

“Compared with the federal government, states have shown greater aggressiveness and imagination in devising ways to earn revenues from their lands.”

—*Robert H. Nelson*  
Professor of Public Affairs  
University of Maryland

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## INTRODUCTION

Each year, at least fifty national forests managed by the Forest Service lose money on their timber sale programs. To some critics, these programs represent an environmental travesty and a classic example of corporate welfare.

Environmental groups such as the Sierra Club and The Wilderness Society point out that many of the money-losing forests are located in rugged, high-altitude areas, with dry or harsh climates. In their view, the failure of the Forest Service to make money indicates that these forests are unsuitable for logging, and that logging should stop.

Some environmentalists also contend that the Forest Service is subsidizing the timber industry. That is, they believe that the Forest Service's inability to make money indicates that the Forest Service

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is giving away our natural resources by selling timber at clearance-sale prices.

Until now, there has been very little empirical investigation of the reasons for below-cost timber programs. As a result, the claims of subsidized programs have carried a great deal of weight in political circles. But there are other possible reasons for below-cost timber programs.<sup>1</sup>

### *Possible Reasons for Below-Cost Timber Programs*

While critics claim that below-cost timber programs occur because logging is not economically feasible, they may occur instead because of agency inefficiencies. Since the Forest Service is under no legal obligation to make a profit, it has little incentive to keep its costs low. Indeed, budgetary incentives currently in place may actually encourage excessive spending.

Second, over the last decade, rising environmental demands have led to more reviews, studies, appeals, and litigation. These have caused the Forest Service to fall far short of its timber sale targets. With less timber sold, there is less revenue to cover the costs.

Finally, the claim that the Forest Service is subsidizing the timber industry is doubtful. The Forest Service, like private, state, and county timber owners, sells most of its timber to the highest bidder in competitive auctions. Thus, the price that timber companies are paying is set in the marketplace. Unlike the federal government's target price program for wheat and corn, which subsidizes production by setting a floor on prices, the government does not manipulate the price of timber.

Why then does the Forest Service lose money selling timber from some national forests? This paper, the fourth in PERC's 1995 *Policy Series*, begins to answer this question. It does so by comparing the economic and environmental performance of national forests with adjacent forests managed by the state of Montana and by St. Louis County, Minnesota. These comparisons will provide insight into the reasons why the Forest Service loses money on timber operations.

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**CASE STUDY: MONTANA**

he timber sale program carried out on the forests of Montana's state school trust lands<sup>2</sup> provides an excellent benchmark for evaluating the Forest Service's timber sale programs on national forests in Montana. Logging sites on school trust lands are often located next to or even within national forests. Their climate, topography, and variety of trees are quite similar.

There are also important operational similarities. Like the Forest Service, the Department of State Lands (DSL), the state agency charged with care and management of trust lands, must prepare timber sales, administer harvests, carry out environmental assessments, respond to environmental appeals, and conduct competitive bids for timber. Like the Forest Service, the DSL requires road construction, tree stand improvement, and reforestation. It must also integrate its timber activities with other uses such as public recreation, wildlife habitat, livestock grazing, and special use leases.

Where these agencies differ markedly is in the stated purpose for the use of their lands. State forests are mandated by law to generate income from timber (and other uses) for the funding of public schools. National forests have no such mandate. By law, national forests are managed to achieve the "combination [of land uses] that will best meet the needs of the American people . . . and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output."<sup>3</sup>

Under these circumstances, it is reasonable to expect the state of Montana's timber program to have higher net returns for a given volume of harvest on its forests than nearby national forests. As we will see, this is the case.

***Regions in Montana***

To compare national and state forests, three distinct growing regions in western Montana were selected. Each region has both

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national and state forests with similar timber-growing potential (although most national forests actually have slightly higher estimates of potential productivity). There is, in other words, no evidence that the potential for growing trees is higher for the state forests than for the national forests in each regional comparison.

The northwest region is the top timber-growing region in the state. State forests in the region, which account for 286,360 acres of suitable timberland,<sup>4</sup> have an average productive potential of about 77 ft<sup>3</sup>/acre/year (Collins and Conner 1991). The nearby Flathead and Kootenai national forests, which account for 670,670 acres and 1,263,00 acres of suitable timberland, respectively, have slightly higher average productive potentials of approximately 90 and 111 ft<sup>3</sup>/acre/year (USDA Flathead Forest Plan and Kootenai Forest Plan).

The western region is the state's next most productive. State forests account for 155,852 acres of suitable timberland and have an average productive potential of 64 ft<sup>3</sup>/acre/year (Conner and O'Brien 1991). The Lolo and Bitterroot national forests are in this region and account for 1,258,033 acres and 389,820 acres of suitable timber land, respectively. Lolo and Bitterroot have productive potentials of 80 and 60 ft<sup>3</sup>/acre/year, respectively (USDA Lolo Forest Plan and Bitterroot Forest Plan).

The southwest-central region has the lowest timber-growing potential of the three. Most of this region is located east of the Continental Divide and is more arid. State forests in the region account for 196,289 acres of suitable timberland and have an average productive potential of 48 ft<sup>3</sup>/acre/year (Chojnacky and Brown 1991). Six national forests lie in this region. They are the Gallatin, Beaverhead, Lewis and Clark, Custer, Deerlodge, and Helena forests. Combined, they account for 1,653,847 acres of suitable timberland and have an average productive potential ranging from 32 ft<sup>3</sup>/acre/year on the Custer to 54 ft<sup>3</sup>/acre/year on the Gallatin.<sup>5</sup>

### *Comparing Economic Performance*

Economically, the state forest trust lands in Montana have been

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far more successful than the national forests in Montana. Timber sales from state forests generated \$13.3 million in income over the 1988–1992 period, while sales from Montana’s ten national forests yielded a loss of nearly \$42 million over the same period, before the forests made mandatory payments to the state. Remarkably, state forests generated this income by harvesting only 8 percent of the quantity harvested by the Forest Service in Montana over this period (see Table 1).

**Table 1**  
**Total Revenues, Expenditures and Harvest Volume**  
**FY 1988–1992**

	<b>Revenues</b>	<b>Expenditures</b>	<b>Harvest Volume*</b>
State Forests	\$ 25,545,779	\$ 12,203,055	191.1
10 Nat'l Forests	173,410,305	215,291,127	2,323.6

\*Million board feet

Sources: Montana Office of Legislative Auditor (1992); and USDA *Timber Sale Program Annual Reports* (1988–1992).

Another way of describing this economic performance is to say that state forests averaged \$2.16 in gross annual revenues for every dollar in expenditures, while nine of ten national forests averaged between \$.09 and \$.73 for every dollar spent on timber sales (see Figure 1).

Only the Kootenai, located in the northwest region, succeeded in making money selling timber. But its economic performance was still much less than that of the state (\$1.30 versus \$2.16). The state’s performance relative to the Kootenai is all the more impressive considering that Kootenai is in the most productive timber region in Montana. The state’s \$2.16 figure reflects sales from both relatively high-producing timber areas near the Kootenai and less productive areas in the southwest-central region.

By far, the worst performers were the Custer, Beaverhead, and

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Gallatin national forests. These forests, located in southwest-central Montana, averaged \$.09, \$.21, and \$.24, respectively, for every dollar in expenditures over the five-year period.

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We can learn more by looking at each region. For the northwest region, economic data from the Flathead and Kootenai national forests were compared to data from the state's northwest forests. Data from the Lolo and Bitterroot national forests were compared to data from the state's western forests, and data from Gallatin, Beaverhead, Custer, Lewis & Clark, Deerlodge, and Helena national forests were compared to data from the state's southwest-central forests. Revenues and costs were averaged over the total volume of timber harvested over the last five years for each region. As Table 2 indicates, the state's overall superior performance is due to both lower costs and higher revenues.

**Table 2**  
**Regional Comparisons of Revenues and Costs\***  
*(five-year averages)*

	Average Revenues	Average Costs
<i>Northwest Region</i>		
State Forests	\$ 156.31	\$ 65.31
Flathead Nat'l Forest	79.27	106.26
Kootenai Nat'l Forest	86.84	66.54
<i>Western Region</i>		
State Forests	102.97	51.98
Lolo Nat'l Forest	69.62	91.85
Bitterroot Nat'l Forest	85.73	175.44
<i>Southwest-Central Region</i>		
State Forests	85.21	79.78
Gallatin Nat'l Forest	30.86	132.56
Lewis & Clark Nat'l Forest	44.81	99.27
Beaverhead Nat'l Forest	34.88	168.79
Custer Nat'l Forest	14.55	139.70
Deerlodge Nat'l Forest	51.58	110.66
Helena Nat'l Forest	51.42	127.29

\* Thousand board feet of harvest

Source: Same as Table 1.

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### *Cost Differences*

Let us look first at some wide discrepancies on the cost side. In the northwest region, Montana spent an average of \$65 per thousand board feet of harvest to administer its timber program, while nearby Flathead National Forest spent an average of \$106 per thousand board feet of harvest on its program. In the western region, the state spent an average of \$52 per thousand board feet of harvest, compared with \$175 on nearby Bitterroot National Forest. In Montana's southwest-central region, the state's costs averaged \$80 per thousand board feet of harvest versus \$133 on Gallatin National Forest, \$169 on Beaverhead National Forest, \$140 on Custer National Forest, and \$128 on Helena National Forest.

A labor comparison of the Gallatin National Forest and the state's central land office provides insight into the cost disparity (Table 3). Gallatin was examined because it is one of the four most costly national forests in Montana and because data on labor hours were available. Based on 1992 budget figures, Gallatin's average wage cost per hour was only slightly higher than that of the state. But the number of Gallatin's labor hours spent to produce a given volume of harvest was over two-and-one-half times that of the state.

**Table 3**  
**Labor Comparison**  
**FY 1992**

	<b>Average Hourly Wage Cost</b>	<b>Labor Hours *</b>
Gallatin National Forest	\$ 15.63	11.6
State Central Land Office	15.30	4.5

\* Per thousand board feet of harvest

Source: For state data, see Montana Office of the Legislative Auditor (1992, 17-18 and 41). Labor data for Gallatin National Forest provided by Dale Holiday, Budget Officer, Gallatin National



Forest.

A Forest Service cost study issued in 1993 sheds additional light on the cost discrepancy. The report notes “a growing imbalance” between the size of the Forest Service sale preparation organization and the size of timber sales (USDA 1993, 54–5). Timber output has fallen dramatically over the last five years while staff size has remained nearly the same, and this has led to a dramatic rise in timber sale costs. On Flathead National Forest, for example, the average cost of sales rose from \$60.17 (per thousand board feet) in 1988 to \$149.40 (per thousand board feet) in 1991 due to lower timber output. The study says that the decline reflects delays and stoppages due to environmental lawsuits and a massive expansion in lengthy environmental analyses.

However, the decline in timber output, while quite real, is only part of the story. The evidence indicates that the Forest Service is inherently less efficient than the state in preparing timber sales and administering harvests.

A comparison of timber sale preparation and harvest administration costs per unit of timber harvested was made between state sales from the northwest region and Forest Service sales from nearby Flathead National Forest over the 1988–1991 period. The state’s best output year in that area was 1988. It harvested 38 million board feet, and the cost of sale preparation and harvest administration was \$16.17 per thousand board feet of harvest. The Forest Service’s best output year in the Flathead was also 1988, a year when it met its timber output target of 122 million board feet of harvest. Yet the cost of sale preparation and harvest administration was \$60.17 per thousand board feet, nearly four times greater than the state’s (USDA 1993). Thus, even in a high output year the Forest Service spends much more per unit than the state conducting basic timber support activities.

The state also builds less expensive roads. To construct a mile of road, the state spends from \$4,000 to \$8,000, while the Forest Service spends from \$45,000 to \$50,000 (USDA 1993). The reason is that most of the state’s constructed roads are temporary. They are built only to extract timber from a given area and when that is finished the road is often reseeded with natural vegetation. In

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contrast, the Forest Service builds many permanent roads, which are more expensive. The Forest Service explains that the roads are for other uses as well, such as motorized recreation. But since recreation users do not pay for the use of the roads, timber programs absorb most of the cost. This cross-subsidization is another reason why the Forest Service's timber sale costs are higher. Timber program dollars are subsidizing motorized recreation.

### *Revenue Differences*

Now let's look at revenues. The Forest Service's national forests in Montana consistently receive less revenue per thousand board feet of timber sold than do the state forests. There could be a number of reasons.<sup>6</sup> For example, the Gallatin National Forest experienced an unusually high number of timber salvage sales over the 1988–1992 period.<sup>7</sup> Salvage sales involve selling diseased or burned timber, which fetches a much lower price than healthy timber.

David H. Jackson (1987) offers a couple of possible explanations for the lower revenues. He analyzed samples of state and Forest Service timber sales in Montana over the 1978–1983 period to determine why stumpage price, a measure closely related to average revenues, is, on average, higher for the state.<sup>8</sup>

Jackson found that the Forest Service did more clearcutting than the state did during this period. Clearcutting generates a lower average stumpage price when stands contain both low and high quality timber. With selective cutting, foresters take mostly high-quality timber.

In addition, Forest Service sales typically involved higher volumes of timber. Forest Service sales averaged 2.9 million board feet, while state sales averaged 1.1 million board feet. More importantly, 10 out of 40 of the national forest sales were much larger than either of these averages, ranging from 6 to 21 million board feet. Jackson describes these ten sales as massive initial development sales in remote areas requiring high road construction costs and costly log retrieval. Because of these higher costs, timber purchasers bid less for this stumpage than for timber sold through

small, less complex sales. The high volume of these large, low-priced sales brought down the overall average price of Forest Service sales. Jackson concludes that “more prudent spatial development” by managers would result in “higher prices and lower development costs. To put it quite simply, current management practices are wasteful” (Jackson 1987, 235).

Some of these management practices may already have changed. More recent figures from Warren (1994) indicate that 1993 average stumpage prices for timber sold from national forests in Montana and state forests were nearly equal. Whether this is because the Forest Service designed its sales with lower development costs and less expensive logging methods than in the past is not known at this time. However, it does indicate that the Forest Service has the potential to approach the state in average stumpage price and, in turn, average revenue.

### ***Comparing Environmental Performance***

Given the fact that the Forest Service’s costs are higher, one might expect environmental quality to be higher on logged sites in national forests than on those of the state. After all, the Forest Service has incurred increasing costs due to more analyses and documentation designed to reduce the impacts of logging on watersheds and other natural resources. Empirical evidence, however, indicates otherwise.

A 1992 study of 46 sites in Montana harvested within the previous three years concluded that the state did a better job of protecting watersheds from the impacts of logging than the Forest Service did. The study concluded that state lands had a “higher rating than other ownership” in employing forest practices that reduce the impact of logging on watersheds (Schultz 1992, 4).

The study, requested by the Montana legislature, had as its express purpose the evaluation of environmentally-related management practices on state, federal, and private forests. The study was carried out by an independent, interdisciplinary team consisting of individuals from environmental groups, state foresters, the Forest Service, the Bureau of Land Management, the

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timber industry, and various consultants. The state ranked highest among all forest landowners, including the Forest Service.

### *Managing for Timber Growth*

One measure of good timber management is the actual growth rate of a forest. This reflects the annual increase in the volume of standing timber, or timber productivity. A forest composed mostly of mature trees grows very slowly and therefore adds little to the inventory each year. A well-planned rotation of harvests and reforestation ensures a timber base with a reasonably high growth rate.

Table 4 presents actual annual growth rates for a number of national forests and regional state forests in Montana. Among national forests, Lolo had the highest average annual growth, averaging 46 ft<sup>3</sup>/acre or about 58 percent of its productive potential. Nearby state forests in the western region averaged 42 ft<sup>3</sup> of growth per acre or about 66 percent of their productive potential.

**Table 4**  
**Measured Annual Net Timber Growth**

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<i>Southwest-Central Region</i>	
State	32 ft <sup>3</sup> /acre
Gallatin National Forest	-13 ft <sup>3</sup> /acre
Lewis & Clark National Forest	14 ft <sup>3</sup> /acre
<i>Northwest Region</i>	
State	40 ft <sup>3</sup> /acre
Flathead National Forest	44 ft <sup>3</sup> /acre
<i>Western Region</i>	
State	42 ft <sup>3</sup> /acre
Lolo National Forest	46 ft <sup>3</sup> /acre

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Source: Collins and Conner (1991); Conner and O'Brien (1991); Chojnacky and Brown (1991); O'Brien and Collins (1991); and USDA forest plans for Flathead, Gallatin, Lewis & Clark, and Lolo.

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The greatest discrepancies exist in the state's southwest-central region. Gallatin averaged a *negative* 13 ft<sup>3</sup>/acre, and Lewis & Clark averaged 14 ft<sup>3</sup>/acre of annual growth or 30 percent of its productive potential. The comparable state forests averaged 32 ft<sup>3</sup>/acre, or 67 percent of their biological potential.

Negative growth on the Gallatin is explained by the fact that most of its suitable commercial timber base is now comprised of very old stands of trees. These older trees have negligible annual growth and are susceptible to insects, disease, and fire. While it is good to have some old growth, the amount of old growth in this forest's inventory appears excessive. (These figures, of course, exclude Gallatin's wilderness areas.)

#### ***Conclusion: Montana Forests***

In sum, this comparison shows that the Forest Service could make money selling timber from some of its money-losing forests if it operated as efficiently as the state of Montana. Moreover, it could do so without sacrificing environmental quality. The state's environmental protection is every bit as good as the Forest Service's, as the 1992 environmental audit of Montana forests indicates. In addition, the state does a better job of sustaining quality timber, that is, trees that are alive and free of disease.

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#### **CASE STUDY: NORTHEASTERN MINNESOTA**

**A** comparison of federal and county timber programs in northeastern Minnesota provides an opportunity to examine performance in the Great Lakes region. Returns from timber sales between 1990 and 1993 were compared for Superior National Forest and the forests managed by the St. Louis County Land Department. These forests grow both hardwoods (e.g., aspen) and softwoods (e.g., balsam fir). As the statistics below indicate, Superior and St. Louis County forests have similar timber-growing potential.

Superior National Forest contains over 2.1 million acres of land

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spread through northern St. Louis County, Cook and Lake Counties. About twelve percent of Superior National Forest is water, and 645,000 acres of land are deemed suitable for timber production by the Forest Service. The forest contains 2,000 lakes, a myriad of wetlands, and the one-million-acre Boundary Waters Canoe Area Wilderness. The forest plan for Superior states that the Forest Service’s goal in managing forest assets is to provide “the greatest long-term net public benefits in an environmentally sound manner” (see USDA *Superior Forest Plan*, p. 1-1).

**Table 5  
Timber Base Comparisons**

	<b>St. Louis County Lands</b>	<b>Superior National Forest</b>
Suitable timberland	744,800 acres	645,025 acres
Standing timber	991 ft <sup>3</sup> /acre	1,083 ft <sup>3</sup> /acre
Hardwood/softwood mix	60:40	50:50
Potential productivity	38.7 ft <sup>3</sup> /acre/year	37.9 ft <sup>3</sup> /acre/year
Average net annual growth	23.4 ft <sup>3</sup> /acre/year	24.6 ft <sup>3</sup> /acre/year
Hardwood/softwood harvest	80:20	67:33

Sources: Kingsley (1991, 3, 23, 25, and 40) and USDA *Superior Forest Plan* (p. 3-9).

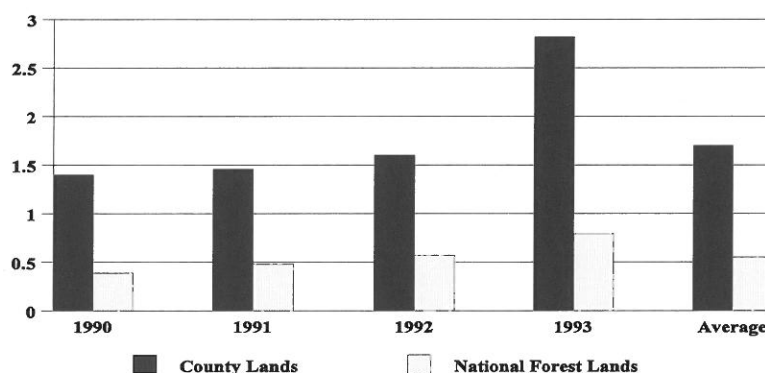
The St. Louis County Land Department manages county lands “to provide optimum returns” while also aiming to assure sustained

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yields of renewable resources and provide protection for wildlife, watersheds, and recreation (St. Louis County Land Dept 1981). It oversees 744,800 acres for timber production scattered throughout St. Louis County (Kingsley 1991, 23). In the northern two-thirds of the county, the Land Department's timberlands are interspersed with state and Superior National Forest timberlands.

#### ***Comparing Economic Performance***

Over the 1990–1993 period, the Land Department harvested 275 million board feet of timber and generated \$2,340,572 in income from its timber program, while the Forest Service harvested 341 million board feet and lost \$5,178,362 from its timber program. Stated another way, the Land Department returned, on average, \$1.70 in gross revenue for every dollar spent on its timber program, while the Forest Service returned only \$0.55 for every dollar spent on its program. Figure 2 presents the data over the 1990–1993 period.



**Figure 2**  
**Returns Per Dollar Spent On Timber Programs**  
Source: St. Louis County Land Department (1994); and USDA, *Timber Sale Program Annual Reports, 1990–1993*.

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Why such a big difference in economic performance? The answer does not lie in revenues. As Table 6 indicates, Forest Service average revenues were only slightly lower than average revenues of the St. Louis County Land Department.

**Table 6**  
**Average Revenues**  
**Per Thousand Board Feet of Harvest**  
*(1993 Dollars)*

	1990	1991	1992	1993	Average
Land Dept					
Lands	\$15.42	\$18.05	\$23.19	\$26.34	\$20.75
Superior					
Nat'l Forest	15.50	17.40	18.35	21.92	18.29

Source: Same as Figure 2.

The Forest Service has generally sold a higher proportion of higher-priced softwoods than the county does, so its average stumpage price has generally been higher (Minnesota Department of Natural Resources, 1988–1993). However, higher stumpage prices for Superior National Forest have not translated into higher average revenues. The reason may be quite simple. It appears that the Land Department has a shorter turnaround time between when the timber is sold and when it is harvested, and the remaining proceeds from the sale are collected. Timber prices were rising over the 1990–1993 period and the county may have more quickly experienced the benefits of rising prices.

To figure out why the Forest Service has done so poorly in comparison with St. Louis County, we must look at costs. Both the Forest Service and St. Louis County spend money on timber sale preparation, environmental and recreational planning and mitigation, roadbuilding, harvest administration, reforestation, and stand improvement. When these costs are divided by annual total harvests, the result is the average cost.



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As Table 7 indicates, the Land Department has much lower average costs. From 1990 to 1993, the overall average cost per thousand board feet was \$12.61 for the Land Department and \$34.12 for the Superior National Forest.

**Table 7**  
**Average Cost**  
**Per Thousand Board Feet of Harvest**  
*(1993 Dollars)*

	1990	1991	1992	1993	Average
Land Dept					
Lands	\$10.99	\$12.38	\$14.51	\$11.36	\$12.31
Superior					
Nat'l Forest	40.20	36.30	32.39	27.59	34.12

Source: Same as Figure 2.

To determine why the Land Department's average costs are so much lower, several cost categories were examined. One was harvest administration. This includes activities such as periodic inspections of the harvested area and monitoring of the terms and conditions of the sales contract. As Table 8 indicates, the Forest Service's costs for harvest administration were nearly 30 percent higher than the Land Department's.

In timber sale preparation, the Forest Service and the Land Department differ even more dramatically. The Forest Service has formal procedures for carrying out environmental analysis, producing reports, and conducting public comment periods, all of which contribute to timber sale preparation costs. Sale preparation costs also include the costs of design, appraisal, contract preparation, and sale and award of timber contracts.

The Land Department has the usual sale preparation costs such as design, appraisal, contract preparation, and auction and award of timber contracts, but its environmental planning process is far less structured than the Forest Service's. It carries out

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environmental planning but without producing formal environmental assessment reports and environmental impact statements.

**Table 8**  
**Harvest Administration Costs**  
**Per Thousand Board Feet of Harvest**  
*(1993 Dollars)*

	1990	1991	1992	1993	Average
Land Dept					
Lands	\$ 3.21	\$ 3.08	\$ 3.59	\$ 2.97	\$ 3.21
Superior					
Nat'l Forest	4.41	5.38	4.36	4.14	4.57

Source: Land Department's cost data provided by Tom Zeisler, Resource Data Supervisor, St. Louis County, Minnesota. Superior's cost data from USDA (1993).

The Land Department's costs for timber sale preparation are about 46 percent lower, on average, than those of the Forest Service on Superior National Forest. Table 9 presents costs for timber sale preparation for each agency over the 1990–1993 period. Thus, the most dramatic cost contribution would seem to be the different approaches to environmental planning adopted by these two agencies.

**Table 9**  
**Timber Sale Preparation Costs**  
**Per Thousand Board Feet Offered**  
*(1993 Dollars)*

	1990	1991	1992	1993	Average
Land Dept					

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Lands	\$ 4.59	\$ 4.65	\$ 3.39	\$ 3.84	\$ 4.12
Superior					
Nat'l Forest	7.76	7.81	7.88	6.83	7.57

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Source: Same as Table 6

We also find noticeable differences in expenditures for reforestation and timber stand improvement. Although it has a slightly smaller suitable timber base, the Forest Service does much more reforestation and timber stand improvement than the Land Department. Over the 1990–1993 period, the Forest Service’s combined reforestation and timber stand improvement activities encompassed some 31,096 acres, while the Land Department’s combined reforestation and timber stand improvement activities encompassed roughly 4,000 acres, or only 13 percent of the acreage treated by the Forest Service. The total cost of this activity for the Forest Service over this period was \$2,214,000 in 1993 dollars (Forest Service Central Accounting System). The Land Department’s cost for this activity was \$305,926 in 1993 dollars,<sup>9</sup> or 86 percent less than the Forest Service.<sup>10</sup>

Why does the Forest Service choose to do more reforestation and stand improvement than the Land Department? One plausible reason is that reforestation enhances the ability of the national forest manager to obtain control over some of the timber revenues. The more reforestation, the more funding goes to the national forest rather than simply to the U.S. Treasury. This reallocation is authorized under the Knutsen-Vandenburg (K-V) Act.<sup>11</sup>

Interestingly, roadbuilding, which is often viewed as excessively wasteful, did not show a significant difference between owners. Both agencies constructed approximately the same amount of permanent roads a year—10.4 miles by the Land Department on its forest acreage and 9.3 miles by the Forest Service on Superior. The Forest Service spent \$986,000 on road construction over the 1990–1993 period, while the Land Department spent approximately \$790,000.<sup>12</sup>

Other program activities undoubtedly contribute to differences in timber program costs. Both the Forest Service and the Land Department, for example, do forest-wide planning, conduct periodic

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forest inventory, perform silvicultural examinations and prescriptions, and carry out activities to mitigate and sometimes improve conditions for wildlife and recreation. Unfortunately, it was not possible to set up meaningful comparisons for these categories because the costs were not separable from program costs.

Still, the evidence is clear: For two timber bases close to one another and rated very similar in timber-growing potential, the Forest Service carries out a timber program whose costs are substantially higher than those incurred by the Land Department. These higher costs result in substantially lower returns from timber sales when compared to returns from timber sales on lands administered by the St. Louis County Land Department.

### *Comparing Environmental Performance*

Are the higher costs incurred by the Forest Service on its timber program for Superior National Forest resulting in better protection of the forest environment? The empirical evidence indicates that the answer is no. The Minnesota Division of Forestry established an annual field auditing program in 1991, designed to evaluate how well landowners protect water quality from the impacts of logging. The report on the 1992–93 field audit concludes that the rate of compliance was highest on county lands at 90 percent, while the Forest Service’s rate of compliance was slightly lower at 87 percent (Phillips, Rossman, and Dahlman 1994).

The Minnesota audit included assessments of 261 recently harvested sites in eastern Minnesota and was patterned after the approach used in Montana. Like the Montana audit, it was conducted by interdisciplinary teams of experts in forestry, hydrology, soils, and biology, and included representatives from local environmental groups such as the Audubon Society and the Sierra Club. These teams evaluated compliance with “best management” standards for protecting water quality.

The Division of Forestry report offers several observations on why the Forest Service had a lower compliance rate. The report notes that federal contracting procedures give the Forest Service less freedom to select logging companies on the basis of

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performance. It also suggests that the Forest Service has “less direct oversight of field foresters” and has too many tasks to fulfill, reducing the time available to oversee contract performance.

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CONCLUSION

Why is the Forest Service's performance so much poorer than the performance of the state of Montana and St. Louis County?

First, the state and county have an overriding requirement to generate income from timber and other goods and services marketed from their forest lands.

Second, since these lands must generate income to fund public schools in Montana and county services in St. Louis County, Minnesota, school districts in Montana and local taxpayers in St. Louis County have a vested interest in their performance. These groups enjoy legal standing when it comes to making sure that these forests generate revenues from timber sales. When this does not occur—when, for example, state and county land managers fail to make timber purchasers honor their financial commitments or when they bow to environmentalists' pressures and halt a timber sale—courts for the most part have ruled in favor of the trust beneficiaries. They have declared that land managers must honor the requirement to maximize returns.

Ironically, this emphasis on economic returns has had an aesthetic benefit as well. In 1992, residents near Bozeman, Montana, tried to get the state to halt a timber sale because they thought that it would look ugly from their homes; it "threatened" their viewshed. The state took the position that if the residents wanted a scenic viewshed, they should be willing to pay for it. The state offered to sell a viewshed easement to the residents for \$430,000, the amount that the public schools would lose if the state failed to log. The residents were about to buy the easement but then decided that a compromise was more attractive. The state agreed to a selective harvest that mimicked natural openings in the area.

Following the harvest, local residents and environmentalists praised the state's environmentally sensitive approach to the sale. Despite the lengths to which the state went to design a sensitive harvest, it still managed to make a substantial profit. Proceeds were twice the state's costs in carrying out the sale (McMillion 1992).

In contrast to state and county forests, no one has a personal financial stake in the income generated from national forest assets. Moreover, these forests are legally under no obligation to generate income. Gross receipts from timber sales go to the U.S. Treasury and to general timber activity funds, such as roadbuilding and reforestation. Congressional appropriations are used to offset losses. Hence, there is little, if any, incentive for the Forest Service to keep its costs low.

National forests have no bottom line, and without it, the Forest Service lacks an objective measure from which to assess its performance. Instead, it is forced to rely on “pseudo-measurements,” such as the number of environmental assessment reports and forest plans produced or the amount of timber harvested. As this report indicates, many of these activities have accomplished little in the way of environmental quality and much in the way of increased costs. The evidence indicates that federal timber sale programs could achieve much better economic performance without sacrificing environmental quality if they operated with the same income incentive as the state of Montana and the St. Louis County Land Department.

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#### NOTES

1. Some environmentalists use the term “below-cost timber sales” to describe forests that lose money on their timber programs. The term is not quite right, however. Money-losing sales can occur for a variety of reasons (such as getting rid of diseased timber). The issue that we are addressing is the question of why a national forest’s entire timber program fails to make money.
2. State school trust lands are lands that were granted to the state of Montana by the federal government when Montana was admitted to the Union. The purpose is to support common schools, state universities, and other institutions. Of the total trust, 485,000 acres are classified as commercially operable timberlands. In this paper, we refer to these acres as “state forests.”
3. This quotation comes from the Multiple-Use Sustained-Yield

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Act. See 16 U.S.C. § 531 (a) (1988).

4. Suitable timberland is land capable of growing at least an additional 20 ft<sup>3</sup>/acre of timber a year that has not been removed from timber production for legislative or administrative reasons.

5. See relevant USDA forest plans.

6. Revenues can differ because of differences in timber mix, quality of timber being sold, yield of timber per acre, area development costs, silvicultural systems employed (for example, selective cuts or clearcuts), log retrieval systems (such as tractor vs. helicopter logging), and constraints imposed on loggers.

7. Letter from David P. Garber, Forest Supervisor for Gallatin National Forest, May 13, 1993.

8. Stumpage prices are the prices of delivered logs minus all the costs of logging, land development, and transportation to the mills.

9. Data provided by Tom Zeisler, Resource Data Supervisor, St. Louis County Land Department, Duluth, MN.

10. Data provided by USDA Forest Service Central Accounting System 1995 and Tom Zeisler (see above).

11. McKetta and Weiner (1994, 23) provide additional empirical evidence of this phenomenon.

12. Data provided by Forest Service Central Accounting System 1995 and Tom Zeisler (see above).



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