs are reported in board feet then they should continue to be reported in board feet *every year* and not be reported in cubic feet one year and board feet the next. Also, more effective measures of noncommodity resource outputs should be developed to improve reporting for these products of management.

Another **alternative** would be to **completely** rethink the role of the RPA Program. For example, the timeframe of the annual budget process and the timeframe of the NFMA plans cover the period of one to ten years.

What should the RPA Program offer additionally for the same period? Has the Assessment identified problems to be addressed in the first decade or are the problems more likely to be outyear problems, beyond the first decade? If the Forest Service were to aggregate the Forest Service plans, how would they compare to a proposed RPA Program and, more importantly, what would the relationship be between the outputs featured in the plan versus the outputs needed nationally per the Assessment? This question is particularly relevant as the forest plans are completed and funds for their implementation are sought. It is inevitable that members of Congress will focus on obtaining the funds needed to implement "their" plans and pay less attention to broader national needs. If this becomes true, then the RPA process could be redefined to focus only on those national natural resource problems that clearly require a federal **response**. Individual forest plans could provide a focus on regional and local **resource** management needs. In this way, the Assessment and Program could provide a framework in which the forest plans and annual budgets could be viewed.

An alternative way for the RPA to be more useful in concert with complete forest plans is for it to **focus** on upcoming key issues that are **developing** on the nation's forests. In this way, national issues can be reviewed in relation to individual forest plans and the need for legislative or administrative responses can be better understood.

Conclusion

The simplest way for the RPA process and its products to be improved for Congress' use is to ensure that the RPA is implemented in the **manner** in **which** it was originally intended. RPA was to provide the Congress with an idea of the status of the nation's resources, what kind of **demands** would be placed on these resources, and how Forest Service professionals believed **these** resources should be managed to reconcile differences **between** resource supplies and future demands. Unfortunately, RPA Programs to date have failed to clearly describe future resource needs, to spell out what should be done to meet these needs, to identify the resources required to implement this Program, and to describe the consequences of failing to do so. Most of the high visibility forestry issues today such as the buyout of overpriced contracts, below cost timber sales, and acid deposition have received little, if any, attention **in** the RPA process. This has to

change if RPA is to be relevant in congressional eyes. Having no clear understanding of what the Forest Service feels is needed **and** seeing no adverse consequences as a result of failing to implement previous Programs, the Congress has had no reason to put any faith in the RPA process or its products. The burden of proof lies with the Forest Service to demonstrate why the Congress should be concerned about RPA.

References

1. The views expressed are those of the authors and are not intended to reflect the views of members of Congress or the official position of the House CommiUee on Agriculture or the Senate Commiuee on Appropriations

2. *Cong. Record*, Aug. 5, 1980, p. 21348

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(Sustainable Development and Natural Resource Forecasting

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For natural resource forecasting to be **useful** rather than simply entertaining, it must be embedded in a realistic policy framework, one in which the perspectives and values of many different participants are noticed **and** taken into account. Such a framework ought to provide the wherewithal for determining, *inter alia*, the optimal rate and form of resource exploitation. This chapter outlines several approaches to resource management and links them to current proposals for the **use** of "sustainable development" as an objective. The discussion concludes by identifying the elements required to reorient and enrich natural resource forecasting in light of this new management objective.

The optimal path of **resource** exploitation depends, of course, on value judgments, a tempting thought for those believing exploitation to be best left as a simple and unsystematic matter. Yet, coming up with the optimal rate of exploiting particular resources involves fascinating issues, both technical and political, even if the social welfare function were well defined and consensually accepted. The challenge of forecasting, and of integrating the forecasting into a **realistic** policy framework, is no less important for the fact that optimality is a matter of views and values. This point holds for traditional resource management goals as well as for more unconventional ones lately being considered. A brief retreat to the past is in order.

Traditional managerial goals

Ever since individuals became aware of the need to manage **resources**, not merely to use them, a succession of increasingly sophisticated and complex **ends** has been sought. Nonetheless, from simple and naive all the way to complex and sophisticated, all managerial goals have demonstrated strong assumptive and value **bases**—even when not acknowledged or denied. [1]

The Simplest goal is maintaining a resource at previous average levels of abundance. *Sustainable yield*, in other **words** amounts to a **holding** action whose success is measured in terms of preventing declines or downturns in a given, valuable **resource**. The goal gives heavy weight to the harvest levels recorded at the time intervention is proposed, when these resources typically are recognized as "low" or "in peril". Fish and wildlife agencies have been created, and then continue, under these conditions, to pursue the sustainable yield goal. Development of a resource's potential, its reconstitution from an historically depicted level, or switching from it to an alternative resource base are all thus forgone. Clinging to **the** status quo is frequently rationalized with **arguments** that no one **understands** the systems well enough to quench uncertainty and, even if they did, increasing yields would only encourage others to seek entry with longer term overexploitation as a result. Decreasing yields, by a **different** logic, is also resisted, but on the ground of political infeasibility not exploitation's inevitability.

Maximum sustainable yield (MSY) as a management goal is **based** on a biological presumption that any existing natural population must overproduce itself over the long term, or else it would have long ago gone out of business. The production rule thus **becomes: harvest** the excess over the stock needed for maintenance of the population. This concept offers deceptive precision in an equilibrium package, both of which in turn fail to correspond to characteristics of the **resources themselves**. Natural variation, weak understanding of **species** interactions or other **constraints** in dynamic **contexts** **thresholds** and attendant explosions and crashes, and assorted human behavioral foibles all **conspire** to limit management regimes **tied to the MSY concept**.

A *deCision-theory* **basis** for policy choices also **exists**, but in this case, explicit attention is focused on the human behavioral **aspects** (however,

this managerial regime exhibits its own limitations and fails to provide adequate guidelines for one attempting to forecast resource outcomes or effects. Constructing the utility functions of decision makers, so goes the argument, allows the decision theorist to forecast the odds and payoffs for risk-averse, risk-neutral, and risk-taking behaviors. The bookmaker aspect of the approach is notable. So, for instance, a preservationist would select strategies of a risk-averse sort, while a "cut-and-run" operator would do just the opposite. Cost and benefits for each strategy can be calculated and the management steps required for each specified. Here again the precision of the decision theoretic calculus obscures the fact that no single decision maker totally determines outcomes (whose utility function?) and that objective circumstances change through time and from place to place. "It all depends," and "It doesn't work that way here," are indicative.

Different *economic ideas* have been advanced to get around these complaints, although their Widespread successful use by managers is still pending. Option pricing, discounting, stabilizing, and other **forms** of market operation and government intervention can be cited and in specific forms have been tried as guides to planning and management.

Take *option pricing*, for instance.¹²¹ A stand of timber is probably worth more to society if harvested this year than waiting 50 years to be cut. It is certainly worth more as timber, and it may be much more valuable when sale proceeds are invested in even higher productivity ventures.

Nonetheless, there is probably still some value, and monumental uncertainty, in deciding to wait. How much is society willing to pay to ensure the timber for future generations? The answer to the question is a judgment about how much "people" (usually unspecified in the theory) would **pay** to keep this option open.

Calculating a **resource's discounted value**, a matter taken up later in more detail, is a more tried and true management tool and approach.¹³¹ This year's harvest is worth less if left to subsequent years. A low discount rate "means" that today's decisions are more sensitive to future **needs** (on terms of the resource being valued) than a high rate would be. Selecting the rate is where value and judgment enter and disturb an otherwise straightforward procedure. Ought the rate be set at the current cost of capital, equal to the renewal rate of the resource, or to some ethically (or politically) determined social discount level? The case of calculation does not remove the need to answer such questions or to specify the rate.

Political goals of *dampening economic fluctuations* or providing *em-*

ployment where the market indicates little or none exist are more up-to-date rationales for resource management. Each presents its own set of difficulties, especially for those responsible for the forecasting and analysis tasks erected in their **support**.^[4] Trying to break out of a boom and bust cycle common to many economies which depend heavily on a single resource may mean enforcing savings and facilitating investments in boom times as a means to diversify or to ease the transition to new resource bases. Creating and broadening a tourist industry infrastructure (in Mexico and lately in Oregon) are indicative. The welfare goal of providing employment is most visible in "limber mining" operations in British Columbia and in support of both investments and operations of many national fishing fleets around the world. In either instance, concern for the short-term and the level of employment overwhelm thoughts about long-term resource vitality. **The** future, in a real sense, is not only discounted, it is mortgaged to the hilt.

For newcomers and strangers to the arcane world of the Resources Planning Act, complication and contradiction in goal and purpose stand out in sharp relief. As is the case with most complex policy decisions, (and the legislation, rules, regulations, guidelines, and related efforts to carry them out) ambiguity and vagueness are the norm. For instance, the environment is supposed to be conserved to achieve an ecologically healthy and economically functioning resource base. Something of a sustainable yield purpose is here implied. But on the other hand, in the RPA regime, the rate of use of renewable resources ought not exceed the ability and commitment to renew them. This is undeniably an appeal to manage at maximum sustained yields which, to remind one, is inconsistent with the prior goal. Risk aversion, as determined through cautious maximization of a social utility function, is implied in the charge to the U. S. Forest Service to secure the greatest net benefit from the nation's forests and to do so in light of meeting local, regional, and national needs. Or, on the other hand, the greatest net benefit might be described in terms of achieving optimum resource output levels, an economic efficiency...or is it economic stabilizing...or is it a jobs creation and maintenance task? No one truly knows. What is evident, however, is that forecasting, executing, or assessing RPA all depend intimately on getting clarity and agreement on matters of precisely this sort.

The root difficulty, of course, is deciding whose preferences (values) will be indulged and thus whose get neglected, topics that have nothing to

do with detailed measurements and analyses of this or that optimal schedule of what to do with the country's trees.

Sustainable development

One of the most forceful ways of integrating the value commitment with the analytic task of natural resource forecasting is to begin with the pungent notion of "sustainable development." Clearly, the insights and the appeal of the idea of sustainable development are tied to the built-in message that profligate resource depletion jeopardizes the capacity to generate economic and social benefits. It is an explicitly future-sensitive notion.¹⁵¹

Yet "sustainable development" is more than an insight; it has also become a slogan. And like most slogans, it has accumulated several meanings that make its use in policy analysis problematic. Several of these meanings link questionable (i.e., suboptimal) practices with this positively connoted slogan.

If "sustainable development" is to be the desideratum of resource use, then it is more usefully defined as *the pattern of resources exploitation that maintains the highest possible levels of net social welfare benefits into the future*. Thus there is no simple, exclusively present-oriented algorithm for identifying optimal sustainable development.

To demonstrate this point, it is necessary to explain why two superficially attractive, simpler definitions of sustainable development do not work. One tack would be to equate it with maintaining the historical (or any other) yield of a given raw material or endproduct. However, there is no **particular** reason to expect that the sustained yield of any given material coincides with optimizing net social welfare benefits. In some circumstances, a declining yield may be optimal, if rapid exploitation can take advantage of unusually high prices or permit the financing of unusually promising alternative investments. Imagine a widespread (but probably short-lived) Japanese mania for hot tubs that drives the price of redwood up to one hundred times its current level. The United States would probably be better served by harvesting a large portion of our redwoods, even if that yield could not be sustained.

Similarly, "sustainable **development**" cannot usefully be equated with the maintenance of a particular natural resource *stock* at present or other levels. This is almost too obvious to be stated when it comes to non-

renewable resources, for which the slack virtually has to be drawn down for there to be any use of **the** resource (e.g., oil and coal). But it also holds for renewable resources like forest products. Again, there is no particular reason that maintaining the level of stocks would be optimal. **Specific** circumstances may call for more, or less, rapid exploitation. It could be that liquidating nearly an entire tree crop in order to replace it with a superior species makes good sense. Or, conversion of a given parcel of land, in whole or part, from primary **use** growing trees to alternative and more beneficial ones might be preferred.

Thus we reach what to some may seem to be a surprisingly mundane conclusion, given the apparent sexiness of the term "sustainable development": ***The** pursuit of sustainable development, as defined above, is **nothing** more nor less **than following** the dictates of a comprehensive cost-benefit analysis, or "discounted benefit flow."* Such analysis has been resisted in the natural resource area on two grounds: principle and practicality. The first, which we assess briefly below, stems from views that coincide with (some would say rationalize) elevating either preservation or wealth over all other values. But **the** underlying premise of both views is **that** inadequate practical analysis of future benefits and costs will not do justice to one value or the other—a question of the accuracy of natural resource forecasting.

In **the** politics over natural resource policy, both the pristine preservationists and the economic exploiters converge in rejecting full-fledged cost-benefit analysis. The preservationists reject the validity of **cost-benefit** analysis by insisting that rights need not be justified according to the weighing of costs and **benefits**. The assertion of rights (or quasi-rights) of animals to be protected, species preserved, and wilderness areas to be left untouched are really assertions that normative principles hold prior to and at least partly independent of the calculation of costs and benefits for humankind. Thus, even **if** the social welfare function does not seem to be optimized by maintaining these rights as moral imperative", they ought to be respected. This position may be derived from the rejection of the hominocentrism of cost-benefit analysis, even if truly committed to overall social welfare, **as much** too narrowly oriented. To put it baldly: "Trees and animals have rights, **too.**" It may also **be** derived from the practical suspicion that cost-benefit analysis will not sincerely reflect overall social welfare. Finally, to place the negative assessment on the other side, preservationists may be operating from an elitist preference for the mainte-

nance of benefits (e.g., enjoyment of nature) accruing more to themselves than to others.

The economic exploiters may reject the cost-benefit approach out of conviction that the market and hence prices reflect social preferences accurately. In calling them "exploiters" we are asserting that this idea is farfetched under the conditions of any real market. For example, Gillis and Repetto have demonstrated that the destruction of tropical forests around the world has been motivated by market incentives created by faulty tax policies, not the intrinsic social value of the returns on this exploitation.¹⁶

Neutral tax policies would dictate a much reduced pattern of resource use. Even where economic incentives are not distorted, the market will not reflect **the** social benefits and costs that come under **the** rubric "externalities," unless policy specifically translates them into economic considerations. And, even where it is true that market signals reflect social benefits, the cost-benefit analysis would provide the same result.

So why then do market devotees reject the introduction of noneconomic values? A cynical interpretation is that they reject the approach simply because doing so would enhance their benefits. Yet they, like the preservationists, may distrust the practical application of cost-benefit for the opposite reason: they fear the emotional appeal of "soft-headed environmentalists".

If the practical application of a discounted benefit flow analysis is a source of doubt for both extremes, it is important to assess where this analysis finds **its** greatest challenges. Essentially a policy of sustainable development must be based on:

- Projections of the use and replenishment of alternative resources under different policy scenarios.
- Projections of the impacts of such resource-use scenarios, e.g., pollution, recreational opportunities, economic stagnation or stimulation.
- Evaluations of the utility of outcomes.
- The application of an appropriate discount rate to make the present evaluation of future outcomes.

Lest this list seem too daunting-after all, how could we accurately forecast resource use and all its implications?-it must be emphasized that precision is overrated because a) the policy process operates on generalities and rough figures; b) finely-tuned planning (**in the** sense of pre-committed action) is largely a figment of **the** planner's imagination; and c) non-technical considerations are always present, making the precision of the

technical analysis moot even though the technical aspects are certainly important. Thus natural resource forecasting goes beyond a narrow (and impractical) goal of trying to estimate and value future stocks. Rather it aims to identify key resources whose potential exhaustion requires policy deliberation, to assess whether alternative resources are viable substitutes, and to outline broad policy alternatives.

Several of these key ideas are reflected in the following comments from a successful state-level resource manager:⁽⁷⁾

On precision: "Even grossly qualitative forecasts may be most useful management tools and serve to reestablish belief in the management process." Likewise, "Our knowledge of the nature, degree, or causes of natural variability is generally anecdotal and hardly to be considered as a basis of management action when compared with the quantitative information routinely offered on [the levels of resource removals!]"

On problem specification: "The recent emphasis on quantitative assessments as the basic management tool has not been very helpful to managers because assessments contain little predictive content." Likewise, "A manager is not primarily concerned with an accurate estimate of the abundance of a stock. He is more likely concerned with the probable trend or relative abundance."

On relevant dimensions of the problem: "If a manager, concerned with stocks, people, economics, and regulation, is to meet his responsibilities, he must have advice on how the system works."

However, if this advice fails to take explicit account of the manager's and others' perspectives it may be worse than no advice at all.

Let us now survey where the biggest holes are typically found in natural resource forecasting, bearing in mind that the exactness of the forecasts is far less important than is making sure that major factors are not left out of the analysis. It is indeed striking how often the lock-step projection of itemistic trends ignores the following kinds of considerations.

A new forecasting agenda

Once we are liberated from the fetish of insisting on continued dependence on existing resource bases, the question of the costs of switching from one resource base to another naturally arises. By far the weakest link in the economic forecasting component of natural resources

planning is the projection of just such adjustment costs. In the absence of systematic attention to these costs, consideration of this issue is typically given over to temperament and ideology. The technological optimists and most extreme free-market devotees tend to **dismiss** the issue **as** a red herring, while the **pessimists** see the potential for dislocation and unemployment as too unpredictable to risk.

Yet, a systematic mapping of resource **substitution** adjustment costs is rather straightforward. Moreover, it fits in very well with the thinking on the "termination problem."

First, there are several clear-cut categories for which the switch from one resource base to another entails net costs:

- Obsolescence of machinery and technology related to the previous resource base.
- Costs of developing new technology for extraction and use of the new resource base.
- Vulnerability of the new resource to trends requiring yet another transition.

Second, there are several categories for which the balance between the **sacrifice** of the prior resource **base** may or may not be a net cost:

- Economic efficiency changes.
- Stimulation of backward and forward linkages.
- Employment level differences.¹⁸¹
- Pollution level changes.
- Changes in safety risks.
- Changes in the distribution of benefits.¹⁵

Some scenarios of shifting from one resource base to another entail an **ecological** collapse. One of the most difficult and yet important response forecasts involves the **change** in the power and policy framework following such a collapse. Naturally, since so much of the preoccupation of resource management is to avoid such collapses, there has been little consideration of life after the collapse, and even **less** of the possibility of using an ecological or closely related "crisis" to advantage. This is not to say that astute politicians have failed to take advantage of resource-inspired crises. Witness deregulatory decisions in the oil and gas realm that proved impossible until the energy crises of the 1970s.¹⁹¹ It is to say that thoughtful consideration of the options **beforehand** is extraordinarily uncommon.

The potential **advantage**, **as** far as the power and policy context is concerned, is the possibility that the reduction in vested interests following

the collapse would permit rational resource management to take over without strong political resistance. Sometimes, when part of the original problem was the dominance of local authorities who had little capacity or willingness to pursue the collective good, the collapse can lead to the discrediting of these local authorities, permitting broader authorities to **assert** control. Demands for ecosystem management regimes in the Yellowstone region are typically so based.¹¹⁰ In other **words**, once there is little left to lose, the potential for consolidating control under a responsible institution of sufficient technical capability and jurisdictional scope may be greater than ever. Rehabilitation of the Great Lakes under **the** guidance of a joint U.S. - Canadian **commission** is **suggestive** of the general idea.¹¹¹ Coordinative **difficulties** surrounding striped bass conservation **along** the American east coast provide further support.

Moreover, following an ecological collapse it is easier to justify a bold switch to an alternative resource base. For example, once **the** natural **forests** in Connecticut and Michigan had been depleted, new forest strategies based on different tree species and even different **uses** of the land base became viable. The collapse of the sardine fishery immediately after World War II ruined the fishing industry of Monterey, California in the short term while it created "space" and impetus for alternative touristic and vacation! retirement-based industries in the 1950s and beyond.

Obviously, this is not to advocate a general policy of removing naturally-occurring resources in order to introduce alternatives. We are simply suggesting that ecological collapse opens up the particularly great challenge of anticipating and planning for **alternative** natural **resource** bases. Contingency and fall-back plans need to be thought of beforehand, not after some disaster strikes. For instance, what might happen if insurance pools were created by **taking** a percentage fee from **harvests** in good years to be used during bad? (Assessment rules would be hard to **figure** out, but this difficulty does not detract from the basic point at issue.) What might happen if respective **authorities** required a "getting out of **business**" fee to accompany any new investment in **harvesting** capacity- an amount to vary with the projected status of the resource? That is, the more **threatened** the stock, the higher **the** fee. When a resource collapses, is used up, or no longer has "adequate" value, the expenses involved are borne largely by public **authorities**; thus it seems reasonable to collect a **contingency fee** against likely demands on the public purse for unemployment, retraining, relocation, and other similar expenses of a changing **resource** base.

Presume the worst does happen, and an ecological collapse occurs. Whose responsibility is it to serve as salvage specialists or receivers to reallocate investments in ruined or declining resource industries? Who ought to be worrying about and paying the price of rehabilitation, should that be the policy choice? What cooperative arrangements need to be considered between public and private institutions or even between nations so that reconstitution and rehabilitation efforts and expenses (and subsequent benefits) are distributed equitably and effectively? Who is responsible for retraining and relocating employees when bust years are not offset by ones of boom?

Another pertinent thought comes to mind here. Ironically, the future orientation of natural resource planning and forecasting may focus too much attention on future collapses at the cost of overlooking opportunities to rebuild from *past* collapses. Of course, any future ecological collapse or even a gradual shift to substitutes ought to be lagged and analyzed. Yet it is also important not to fixate on future dangers to the exclusion of identifying future opportunities.

Judging how important the renaissance following an ecological collapse ought to be raises the very broad and contentious issue of the future discount rate. Shortcuts of selling the discount rate equal to the cost of capital make sense only when alternative investments with only financial benefits are under consideration. For example, it would make no sense to introduce the cost of capital as a baseline for deciding how much to discount future recreational opportunities as against current recreational opportunities.

Setting the discount rate entails a fascinating problem of intergenerational power distribution. It may be argued that the current generation of policymakers cannot be expected to have the same appreciation of future generations as they do of themselves. Yet who else can decide? The discount rate also shares, along with the social utility function in general, the ambiguity as to whose values ought to be invoked. The concept of a "societal preference" is problematic without a clear empirical referent. In **reality**, the discount rates implicit in government policy choice are obviously the outcomes of the whole policy process, where both political and technical aspects have weighed in.

The key issue of *policy response* is also rarely introduced into natural resource forecasting and planning. The forecasting question is this: If the future rates of resource exploitation are partially shaped by government

policies, what sorts of policy responses can be expected in the face of potential resource scarcities, environmental dangers, demands to convert natural resources into financial resources, and so forth? To approach this question it is often useful to ask the prior methodological-theoretical question: What kind of optimization ought to be presumed to motivate these policy choices?

To this latter question, most models in resource forecasting that include optimization explicitly assume that they are optimizing the social welfare function. Assume, for example, that an optimal pattern of both current and future resource use is identified and adopted by current policymakers. But assume further that future policymakers are likely to be more short-sighted than today's hypothetical saints. In many circumstances that would mean that future resource use would be above the optimal rate of exploitation (since political **popularity—except among conservationists—is** typically believed to increase with the provision of greater benefits to the public or to particular groups, and more rapid resource exploitation is a prime means of providing greater benefits). This scenario would call for current policy to build in a cushion of lower resource exploitation in order to offset the future likelihood that the resource base would be drawn down too rapidly. In other words, to the extent that the preservationists' fears of greediness and weakness of the future policymaker are justified and recognized, the cushion of conservation can be built into today's resource planning.

Conclusions

The forecasting necessary to chart a course of sustainable development must be holistic because any short-cut algorithms violate the requirement that cost-benefit analysis consider all relevant values in the present and future. This extends even **to** assessing policy responses made, at least in part, on the basis of political considerations. It includes analyzing the impact of new power relationships in the regulation of resource use.

This forecasting cannot be done definitively as a once-and-for-all, precise exercise. It ought to be institutionalized in order to guarantee frequent updating of assessments of resource base options and their implications. And it **ought to be tied to realistic** and ongoing operations—even to the extent of treating segments of the latter in an experimental way. Indeed, it should be remembered that the best thing to come out of the

1952 Paley Commission (President's Materials Policy Commission) was the Resources for the Future research organization. And it should be noted that some of the most exciting developments in our treatment of resources can be found in movements toward adaptive management.112J

References

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3. This techno-economic matter is thoroughly covered in James P. Quirk and Katsuaki L. Terasawa, *The Choice of Discount Rate Applicable to Government Resource Use* (Santa Monica, Calif.: The Rand Corporation, R-3464, December 1987).

4. The termination aspects of industrial policy are seldom thought through. The point is generally relevant, and especially poignant in timber and other primary resource-based industries. See Garry D. Brewer, "Industrial Policy: Disinvestment, Retrenchment, and the Evolving Role of Public and Private Institutions," in R. L. Golembiewski and Aaron Wildavsky, eds., *The Costs of Federalism* (New Brunswick, N.J.: Transaction Books, 1984): chap. 10.

5. A thorough collection of what various disciplines are able to contribute is provided in William C. Clark and R. E. Munn, eds., *Sustainable Development of the Biosphere*. (New York: Cambridge University Press, 1986).

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