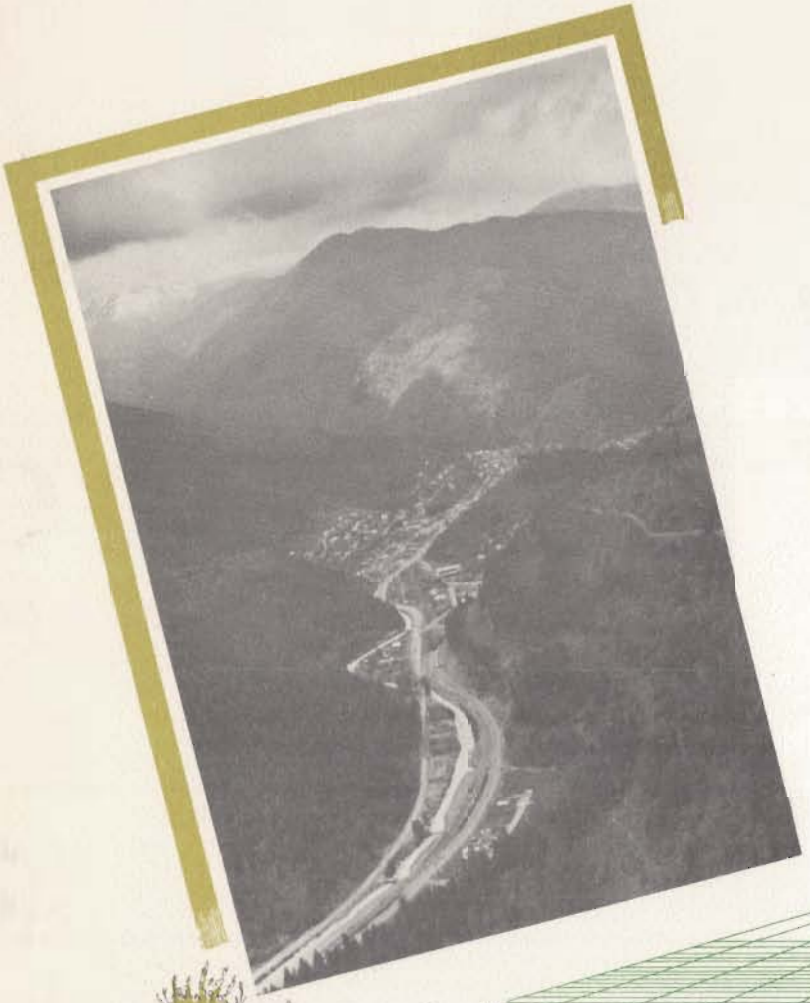

PLANNING AND FINANCING ROADS IN SPARSELY SETTLED PUBLIC LAND STATES

With Special Reference To

IDAHO

Research in cooperation with

IDAHO DEPARTMENT OF HIGHWAYS

and

UNITED STATES DEPARTMENT OF COMMERCE

BUREAU OF PUBLIC ROADS

January, 1962 Idaho BBER Research Report No. 5

UNIVERSITY OF IDAHO
Moscow, Idaho
D. R. Theophilus, President

BUREAU OF BUSINESS AND ECONOMIC RESEARCH
COLLEGE OF BUSINESS ADMINISTRATION
David D. Kendrick, *Dean and Director*
Norman Nybroten, *Associate Director*

SOME PROBLEMS OF PLANNING AND FINANCING ROADS IN SPARSELY SETTLED PUBLIC-LAND STATES
with special reference to IDAHO

by

NORMAN NYBROTEN, *Associate Director and Professor of Economics*

WORKING ARRANGEMENTS AND SUPPORT

In December 1957 a research contract was drawn between the University of Idaho and the Idaho Department of Highways, largely through the efforts of L. C. Cady, who was then Executive Secretary of the University's Research Council and G. Bryce Bennett, State Highway Engineer. The title of the overall project is Value of Roads to and in Public Lands in Idaho. The first report, Value of Roads to and in Public Lands, Preliminary, Part 1, Vol. 1, Effect on Timber and General Values, was issued in August, 1958. The second report, Value of Forest Highways in Idaho, was issued in September, 1959. This is the third and final report on the project.

The organization of the project is as follows--

Project Director: Norman Nybroten, Associate Director of the Bureau of Business Research and Professor of Economics, College of Business Administration.

Advisory Committee: David D. Kendrick, Dean and Professor, College of Business Administration, Chairman of Committee.

L. C. Cady, Dean of the Graduate School.

Earl F. Cook, Dean of the College of Mines and Director of the Bureau of Mines and Geology.

Ronald D. Ensign, Associate Director of the Agricultural Experiment Station.

Allen S. Janssen, Dean and Professor, College of Engineering and Director of the Engineering Experiment Station.

Ernest Wohletz, Dean of the College of Forestry and Director of the Forest, Wildlife and Range Experiment Station.

Liaison: Idaho Department of Highways, Edward W. Equals, Planning Survey Manager.

United States Bureau of Public Roads, William Hall, Planning and Research Engineer, Region 8 and Clifford R. Salmen Divisional Engineer for Idaho.

UNIVERSITY OF IDAHO

MOSCOW, IDAHO

Office of the President

January 16, 1962

Mr. G. Bryce Bennett, P.E.
State Highway Engineer
State Department of Highways
P. O. Box 879
Boise, Idaho

Dear Mr. Bennett:

I again take pleasure in transmitting a report of research resulting from our cooperative project entitled "Value of Roads to and in Public Lands in Idaho." This is most certainly a project of great moment both to those who are responsible for developing and giving access to our public lands and to the economy of the State in general. Those of you who must make and have the opportunity to activate plans for this vital facility comprise one of the most effective instruments for shaping the State's economy. We are glad to have had your cooperation and financial support in this project, which we have considered a major research responsibility, and hope the results will be of some help in your grave responsibility and further that we may be of continued service.

The report, SOME PROBLEMS OF PLANNING AND FINANCING ROADS IN SPARSELY SETTLED PUBLIC-LAND STATES, with Special Reference to Idaho, should answer many questions of public officials and the public in general. Several of its facets should help point the way toward further, more detailed, research and the application of research in the mutual interest of those who must husband or are dependent upon the State's resources.

Sincerely,

D. R. Theophilus
President

DRT:pks

FOREWORD

David D. Kendrick

Chairman of the Advisory Committee

There are people who are well informed on the immediate results of certain public improvements in specific localities. Although these people know their communities well, they generally need more information in either the overall costs of making such improvements or in the overall returns. Both costs and returns normally spread greatly beyond single communities. The public administrator is faced with needs for decisions and for informing the public of widespread factors in such decisions.

The public highway program has reached gigantic proportions considered either from the standpoint of finance or facilities. It will have profound effects on the economy far into the future. It will be especially significant in determining uses and values of public lands and related areas. The economy and destiny of much of Idaho is highly dependent upon the planning and financing of her roads. Research directed toward aiding these functions should be vital.

PREFACE

This report deals mainly with what is here termed the major public-land states. These have been defined as the states in which public domain plus nontaxable Indian lands constitute more than 5 percent of the state's area. The reason for this definition is that lands approximately thus defined constitute the basis for offsetting the existence of public land in states in funds required from states to match Federal aid for projects on Federal-aid primary systems and Federal-aid secondary systems. Under this definition states having hitherto ordinarily been referred to as the 11 Western States are included and also Alaska and South Dakota.

Any definition of public-land states would to some degree need to be arbitrary. The basis used for the definition is not a basis for Federal aid to offset the existence of public land in a State. If the basis for Federal aid were used, the definition would have been more nearly accurate based on total Federal lands in a State rather than only those used as a basis for reducing the amount of funds required from a State to match Federal funds. However, this definition could have made essentially the same delineation.

Certainly the States included cannot be grouped together and referred to as a uniform group either as being sparsely-settled or as having equal amounts or burdens of public lands. Settlements vary from the barren wastes, mountains and deserts to the congested coastal urban areas. The public lands vary from some of the most productive in the contribution to the local economy to the vast wastes which add greatly to the costs of transport and transport facilities. Detailed work in the area would need to treat each State as an individual observation although many of the problems are common to several states.

Special emphasis is given to Idaho in the report, partly as a matter of special responsibility but also because information was more readily available. Although varying in degree and relative importance, Idaho's problems probably are indications of other State's problems and at least common approach might be helpful. The specific sub-area sections for Idaho are included, not to solve the problems for these areas, but, to point out the problems and the great contributions which detailed pragmatic research may make in further invoking highway planning as a force in directing the State's progress and development.

Several Federal, State, and local agencies have been very helpful in supplying data. William Hall, U.S. Bureau of Public Roads and Edward W. Equals, Idaho Department of Highways, suggested many needed changes in the manuscript. Frank Merritt has been responsible for cartographic work and processing. The excellent cooperation of the Idaho Department of Highways has been most important. Notwithstanding all the help and cooperation, I take sole responsibility for conclusions drawn.

University of Idaho
Moscow, Idaho
January, 1962

NORMAN NYBROTEN

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Chapter I

INTRODUCTION

If the major public-land states differed from other states only in the ownership of the land resources, the program and equities in the matter of road development could be greatly simplified. If this were the case, the administrators of public lands could be directed to have the pertinent philosophy and to act in a manner similar to that of the private owners.

One of the great differences between the major public-land states and the other states is in the land resource itself. The degree of difference depends upon which individual states are compared because there is great variation of land resources among the public-land states and also among the other states. The major public-land states contain vast areas of land which are generally submarginal for private ownership and operation. Other lands are suitable for limited use, or cyclical use, and for these the general consensus has been that the government is the most suitable custodian.

Both by virtue of geographic location and the land resources, the public-land states are in earlier stages of development than the other states. The great hinterland areas of these states did not lend themselves as readily to the piecemean conquest by small-scale private enterprise. The barren deserts, rugged-but-rich mountains, and vast distances necessitated collective action through large-scale organization in order to make the area an integral factor in the nation's occidental economy.

Planning and financing transportation factors have been difficult in these states because of--policies of public land disposal, mixtures of great risks and great opportunities, and variations in interests and capacities of the generally underfinanced settlers. Along with the states, the Federal Government recognizes a great responsibility partly because of specific property interests but also because of the widespread effects of improvement in transportation and development. Technological changes in transportation and increasing population pressures are causes for increased recognition.

Problems of Frontier Origin

It may appear as somewhat enigmatic that frontier areas should entice so many people with so little cash to invest in lands so badly in need of investment. This situation is not

unique to the frontier, however. It seems traditionally true that only those persons who have already spent large portions of their physical energies have been able to accumulate much capital for investment. Having spent these energies generally leaves them unenthusiastic about frontier life. Without adequate data and knowledge on the conditions of the frontier, these same persons have been reluctant to extend capital into frontier areas. Moreover, their efforts have not always been appreciated. Frequently they have been thought of and condemned as the absentee capitalists who bleed the resources of the locality without contributing hard work.

The general naiveté of frontier people in the fields of industrial and financial organization became a deterrent factor in the development of the West. Even though capital was badly needed, the people were not adept at distinguishing capital used in their own interests from capital used in an adverse manner. Unfortunately the latter experiences made deep impressions and often an unhealthful climate for capital for bonafide development.

The frontiersman was not proficient in advertising the resources of the West in a manner which would minimize ideas of risk in the minds of the capitalists of the rest of the country. Rather than making a colorful, or even careful, account of the potentialities of the area to induce capital, he usually committed himself to a high interest rate. Interest rates of 2 percent or more per month were prevalent. Throughout the years, the interest rates in comparable circumstances--for example in notes secured by mortgages on real estate--have averaged considerably higher in the less-developed states than in the more-developed states.

Beyond the problem of scarcity of capital, the settler in the frontier areas of the West had a financial problem associated with the pattern of land ownership. Part of the risk in developing his own land depended largely on the development in the adjoining or neighboring lands. To make a reasonable appraisal of the risk element in his development, it was necessary to plan the development of his own land in terms of his prediction of the development of the neighboring lands, which often were in transitory ownership and unpredictable control.

The ultimate ownership and tenure of this other land were to become quite decisive in the nature of land use and development. The physical characteristics of the land, at least to

some extent, determined the ultimate disposal of the public lands. However, this was not the sole determinant. The government policy seemed generally consistent in releasing for private ownership the land deemed more suitable for relatively small-scale private use. Both the interpretation and the effect of this policy varied from time to time and added to the difficulties of predicting the future tenure and development of areas involving unreserved Federal lands.

Another important problem in the decisions of the settlers and the communities bordering these Federal lands was the prediction of the future action of the Federal Government in the use and development of the lands retained in Federal ownership. Ordinarily the development programs have depended upon the disposal to be made. In the instance of reserving the lands for specific public-land uses, the initial decisions and planning for development have been the responsibility of the administering agencies of the government. The nature and degree of development have varied with the land use and the philosophy and effectiveness of the administering agencies of the government.

Predicting the development of reserved Federal lands entails difficulties, but the most significant difficulty comes before the Federal lands are reserved. Relatively little development has been done or planned in the unreserved (Public Domain) Federal lands. The management of these lands has been primarily that of retaining the values, classifying the land, and acting upon claims for land. Out of the Public Domain have come most of the highest-producing farms, ranches, and forests of the West. The successful claimant of public land had a general responsibility for developing the land and, jointly with his neighbors, the community.

A Current Problem

There is a very real problem of road development and finance associated with the Public Domain. Vast areas of the Public Domain do not presently require and cannot economically support roads to the remaining limited and undeveloped local resources--the more productive land having been either reserved for a higher public use or gone into private ownership. Also some of the least productive lands have been set aside as either "wild" areas or "wilderness."

Establishing "wilderness areas" in the Federal lands is a matter of controversy. Some of the local interests claim that their economic enterprises are damaged either through cutting

off resources such as grazing or timber and that the mobility of their operations will be damaged. Most of the major public-land states are involved in this issue. Both highway finance and development can be affected significantly by the decisions as to the boundaries of the wilderness areas.

It is not an objective of this report to show a detailed analysis, or even simple compilation, of the highway finances and developments in the major public-land states. An objective is rather that of presenting some effects of major elements of the present programs--which may be of help in evlauating some possible alterations in the program of Federal aids in terms of maximizing the value of public lands in the nation's economy and also in the economies of the States mainly involved. Only with relatively complete studies of the various economies, including long-run projections into the future, can such changes be adequately evaluated because highways for the future must be planned with knowledge of progress.

Chapter II

FEDERAL HIGHWAY AID AND FEDERAL LAND

Nature of the Public-land Federal Aid

A completely equitable method of compensating an individual state for building and maintaining additional highways because Federally-owned lands are located in the state would at best be a matter of controversy. There would be many variables involved which would not lend themselves to generalization from one area to another. Not only would these variables be associated with the nature and use of the public land but also with the economy in the surrounding land. Ordinarily the principal argument for financial relief to public-land states is that the public land is not subject to local taxation--which may be valid for some programs and not for others. Both the demands for public service and the contributions to the public funds vary greatly among both programs and areas involved.

Whether or not reasonable equities can be determined among the states or geographic areas in Federal aids to highways, there remains the problem of maximizing the value of land resources through giving the products of these resources access to the market. In this matter conditions and needs change both with technology and the general economy. Some of the changes result from relatively predictable orderly growth but others emerge in manners not readily foreseeable, from events such as war, flood, earthquakes,and epidemics and pestilences of various kinds. Often the Federally-owned lands are much involved in emergency conditions and the Federal Government acts when the conditions arise.

A complete tabulation of Federal aid to highways and roads in the public lands or in which public lands are involved would be extremely complex partly as a matter of accounting for highway aids included in programs primarily non-road programs and partly as a matter of tracing the different channels through which such aid can evolve.

Some of the Federal legislation under which Federal money is expended on roads in which Federally-owned land is involved is under the following section headings: (From 23 USCA §§ 101)

Forest road or trail--"...wholly or partly within or adjacent to and serving the national forests."

Forest development roads and trails--"...of primary impor-

tance for the protection, administration, and utilization of the national forests or where necessary, for the use and development of the resources upon which communities within or adjacent to the national forests are dependent."

Forest highway--"...a forest road which is of primary importance to the States, counties, or communities within, adjoining, or adjacent to the national forests."

Indian reservation roads and bridges--"...located within an Indian reservation or that provide access to an Indian reservation or Indian land, and...part of the Indian Bureau road system."

Park roads and trails--"...in national parks or monuments ...and also including approach roads to national parks and monuments..."

Parkway--"...on lands to which title is vested in the United States."

Public lands highways--"...means main highway through unappropriated or unreserved public lands, nontaxable Indian lands, or other Federal reservations."

The finances under these headings are of general importance to the major public-land states. The items are not of equal importance and not of the same relative importance from one state to another. The items of Forest highways, Forest development roads and trails, and Public lands highways are of considerable importance in the financing of highways in Idaho. Although they are of significance, they will not receive major emphasis in this report except insofar as they may be alternatives in the Federal aid based on highway systems.

The three Federal-aid systems

Both from the standpoint of finance and other features of cooperation between the Federal and state governments the public roads in which there is a joint responsibility between these levels of government have been divided into systems. Each system receives a separate apportionment of Federal funds. In each of these systems the relative amounts of the costs paid by the state involved and the Federal Government are affected by the amount of Federally-owned land within the state in question. This comes about indirectly in that the area of the state, including Federally-owned land, is a factor in determining the amount of Federal aid the state will receive. That the relative shares are affected, assumes that a state does not furnish financing beyond the minimum required to obtain the Federal apportionment.

The Interstate System is a National System of Interstate and Defense Highways. For the nation as a whole it is limited to 41,000 miles and is planned to be transcontinental in nature--connecting the principal roads traversing the United States.

For the fiscal years 1960 through 1969 the apportionment of Federal funds is essentially based on the amount needed to complete the system in each state. The public-land aid to this system in the long run would generally be determined by the Federal share payable which is embodied in the fact that the Federal share is "...90 per centum of the total cost thereof, plus a percentage of the remaining 10 per centum of such cost in any State containing unappropriated and unreserved public lands and nontaxable Indian lands, individual and tribal, exceeding 5 per centum of the total area of all lands therein, equal to the percentage that the area of such lands in such State is of its total area, except that such Federal share payable on any project in any State shall not exceed 95 per centum of the total cost of such project." (From 23 USCA § 120, c) Under this law the Federal share reaches its maximum at the point of a state having half of its total area classed as "unappropriated and unreserved public lands and nontaxable Indian lands, individual and tribal."

Figure 1 shows diagrammatically the sharing of the costs of the Interstate System between a state and the Federal Government. Note that the base is 90 percent Federal for any state having less than 5 percent of its area in the classes eligible for credit. Idaho, with approximately 12.3 million acres of eligible land, has about 23 percent of her area in the classes eligible for this type of public-land credit in the matching funds. Consequently, the Federal share on the Interstate System in Idaho is approximately 90 percent plus .23 x 10 percent or 92.3 percent. If all of the Federal lands within Idaho, both reserved and unreserved, were declared eligible, the Federal share would be at the maximum of 95 percent. From Figure 1, it can be noted that the maximum credit which could be derived from eligible public lands would be 5 percent of the total costs of the Interstate System.(1)

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(1) The entire costs of "elimination of hazards of railway-highway crossings..." may be borne by the Federal Government, but this is in no way contingent upon public lands. (23 USCA § 130)

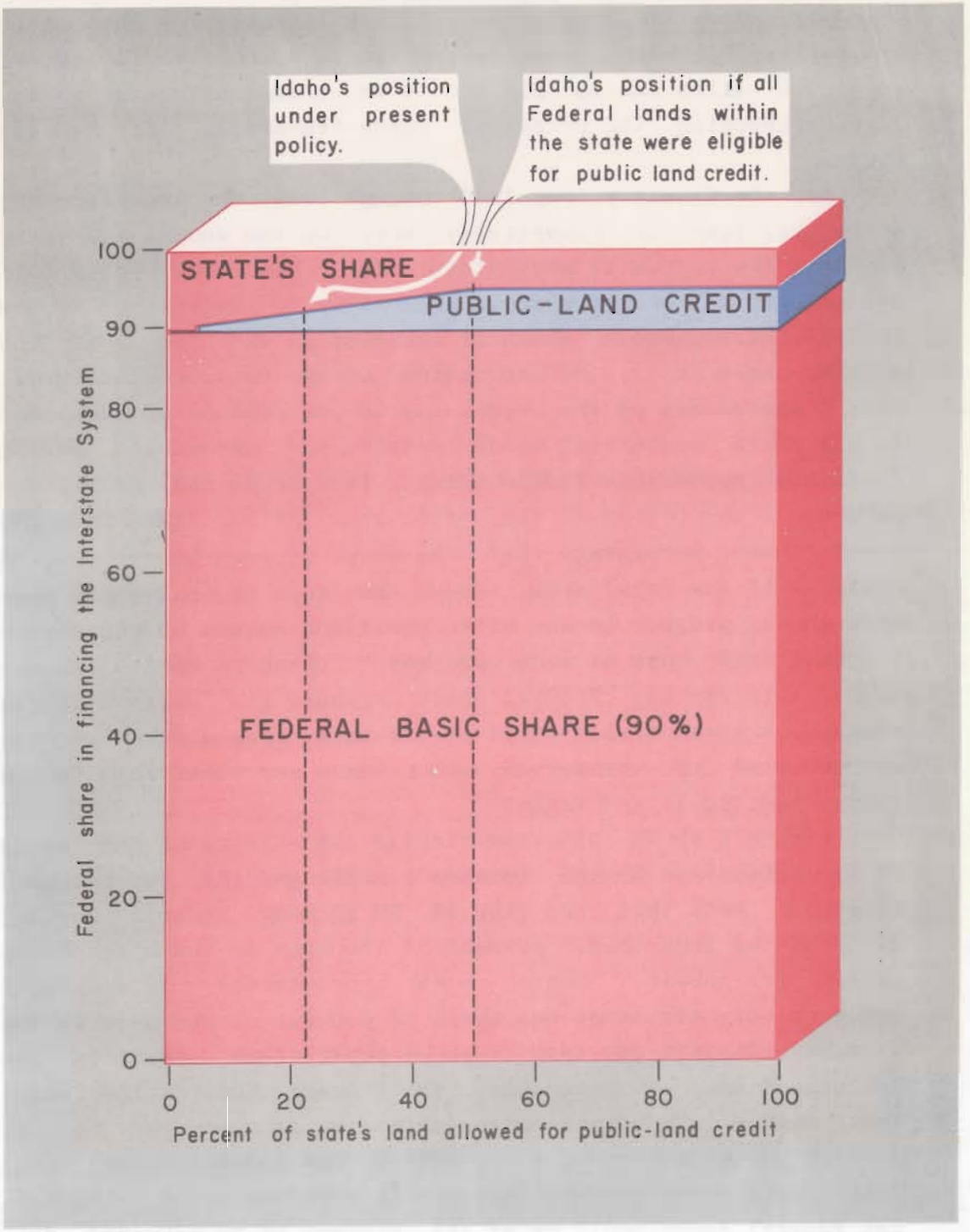

Figure 1. Percentage Federal share in financing the Interstate System for varying amounts of eligible Federal lands in a state qualifying for public-land credit and also showing Idaho's present position and an alternative position(1)

(1) The public-land credit is the same as project matching credit arising from the location within the state either or both public domain and Indian lands in excess of 5 percent of the state's area.

The Federal-aid primary system and Federal-aid secondary system can be treated simultaneously in this analysis, because the factor with which this analysis is concerned is the same in both formulas for Federal aid. So far as financing and administration are concerned, they are, however, two distinctly defined systems. Definitions (23 USCA §§ 103) are as follow:

> (b) The Federal-aid primary system shall consist of an adequate system of connected main highways, selected or designated by each State through its State highway department, subject to the approval of the Secretary as provided by subsection (e) of this section. This system shall not exceed 7 percentum of the total highway mileage of such State, exclusive of mileage within national forests, Indian, or other Federal reservations and within urban areas, as shown by the records of the State highway department on November 9, 1921. Whenever provision has been made by any State for the completion and maintenance of 90 per centum of its Federal-aid primary system, as originally designated, said State through its State highway department by and with the approval of the Secretary is authorized to increase the mileage of its Federal-aid primary system by additional mileage equal to not more than 1 per centum of the total mileage of said State as shown by the records on November 9, 1921. Thereafter, it may make like 1 per centum increases in the mileage of its Federal-aid primary system whenever provision has been made for the completion and maintenance of 90 per centum of the entire system, including the additional mileage previously authorized. This system may be located both in rural and urban areas. The mileage limitations in this paragraph shall not apply to the District of Columbia, Hawaii, Alaska, or Puerto Rico.
>
> (c) The Federal-aid secondary system shall be selected by the State highway departments and the appropriate local road officials in co-operation with each other, subject to approval by the Secretary as provided in subsection (e) of this section. In making such selections, farm-to-market roads, rural mail routes, public school bus routes, local rural roads, county roads, township roads, and roads of the county road class may be included, so long as they are not on the Federal-aid primary system or the Interstate System. This system shall be confined to rural areas, except (1) that in any State having a population density of more than two hundred per square mile as shown by the latest available Federal census, the system may include mileage in urban areas as well as rural, and (2) that the system may be extended into urban areas subject to the conditions that any such extension passes through the urban area or connects with another Federal-aid system within the urban area, and that Federal participation in projects on such extensions is limited to urban funds.

Public lands in the apportionment of Federal highway funds

Although there are several relatively minor direct programs and some indirect programs in which the Federal Govern-

ment gives financial aid to a state by reason of Federal land being located in the state, the most important aid has been in the general apportionment of Federal highway funds. Actually the states are eligible for a public-land credit for the Interstate System, as has been explained, but the main public-land credit comes to states by reason of the Federal-aid primary system and the Federal-aid secondary system. The apportionment for these two systems (23 USCA §§ 104) is as follows:

"(1) For the Federal-aid primary system:

One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the population of each State bears to the total population of all the States as shown by the latest available Federal census; one-third in the ratio which the mileage of rural delivery routes and star routes in each State bears to the total mileage of rural delivery and star routes in all the States at the close of the next preceding fiscal year, as shown by a certificate of the Postmaster General, which he is directed to make and furnish annually to the Secretary. No State shall receive less than one-half of 1 per centum of each year's apportionment.

"(2) For the Federal-aid secondary system:

One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the rural population of each State bears to the total rural population of all the States as shown by the latest available Federal census; and one-third in the ratio which the mileage of rural delivery and star routes, certified as above provided, in each State bears to the total mileage of rural delivery and star routes in all the States. No State shall receive less than one-half of 1 per centum of each year's apportionment."

For both of these systems one-third of the funds are apportioned among the states on the basis of "the ratio which the area of each State bears to the total area of all the States." No distinction is made between Federally-owned lands and other lands in this ratio. Consequently a state with Federally-owned land within its borders is credited with such land in its area and one-third of the funds for both the primary and secondary systems are increased accordingly. This, in effect, results in a public-land credit. If the laws governing the distribution of Federal aids to the primary and secondary systems were not qualified further, one-third of the funds would, to the state level, be applied equally to public lands and other lands, but there are qualifications.

States are required to match Federal funds for the primary and secondary systems. There are matching requirements for a project--which essentially means that these requirements must

be met by a state in order to use the Federal money. The language of the governing law is as follows:

> "Subject to the provisions of subsection (d) of this section, the Federal share payable on account of any project, financed with primary, secondary, or urban funds, on the Federal-aid primary system and the Federal-aid secondary system shall not exceed 50 per centum of the cost of construction, except that in the case of any State containing nontaxable Indian lands, individual and tribal, and public domain lands (both reserved and unreserved) exclusive of national forests and national parks and monuments, exceeding 5 per centum of the total area of all lands therein, the Federal share shall be increased by a percentage of the remaining cost equal to the percentage that the area of all such land in such State, is of its total area." (23 USCA § 120, a)

Figure 2 shows the relationship of any individual state's matching requirement to the percentage of eligible public land in the state. The basic matching ratio is a 50-50 basis--that is, one dollar of state funds for each dollar of Federal on the primary and secondary systems. From the figure it is clear that if all of the land within the boundaries of a state were "nontaxable Indian lands, individual or tribal, and public domain lands (both reserved and unreserved) exclusive of national forests and national parks and monuments," the state would not need to match any of the apportioned money for the primary and secondary systems. If less than 5 percent of the state's area were in this category, the matching would be on a dollar-for-dollar basis.

Idaho has approximately 23 percent of her area in nontaxable Indian lands, individual or tribal, and public domain (both reserved and unreserved) exclusive of national forests. For this reason the matching requirements of the Federal Government are 50 percent plus .23 x 50 percent or 61.5 percent. Although the law states that the "Federal share shall be increased" there is no increase in Federal funds to the state having eligible public lands--the funds to the state having already been determined in the apportionment. The statement that the share is increased pertains to matching requirement and would appear to be more accurately stated in saying that the state's share is reduced because the ultimate effect is that less state funds are available. The Federal-aid construction would be diminished unless the state furnished more funds than required in the matching ratios. For example, if all of the Federal lands in Idaho were classified as eligible for this exemption, Idaho would supply less than 18 percent of the funds for the primary and secondary systems. Rather than increase

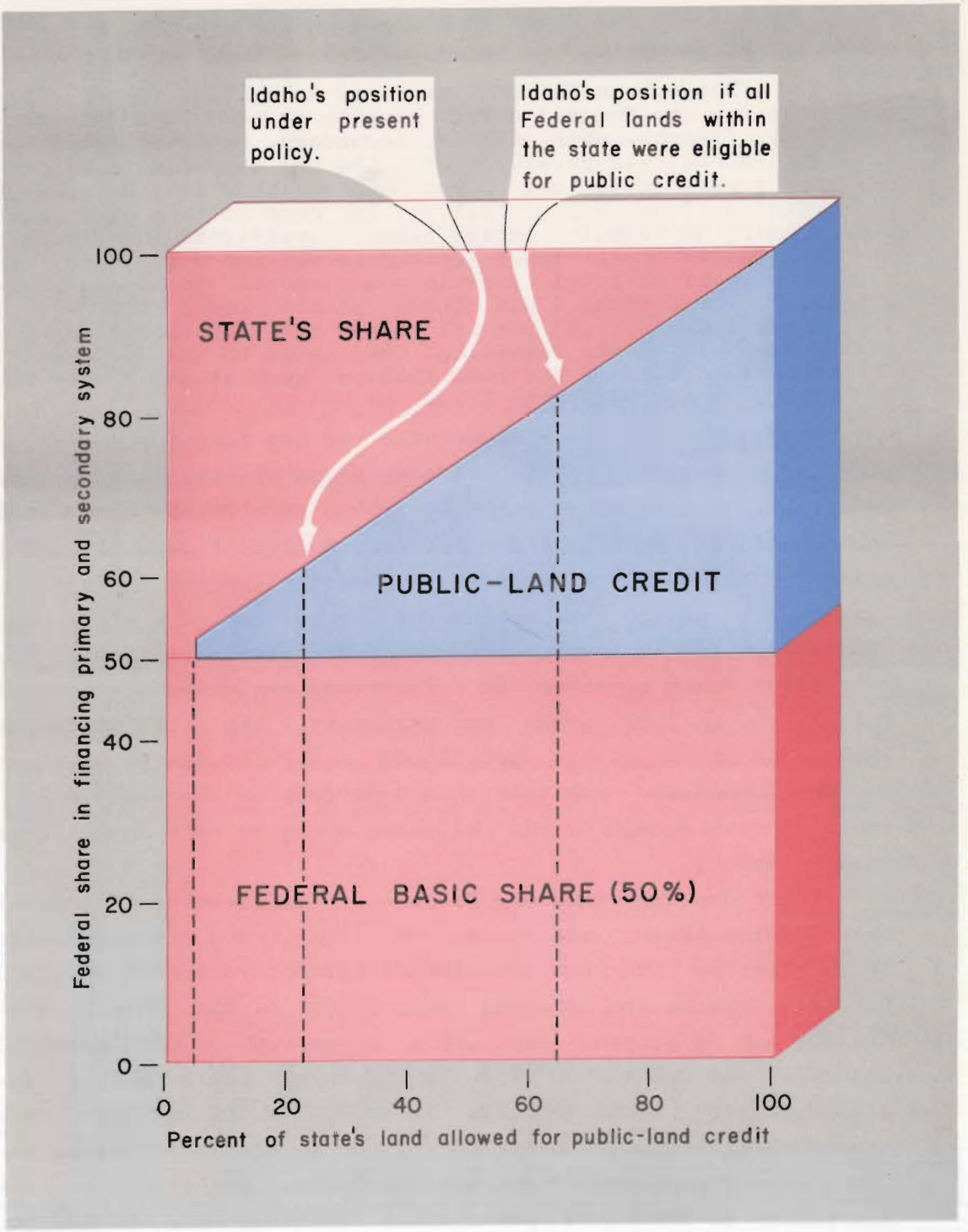

Figure2. Percentage Federal share in financing projects on the primary and secondary highway systems for varying amounts of eligble Federal lands in a state and also showing Idaho's present position and an alternative position.(1)

(1) The public-land credit refers to the same as project matching credit arising from public domain plus nontaxable Indian lands in excess of 5 percent of a state's area being situated within such state.

the amount of Federal funds this would decrease the amount of state funds and would in effect reduce the total funds to the Idaho Department of Highways.

Extent and distribution of Federal lands

The distribution of Federal lands can have significant effects on highway finance and development. Some of this can be the result of the difference in ownership but much of it is the result of the value and use of the land and its effect on local revenue. Of greatest salient importance is the fact that one-third of the funds for the primary and secondary systems are apportioned on an area basis and that Federal lands are included in the areas of the several states. In the 1960 apportionment for the primary and secondary systems a total of $298.5 million was apportioned on the basis of area of which approximately $99.5 million was apportioned on the basis of Federally-owned lands. This is of extreme importance to the financing of highways in several states.

In the United States (exclusive of Alaska, Hawaii, and Puerto Rico) there are more than 400 million acres of Federally owned lands--ninety percent lies in the 11 western states.

None of these eleven states has as much as 70 percent of its area in non-Federal land while in Nevada only 13.7 percent of the land is not in Federal ownership. (See Table 1.) For the nation as a whole (less Alaska, Hawaii and Puerto Rico) approximately 21.5 percent of the land is owned by the Federal Government whereas in the 11 western states, 51.1 percent of the land is Federally owned.(1)

Both type and amount of Federal land vary greatly among the 11 western states. Nevada with almost seven-eighths of her land in Federal ownership has almost two-thirds of her area in public domain.(2) Although Washington has the significant amount

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(1) Alaska is estimated to have an unreserved land area of in the neighborhood of 270 million acres compared with 168 million acres for the rest of the United States. Until the 1959 amendment to the Highway Act, this area was not treated the same as other areas in the United States so it has been withdrawn from the analysis at this point but will later be re-introduced.

(2) The public domain is generally the land owned by the Federal Government but not set aside for specific uses such as national forests, parks, monuments, or defense establishments. It is under the jurisdiction of the Bureau of Land Management. Part of the land is in the process of being "claimed" by individuals and part "reserved" by the Federal Government. Until the process has been completed, it is classed as public domain.

TABLE 1. TOTAL AREAS, AREAS OF FEDERAL UNRESERVED LANDS, AND AREAS OF NON-FEDERAL LAND IN THE ELEVEN WESTERN STATES[1]

State	Total area 1000's acres	Public domain[2] 1000's of acres	Public domain[2] Percent of total	Non-Federal land 1000's of acres	Non-Federal land Percent of total
Arizona	72,902	12,609	17.2	40,126	56.6
California	101,564	16,184	15.9	54,163	53.3
Colorado	66,718	8,016	12.0	42,397	63.5
Idaho	53,477	11,422	21.4	18,461	34.5
Montana	94,168	6,636	7.0	65,372	69.4
Nevada	70,746	45,823	64.8	9,721	13.7
New Mexico	77,866	13,056	16.8	50,551	64.9
Oregon	62,068	13,097	21.1	29,887	48.2
Utah	54,346	24,204	44.5	16,143	29.7
Washington	43,643	413	.9	30,096	44.1
Wyoming	62,665	16,128	25.7	32,119	51.3
Totals[3]					
Eleven states	760,163	167,588	22.0	389,036	51.1
Other states	1,143,662	484	0.0	1,106,598	96.7
United States	1,903,825	168,072	8.8	1,495,634	78.5

(1) Sources: All of the acreages were taken from Statistical Abstract of the United States, 1959,--acres of public domain from page 188; area of state, page 160; acres of non-Federal land, page 184. Alaska is not included even though it is the most significant public-land state from the standpoint of area.

(2) In general the public domain is thought of as unreserved Federal land but this is not strictly true for all parcels of land. Some areas in the public domain have been tentatively claimed for specific use but still in Federal ownership. The Federal-aid Highway Act makes no distinction between the lands "reserved" in the public domain and "open" lands. The non-Federal land plus the public domain do not total to 100 percent of the national area because of the reserved Federal lands not in the public domain.

(3) Alaska, Hawaii and Puerto Rico not included.

of 44.1 percent of the land area in Federal ownership, only .9 percent of the state's area is in public domain. Utah and Idaho follow Nevada in the percentage of land in Federal ownership.

The public domain is very generally poorer land than other Federally-owned land. The reason that it is public domain is that it was not wanted sufficiently by individuals to take it out of Federal ownership and the Federal Government has not found it suitable to be reserved for specific use.

The non-taxable Indian lands in the United States total to 57 million acres, or approximately one-third the area of the public domain. Of this, the various Indian tribes own 42.3 million acres;the government owns 1.8 million;and 12.9 million acres are held in trust allotment to individual Indian members. More than 95 percent of these lands lie within the borders of the thirteen major public-land states. (See Table 2.) All three categories are non-taxable and treated similarly in the program of Federal aid for highways.

As in the case of the public domain, the non-taxable Indian lands are predominantly in the western states, but with the exception that the sizable amount of 5.1 million acres is located in South Dakota. The significance of the amounts of these lands varies greatly among the eleven western states. Arizona, with more than 19.4 million acres, contains more than one-third of the national total--in this case Alaska is included. These non-taxable Indian lands comprise 26.7 percent of the State of Arizona whereas those in California constitute only .56 percent of the state's area. In New Mexico the Indian lands are about 8.4 percent of the state's area; in Montana and Washington, between 5 and 6 percent; in the other states,less than 5 percent.

Both Indian lands and public domain contribute to the local economy, including public finance, and the demand for roads and contribution to revenue vary greatly from one Indian reservation to another. Roads on an Indian reservation are the responsibility of the Bureau of Indian Affairs, acting with the advice and approval of the Bureau of Public Roads. Although roads traversing such lands may be part of a Federal-aid system, they are eligible for 100-percent Federal financing making determinations of aids, mileages, and cost allocations quite comples. Termination of Indian reservations would have varied effects on highway financing among these states.

The existence in a state of non-taxable Indian lands and the public domain, although singled out for special treatment in the Federal-state matching requirements on highway projects,

TABLE 2. NON-TAXABLE INDIAN LANDS IN THE ELEVEN WESTERN STATES, ALASKA AND SOUTH DAKOTA BY STATE AND LAND STATUS AND TOTAL OF PUBLIC DOMAIN PLUS INDIAN LAND BY STATE, 1958 (a) (thousands of acres)

State or area	Indian lands eligible for a credit allowance to states in the Federal-state matching program on highway projects. (1)				Total of Indian land and public domain
	Total (2)	Trust allotted	Tribal	Gov't owned	
Alaska	4,167	7	2,888	1,272	
Arizona	19,443	262	19,150	31	32,052
California	571	68	501	2	16,755
Colorado	770	5	764	1	8,786
Idaho	849	402	407	40	12,271
Montana	5,584	3,888	1,564	132	12,220
Nevada	1,150	80	1,062	8	46,973
New Mexico	6,546	647	5,821	78	19,602
Oregon	1,618	263	1,354	1	14,715
South Dakota	5,135	3,276	1,725	134	5,410
Utah	2,324	91	2,232	(b)	26,528
Washington	2,631	828	1,803	(b)	3,044
Wyoming	3,644	1,890	1,753	1	18,018
Totals					
13 states	54,431	11,707	41,024	1,700	216,374(c)
Other states	2,592	1,189	1,280	123	8,721
United States	57,023	12,896	42,304	1,823	225,095(d)

(a) Data on Indian lands are based on information from page 191 of Statistical Abstract of the United States, 1959, U.S. Department of Commerce.

(b) Less than 500 acres.

(c) Actually total of twelve states.

(d) Alaska not included.

(1) The credit allowance in the matching program should not be confused with bases for apportionment among the states.

(2) These acreages exclude public domain lands used by Indians but outside of the reservations and not under the jurisdiction of the Bureau of Indian Affairs; thus there is no overlap in acreages.

does not yield any more Federal funds to that state than the existence of other Federal lands in that state. Actually the existence of such lands in a state, if only the minimum matching requirements are met by the state, will result in decreased highway funds compared with having those same lands classed in categories not eligible for "credit" in the matching program. The existence of such lands simply means that the state needs to raise less state money to receive the Federal money. This will be brought out again with special reference to Idaho.

Analysis of the area factor in the 1960 apportionment for the primary and secondary systems

The funds apportioned to the states on the basis of the authorization for the year ending June 30, 1960 serve well in an analysis of the effect of the area factor in the apportionment formula. Several years could be averaged for this purpose but using one year in the analysis will bring attention more simply to the effects to be stressed in the analysis.

Table 3 shows that $405 million for the Federal-aid primary system and $270 million for the Federal-aid secondary system were authorized to be appropriated for the year ending June 30, 1960. One-half percent of these funds were retained for administration, research and investigational studies. In the primary system there were six jurisdictions which received the minimum of one-half percent of the total funds apportioned for the primary system and seven for the secondary system. In the aggregate these minimum states received $12,089,250 for the primary system and $9,402,750 for the secondary system. The remainder--$390,885,750 for the primary system and $259,247,250 for the secondary system--was apportioned to the remaining states, including Puerto Rico, on the basis of the apportionment formula and in this report are referred to as the "formula states" or "states on formula."

To the formula states one-third of the funds were apportioned on the basis of area, one-third on population, and one-third on mileage. The definitions of population are not the same for the primary and secondary systems but the mileage and area definitions are identical for the two systems.

Table 4 shows the primary funds apportioned to the formula states broken down by the one-third based on area as distinct from the two-thirds based on population and mileage. The 13

TABLE 3 . DISPOSAL OF FEDERAL FUNDS AUTHORIZED FOR THE FEDERAL-AID PRIMARY AND SECONDARY SYSTEMS TO BE APPROPRIATED FOR THE FISCAL YEAR ENDING JUNE 30, 1960 (1)

Item	Federal-aid primary system	Federal-aid secondary system
I. Total amount authorized for appropriation	$405,000,000	$270,000,000
II. Less one-half percent for administration, research, and investigational studies	2,025,000	1,350,000
III. Total to be distributed among the states (Item I minus Item II)	402,975,000	268,650,000
IV. Amount to states receiving the minimum of one-half of one percent	12,089,250(a)	9,402,750(b)
V. The amount to be apportioned to states on the basis of area, population, and mileage. (Item III minue Item IV)	$390,885,750	$259,247,250

(1) Source: Items I, II and III are from the CERTIFICATE OF APPORTIONMENT OF THE SUMS ... AUTHORIZED TO BE APPROPRIATED BY THE FEDERAL-AID HIGHWAY ACT OF 1958 FOR THE FISCAL YEAR ENDING JUNE 30, 1960 to the Secretary of the Treasury of the United States and the State Highway Departments recommended by the Federal Highway Administrator July 16, 1958 and executed by the Secretary of Commerce July 21, 1958. Item IV is derived from data in the same source.

(a) In the federal-aid primary system, Delaware, The District of Columbia, Hawaii, New Hampshire, Rhode Island, and Vermont each received the minimum of one-half percent or $2,014,875.

(b) In the secondary system, all of the states named in footnote (a) plus Connecticut received one-half of one percent or the minimum of $1,343,250.

TABLE 4. APPORTIONMENT OF FUNDS FOR THE FEDERAL-AID PRIMARY SYSTEM AUTHORIZED FOR THE YEAR ENDING JUNE 30, 1960 SHOWING THE ONE-THIRD APPORTIONED ON AN AREA BASIS BROKEN DOWN TO AMOUNTS APPORTIONED OF FEDERAL LANDS COMPARED WITH NON-FEDERAL LANDS WITH INDIVIDUAL FIGURES FOR THE MAJOR PUBLIC-LAND STATES (1)

State or Area	Apportionment for year ending June 30, 1960 ($1,000)				
	Total	From one-third based on area			From two-thirds on population & mileage
		Total	Non-Fed. area	Fed. area	
Alaska	8,219	7,780	21	7,759	439
Arizona	5,996	4,641	2,566	2,075	1,355
California	19,253	6,406	3,529	2,877	12,847
Colorado	7,296	4,247	2,716	1,531	3,049
Idaho	4,904	3,383	1,191	2,192	1,521
Montana	8,086	5,961	4,191	1,770	2,125
Nevada	5,062	4,487	590	3,897	575
New Mexico	6,438	4,966	3,233	1,733	1,472
Oregon	6,789	3,936	1,924	2,012	2,853
South Dakota	6,111	3,127	2,914	213	2,984
Utah	4,578	3,365	1,040	2,325	1,213
Washington	6,735	2,729	1,925	804	4,006
Wyoming	5,032	3,985	2,057	1,928	1,047
Total	94,499	59,018	27,900	31,118	35,486
Other states on formula	296,387	71,279	68,725	2,554	225,108
Total states on formula(2)	390,886	130,297	96,625	33,672	260,594

(1) Sources: Data on the total apportionment per state were taken from page 141 of Highway Statistics 1958, U.S. Dept. of Commerce, Bureau of Public Roads and all area data were taken from Statistical Abstract 1961, U.S. Dept. of Commerce

(2) Delaware, the District of Columbia, Hawaii, New Hampshire, Rhode Island, and Vermont received the minimum of one-half of one percent of the total funds each and therefore, not on formula. Each of these received $2,014,875 for a total of $12,089,250 for the six units or states. States receiving more than the half-percent minimum--thus receiving an apportionment based on area, mileage, and population--are referred to as "formula states" or "states on formula" in this report.

major public-land states, as a group, received $59,018,000 of the one-third apportioned on the basis of area--approximately 45 percent of the total apportioned to formula states. Out of the other two-thirds on the basis of population and mileage the 13 major public-land states received only $35,486,000 or approximately 13.6 percent of the total to formula states. This stresses the fact that the area factor in the apportionment formula is of extreme significance to most of the public-land states.

If there were a state perfectly normal in area, population and highway mileage it would receive one-third of its Federal funds from area, one-third from population and one-third from mileage. For the primary system California was the only state which received as much as two-thirds of her apportionment from population plus mileage--and this was just two-thirds.(1) Alaska was at the extreme with only about 0.53 of one percent of the Federal aid for her primary system received on the basis of her population plus mileage. Nevada received approximately 11.4 percent of her aid on the basis of population and mileage and Wyoming about 20.8 percent.

In the 13 major public-land states $31,118,000 of Federal aid for the primary system was received by virtue of the location of land owned by the Federal Government in these states.(2) Approximately 52.7 percent of the funds apportioned to these states on the basis of area was a result of the large areas of Federally-owned lands in these states. Approximately one-third (32.9 percent) of all the Federal aid to the primary system in the 13 major public-land states was derived on the basis of the area of Federally-owned lands.

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(1) It should be borne in mind that the 1950 census was used for this apportionment and that the rapid growth in California's population would have resulted in a greater share to California on the basis of population had the 1960 census been used. One of the "imperfections" of the formula is that the population base is not currently adjusted and there is a lag in aid (until the new population census is used) to those states whose population grows more rapidly than the average growth in the formula states.

(2) Unless otherwise defined "Federal land" or "Federally-owned land" is used in this report to mean all the land owned by the Federal Government regardless of its use or classification. The reason for this is that it all receives the same treatment as land in other ownership in the apportionment regardless of its use or classification. It should be noted, however, that in Federal-state fund matching on highway projects the classification of Federal lands is of importance and will thus be classed for that purpose.

Both the amount and the percentage received by virtue of the Federal lands varied exceedingly among the major public-land states. Alaska received 99.7 percent of the one-third based on area and 94.4 percent of her total Federal aid for the primary system by virtue of the Federal land within her boundaries.(1) Nevada was next with 77 percent of her aid to the primary system due to the Federal lands in her area. South Dakota received only 3.5 percent of her aid and Washington only 11.9 percent of hers by virtue of the Federal land. The formula states other than the 13 major public-land states received $2,554,000 by virtue of the Federal land--or approximately 0.86 percent of their total Federal aid for the primary system.

Table 5 shows essentially for the Federal-aid secondary system what Table 4 shows for the primary system. The slight relative differences in the effects of areas and Federal lands in the apportionment to the different states and groups of states between the two Federal-aid highway systems arise from the facts that the mileage plus population base is different and also there is one less formula state (Connecticut) in the secondary system. The great dependence of the major public-land states upon the area factor and upon the Federal lands again shows up in the Federal aid to the secondary system. As in the primary system the Federal lands are relatively unimportant to formula states other than the major public-land states.

Effects of allowing Alaska's total area in apportioning Federal aid: Prior to and including the apportionment of Federal aid to the primary and secondary for the year ending June 30, 1960 only one-third of Alaska's area was allowed and used in the apportionment. In 1959 the Federal-Aid Highway Act was amended to allow and use the total area of Alaska in apportioning the Federal-aid funds. This amendment has important effect on the amounts of funds apportioned to the public-land states--increasing greatly the aid to Alaskan highways and decreasing aids to highways in other public-land states. It is not intended here to attempt to evaluate the additional Federal investment in Alaskan highways but rather to show the effects on funds going to other states or groups of states.

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(1)This was on the basis of allowing only one-third of Alaska's area in the apportionment of those Federal funds apportioned on the basis of area.

TABLE 5. APPORTIONMENT OF FUNDS FOR THE FEDERAL-AID SECONDARY SYSTEM AUTHORIZED FOR THE YEAR ENDING JUNE 30, 1960 SHOWING THE ONE-THIRD APPORTIONED ON AN AREA BASIS BROKEN DOWN TO THE PART ACCRUING TO FEDERAL LANDS AND THE PART TO NON-FEDERAL LANDS AND SHOWING INDIVIDUAL FIGURES FOR THE PUBLIC-LAND STATES (1)

State or Area	Apportionment for year ending June 30, 1960($1000)				
		From one-third based on area			From two-thirds on population & mileage
	Total	Total	Non-Fed. area	Fed. area	
Alaska	5,543	5,172	14	5,158	371
Arizona	4,085	3,085	1,706	1,379	1,000
California	9,970	4,258	2,346	1,912	5,712
Colorado	4,873	2,822	1,805	1,017	2,051
Idaho	3,455	2,248	791	1,457	1,207
Montana	5,565	3,962	2,786	1,176	1,603
Nevada	3,383	2,982	392	2,590	401
New Mexico	4,427	3,301	2,149	1,152	1,126
Oregon	4,752	2,616	1,279	1,337	2,136
South Dakota	4,378	2,079	1,937	142	2,299
Utah	3,028	2,236	691	1,545	792
Washington	4,498	1,813	1,279	534	2,685
Wyoming	3,411	2,649	1,367	1,282	762
Total	61,368	39,223	18,542	20,681	22,145
Other states on formula	197,879	47,193	45,495	1,697	150,687
Total states on formula(2)	259,247	86,416	64,037	22,378	172,832

(1) Sources: Data on the total apportionment per state were taken from page 141 of Highway Statistics 1958, U.S. Dept. of Commerce, Bureau of Public Roads and all area data were taken from Statistical Abstract 1961, U.S. Dept. of Commerce.

(2) Delaware, the District of Columbia, Connecticut, Hawaii, New Hampshire, Rhode Island and Vermont received the minimum of one-half of one percent of the total funds each and were therefore not included in the apportionment formula. Each of these received $1,343,250 for a total of $9,402,750 which accounts for the difference between the total of $259,247,000 shown and the total of $268,650,000--subject to rounding off to thousands of dollars.

The first column in Table 6 shows the actual apportionment of Federal funds authorized to be appropriated for the year ending June 30, 1960. The second column shows what the apportionment would have been had all of Alaska's area been used rather than one-third. The actual apportionment to Alaska was $13,762,000 but would have been $35,506,000 had all of her area been allowed. Alaska thus gained $21,744,000 in the apportionment, or a gain of approximately 158 percent. This gain would need to be made up by losses in other states.

Merely on the basis of the mathematics of the formula the greatest decreases resulted in the states containing the greatest area--in fact, the absolute decreases are directly proportional to the area of the state. This results in relatively large decreases in the expansive major public-land states. As a group, including Alaska, the public-land states gained 8.1 percent in the apportionment; however,with Alaska excluded this group actually lost $9.1 million or approximately 6.4 percent. In contrast, other formula states lost only about 2.6 percent. Those states receiving the minimum of one-half of one percent did not share in the decrease in funds. (1)

Using all of Alaska's area apportions a greater amount of the aid to Federal land. The primary reason for this is that the area of Alaska is almost entirely in Federal ownership. Table 7 shows that more than half of the funds apportioned on the area basis accrue to the Federal lands in both the Federal-aid primary system and the Federal-aid secondary system. In the major public-land states approximately 62.5 percent accrues to Federal land under this use of the formula.

The 1959 amendment to the Federal-Aid Highway Act, allowing all of Alaska's area, in effect increases national investment in the development of Federal land but specifically that in Alaska. It also has the effect of reducing the investment in Federal land in other formula states. If all of Alaska's area were used on the 1960 apportionment a total of $94,934 per million acres (about 9.5 cents per acre) would be apportioned whereas if only one-third of Alaska's area were used there would be an apportionment of $106,298 per million acres,

(1) The hypothetical analysis of the 1960 apportionment shown in Table 6 approximates the actual change between the 1960 apportionment and the 1961 apportionment. In 1960 Alaska received $13,829,881 out of a total of $895,500,000 ABC funds and in 1961 received $36,769,000 out of a total of $864,363,000. (See Highway Statistics 1958 pp. 141-2.)

TABLE 6. EFFECT ON APPORTIONMENT TO EACH OF THE MAJOR PUBLIC-LAND STATES BY ALLOWING ALL OF ALASKA'S AREA, RATHER THAN ONE-THIRD AS WAS ACTUALLY DONE, IN APPORTIONING THE FEDERAL FUNDS AUTHORIZED FOR THE FEDERAL-AID PRIMARY AND SECONDARY SYSTEMS FOR THE YEAR ENDING JUNE 30, 1960 (1)

State or area	Apportionment of Federal-aid primary plus secondary system funds appropriated for the year ending June 30, 1960			
	Using one-third of Alaska's area	Using all of Alaska's area	Effect of using all of Alaska's area	
			Decrease*	Percent of state total
	($1,000)	($1,000)	($1,000)	(Percent)
Alaska(2)	13,762	35,506	(21,744)	(158.0)
Arizona	10,081	9,256	825	8.2
California	29,223	28,083	1,140	3.6
Colorado	12,169	11,414	755	6.2
Idaho	8,359	7,757	602	7.2
Montana	13,651	12,591	1,060	7.8
Nevada	8,445	7,646	799	9.5
New Mexico	10,865	9,980	885	8.1
Oregon	11,541	10,841	700	6.1
South Dakota	10,489	9,933	556	5.3
Utah	7,606	7,007	599	7.9
Washington	11,233	10,749	484	4.3
Wyoming	8,443	7,733	710	8.4
Total	155,867	168,496	(12,629)	(8.1)
Other states on formula	494,266	481,639	12,627	2.6
Total of formula states	650,133	650,135	0	0

(1) Data on areas used for the derivation of this table were taken from the Statistical Abstract and the data on apportionment and funds were taken from Highway Statistics 1958. Figures have been rounded off so that the last digit may be in error--for example, the total apportioned to the formula states should have been 650,133 ($1,000) regardless of whether one-third or all of Alaska's area were allowed.

* Figures shown in parentheses are actually increases.

(2) The reason for applying the two treatments to the area of Alaska is that one-third of Alaska's area was used in the apportionment through funds appropriated for 1960 but beginning with 1961 all of the area of Alaska was used in the apportionment.

TABLE 7. WHAT THE APPORTIONMENT TO MAJOR PUBLIC-LAND STATES OF FEDERAL-AID PRIMARY AND FEDERAL-AID SECONDARY SYSTEM FUNDS AUTHORIZED FOR THE YEAR ENDING JUNE 30, 1960, WOULD HAVE BEEN, FOR THE ONE-THIRD OF THE FUNDS APPORTIONED ON AN AREA BASIS, IF THE TOTAL AREA OF ALASKA HAD BEEN USED

State or area receiving apportionment	Hypothetical apportionment, using all of Alaska's area, of funds appropriated for the year ending June 30, 1960 ($1000) (1)			
	Federal-aid primary system		Federal-aid secondary system	
	To non-Fed. lands	To Fed. lands	To non-Fed. lands	To Fed. lands
Alaska	56	20,793	37	13,810
Arizona	2,293	1,854	1,523	1,231
California	3,153	2,570	2,094	1,707
Colorado	2,427	1,367	1,612	908
Idaho	1,064	1,958	706	1,301
Montana	3,745	1,581	2,487	1,050
Nevada	527	3,481	350	2,312
New Mexico	2,888	1,548	1,918	1,028
Oregon	1,719	1,798	1,141	1,194
South Dakota	2,603	191	1,729	127
Utah	929	2,077	617	1,379
Washington	1,720	719	1,142	477
Wyoming	1,837	1,723	1,220	1,144
Total of above states	24,961	41,660	16,576	27,668
Other states on formula (2)	61,394	2,281	40,654	1,515
Total of all formula states	86,355	43,941	57,230	29,183

(1) The area data used in derivations are from the Statistical Abstract 1961 and the appropriation data are from Highway Statistics 1958. Because all the data have been rounded off, the last digit is subject to error.

(2) Delaware, District of Columbia, Hawaii, New Hampshire, Rhode Island, and Vermont have been omitted (both areas and funds) in the figures for both the primary system and secondary system. In the secondary system, Connecticut has also been omitted. These are the states qualifying for only the minimum of one-half percent and thus not on the formula.

which is about 10.6 cents per acre. (See Table 8.) Allowing one-third of Alaska would spread the apportionment over 2,040 million acres whereas using all of Alaska would spread the apportionment over 2,284 million acres. Other effects are also shown in Table 8.

Population is the basis for apportioning one-third of the Federal aid to the primary and secondary systems--total population for the primary system and rural population for the secondary system. On the basis of total 1960-census population the one-third of the Federal apportionment to the two systems for 1960 amounted to approximately $1.25 per capita for the formula states. (This is not exact because Connecticut was a formula state in the primary system but not in the secondary system.) Total Federal aid to the two systems amounted to approximately $3.75 per capita.

Whereas one-third of the authorization is apportioned on a per-capita basis it seems important to determine the per-capita effects of the other bases for apportionment. Although the inclusion of all of Alaska's area changed only the area basis for apportionment it has extremely different per-capita effects among the different states.

Table 9 shows that the inclusion of the total area of Alaska, rather than one-third, amounts to approximately 15 cents decrease per capita on the basis of the 1950 census and about 13 cents per capita on the basis of the 1960 census in the Federal aid to the formula states as a whole. In effect this would reduce the one-third apportioned on a population basis from $1.25 per capita to $1.12 per capita using the 1960 census as a base.

The $9,115,000 absorbed by the major public-land states other than Alaska amounted to four-and-a-half times (45 cents compared with 10 cents) as much per capita in those states as the $12,629,000 absorbed by the other formula states if based on the 1950 census. On the basis of the 1960 census the per-capita burden in the major public-land states was 3.8 times as great as in the other formula states.

On the basis of the 1950 census, which was actually used in the 1960 apportionment of Federal aid to the primary and secondary systems, the one-third apportioned on the basis of population amounted to approximately $1.48 per capita of total population. In three of the major public-land states (Montana, Nevada and Wyoming) the amount absorbed by the inclusion of

TABLE 8. SOME OVERALL EFFECTS OF ALLOWING ONE-THIRD COMPARED WITH ALL OF ALASKA'S AREA IN THE APPORTIONMENT OF THAT PART APPORTIONED ON AN AREA BASIS OF FUNDS AUTHORIZED FOR THE FEDERAL-AID PRIMARY SYSTEM AND FEDERAL-AID SECONDARY SYSTEM FOR THE YEAR ENDING JUNE 30, 1960[a]

Item	Allowing one-third of Alaska's area in the apportionment	Allowing all of Alaska's area in the apportionment
Total national area on which funds are apportioned on the basis of area (1000 acres) (b)		
Primary system total	2,040,400	2,284,055
Federal land	527,281	770,284
Other than Federal	1,513,119	1,513,771
Secondary system total	2,037,185	2,280,840
Federal land	527,276	770,279
Other than Federal	1,509,909	1,510,561
One-third appropriated for the year ending June 30, 1960 apportioned to states on the area formula ($1000)		
Primary system total	$130,295	$130,295
To Federal land	33,672	43,941
To other than Federal	96,625	86,355
Secondary system total	86,416	86,416
To Federal land	22,378	29,183
To other than Federal	64,037	57,230
Total of both systems	216,711	216,711
To Federal land	56,050	73,124
To other than Federal	160,662	143,585
To major public-land states	98,241	110,865
For primary system	59,018	66,621
For secondary system	39,223	44,244
To other states on formula	118,472	105,844
For primary system	71,279	63,675
For secondary system	47,193	42,169
Amount apportioned per million acres (Dollars)		
Total for both Federal-aid systems	$106,298	$94,934
For primary system	63,858	57,046
For secondary system	42,440	37,888

(a) Data for the derivation of this table are either from Highway Statistics 1958, the Statistical Abstract (different years), or from other tables in this report.

(b) The national totals used are the actual national totals less funds and areas for the states or territories receiving one-half of one percent of the total apportionment because that amount is more than the formula would yield to each of these states.

TABLE 9. PER CAPITA DECREASE FOR EACH OF THE MAJOR PUBLIC-LAND STATES (OTHER THAN ALASKA) WHICH WOULD HAVE RESULTED HAD ALL OF ALASKA'S AREA (RATHER THAN ONE-THIRD AS WAS ACTUALLY DONE) BEEN USED IN APPORTIONING TO STATES THE FEDERAL FUNDS AUTHORIZED FOR THE FEDERAL-AID PRIMARY AND SECONDARY SYSTEMS FOR THE YEAR ENDING JUNE 30, 1960(1)

State or area(2)	Decrease in apportionment caused by using all, rather than one-third, of Alaska's area				
	Total decrease to the state or area	Per-capita decrease to state or area			
		On basis of 1950 census		On basis of 1960 census	
	($1000)	Dollars	Ratio to average(3)	Dollars	Ratio to average(3)
Arizona	825	1.09	7.26	0.63	4.85
California	1,140	0.11	0.73	0.07	0.54
Colorado	755	0.57	3.80	0.43	3.31
Idaho	602	1.02	6.80	0.90	6.92
Montana	1,060	1.78	11.86	1.57	12.08
Nevada	799	4.93	32.87	2.80	21.54
New Mexico	885	1.29	8.60	0.93	7.15
Oregon	700	0.46	3.07	0.40	3.08
South Dakota	556	0.88	5.87	0.82	6.31
Utah	599	0.86	5.73	0.67	5.15
Washington	484	0.20	1.33	0.17	1.31
Wyoming	710	2.44	16.27	2.15	16.54
Total	9,115	0.45	3.00	0.34	2.62
Other states on formula	12,629	0.10	0.67	0.09	0.69
Total of formula states	21,744	0.15	1.00	0.13	1.00

(1) Data on the 1950 population were taken from the Statistical Abstract and pertain to the 1950 census of population. Data on the 1960 population were taken from Information Please Almanac Atlas and Yearbook 1962, Simon and Schuster, New York City.

(2) Alaska has not been included in the tabulation because only decreases are shown whereas these decreases result from giving Alaska an increase by using all her area in the apportionment. On the basis of the 1950 population of Alaska the increase to her of $21,744,000 for the Federal-aid primary plus secondary systems amounts to $181.20 per capita; on the basis of her 1960 population it amounts to $96.21 per capita.

(3) These ratios have been determined by dividing the dollars per capita for the individual state or area by the dollars per capita for all the formula states less Alaska.

the total area of Alaska exceeded the total received by the state on the basis of population. The $799,000 absorbed by the State of Nevada was approximately 3.3 times the amount apportioned to Nevada on the basis of population. The amount absorbed by Wyoming was 1.6 times the amount apportioned on the basis of population and in Montana it was 1.2 times this amount. The absorption by California amounted to only 11 cents per capita (lowest of the major public-land states) but this was still 10 percent above the average of the formula states other than the major public-land states.

The absorption per capita in an individual state resulting from the inclusion of the total area of Alaska is inversely related to the density of population in the state compared with the density in the formula states as a whole. The larger the area of the state the more it would absorb in total amount and with fewer people the more per person--ironically these are conditions in which opportunity for investment, rather than investors, is likely to be found.

Certainly sparsity of population cannot serve as a sole guide to determine which areas would be the most productive from the standpoint of investing public funds for development. The potential returns from the development may be more closely related to some other factors. No simple formula of a generalized nature will determine the geographic apportionment of Federal funds which will derive the greatest net public benefits from the investment of such funds. Undoubtedly the average taxpayer is honestly prone to overrate the proximity of his own resources in his ideas as to where public funds should be invested for resource improvement. Detailed cost-benefit studies would probably show that great net benefits to the general public could be derived by increased Federal aids to the highways to serve and develop the public lands. However in the case at hand (the inclusion of the total area of Alaska)--although the investment may be entirely meritorious--the final incidence of the source of the funds probably mainly takes funds away from some areas needing greater investment in highways in order to increase the funds in a particular area needing investment. Only detailed studies much beyond the scope and facilities of this study, but perhaps at costs relatively insignificant compared with the huge amounts of funds affected, could determine the extent to which this is done and what remedies should be invoked.

Other Federal-aid programs for roads related to public lands

There are several well-established Federal-aid programs of various kinds which may or may not be related to the public lands in a state--examples of this are defense access roads or emergency relief. There are other well-established programs which are directed specifically toward the Federal lands in a state.

The Forest Highway Fund: Perhaps the most important of these programs is the Forest Highway Fund. Its importance varies considerably among the states but with approximately 90 percent of the funds going to the 13 major public-land states. At present there is an annual appropriation of $33 million which is apportioned to states containing National Forest land on the basis of the area and value of such land in a given state compared with the national total. Funds do not need to be matched by the states but must be used on forest roads of "primary importance to States, counties,or communities within, adjoining, or adjacent to the National Forests." Idaho received approximately 10 percent of these funds on the apportionment formula.

Public Lands Highways: Funds have been made available for public lands (public domain) highways in relatively small amounts at national level ($3.5 million for 1962 and $3 million for 1963). In this program "The Secretary is authorized to cooperate with the State highway departments and with the Secretary of the Department having jurisdiction over the particular lands, in the survey, construction, and maintenance of public lands highways." (USCA §§ 209, b) There is no specific apportionment formula for these funds. Idaho, along with the other public-land states, is in a position to be the recipient of such funds. During the past three fiscal years a total of approximately $4 million has been made available to be used on the Lewis and Clark Highway because it traverses public lands.

Forest Development Roads and Trails: The Secretary of Agriculture, through the Forest Service, may cooperate with a State or civil subdivision in financing and building roads. The Forest Service uses both appropriated funds and stumpage receipts in this program and significant mileages of multi-purpose roads are built in this manner in the states containing National Forest land.

Stumpage Funds from National Forests: Twenty-five percent of the net stumpage receipts from timber cutting on National Forest is turned back to the county in which the cutting took place. These funds are to be used for roads and schools. To counties of sparse population with large areas of National Forest, the funds become very significant in the county's budget for both roads and schools.

Minor Programs or Sources of Funds: Emergency relief and defense access have been mentioned. The Federal agency administrating public lands ordinarily can and does build roads necessary to their operation. The Forest Service was mentioned but noteworthy are also the Bureau of Reclamation, the Army Engineers, and the Bureau of Land Management. These generally become public roads and many of them are multi-purpose in nature.

Variations Among States in Effects Of Public Lands and of the Relevant Federal-aid Program

Actually, area alone can neither be used for the sole justification for nor evaluation of the intensity of a highway network--only the economic geography of the resources can serve as the total basis for such justification and evaluation. Nevertheless, a representation of some results on a simple area basis can aid a first-analysis insight into some of the effects of the present program in relation to the location of public lands and state boundaries.

Effect of project matching credit on state's financing of the primary and secondary systems

Mention has been made of the fact that the total Federal funds made available to any state in aiding the financing of the primary and secondary systems are determined by the apportionment formula. Authority to spend the Federal funds is contingent upon the state's matching of the Federal funds with state funds. The basic matching ratio is one dollar of state funds for each dollar of Federal funds except a project matching credit is allowed any state having more than 5 percent of its area in certain public or nontaxable Indian lands.

Footnote 2 in Table 10 explains the basis for the project matching credit. Footnote 3 in the same table explains how this functions and illustrates it with the effects on the over-

TABLE 10 FEDERAL-AID FUNDS APPORTIONED TO THE TOTAL OF THE FEDERAL-AID PRIMARY AND FEDERAL-AID SECONDARY SYSTEMS INCLUDING EXTENSIONS OF THESE SYSTEMS IN URBAN AREAS AND THE PROJECT MATCHING CREDITS RESULTING FROM THE LOCATION OF PUBLIC DOMAIN AND NONTAXABLE INDIAN LANDS FOR THE FISCAL YEAR 1960 FOR EACH OF THE 13 STATES ELIGIBLE FOR THE MATCHING CREDIT (1)

State	Federal funds apportioned ($1,000)	Required state matching funds ($1,000)	Project matching credit resulting from eligible public and Indian lands (2)		
			Total amount ($1,000)	Percent of Federal funds	Percentage reduction in highway finance (3)
Alaska	13,830	1,383	12,447	90	45.0
Arizona	10,958	4,278	6,680	61	30.5
California	49,241	35,293	13,948	28	14.0
Colorado	14,041	10,780	3,261	23	11.5
Idaho	8,792	5,511	3,281	37	18.5
Montana	14,181	10,922	3,259	23	11.5
Nevada	8,616	1,740	6,876	80	40.0
New Mexico	11,604	6,936	4,668	40	20.0
Oregon	13,347	8,229	5,118	38	19.0
South Dakota	10,926	8,764	2,162	20	10.0
Utah	8,561	2,944	5,617	66	33.0
Washington	14,631	12,722	1,909	13	6.5
Wyoming	8,688	4,807	3,881	45	22.5
Total	187,416	114,309	73,107	39	19.5

(1) The figures in the first two columns were taken from Highway Statistics 1958.

(2) The basis for the project matching credit is to "any State containing nontaxable Indian lands, individual and tribal, and public domain lands (both reserved and unreserved) exclusive of national forests and national parks and monuments, exceeding 5 percentum of the total area of all lands therein,... " in which case the "Federal share shall be increased by a percentage of the remaining cost (actually equal to the Federal aid) equal to the percentage that the area of all such lands in such State, is of its total area..." (Quotes are from USCA 23 § 120, b.)

(3) Unless the individual state matches beyond the Federal requirement there is a decreased highway budget by reason of the location of such eligible land in the state. For example, if none of Idaho's area had been classed as eligible the Federal share would have been $8,792,000 and the State's share $8,792,000 for a total of $17,584,000 but with Idaho furnishing only $5,511,000 the total is only $14,303,000 or about 18.5 percent less than $17,584,000.

all funds available to these two highway systems in Idaho for the year ending June 30, 1960. Table 10 shows the Federal funds apportioned to each of the major public-land states (those eligible for project matching credit) and also the amount of state funds required to match the Federal funds. For the 13 states there is a total project matching credit of $73,107,000. By formula this is unevenly divided among the states with California and Alaska together being allowed more than one-third of the national total.

In effect, the project matching credit reduces the overall funds available to the highway departments in these states. The extent to which this reduction occurs depends upon the relationship of the area of lands eligible for credit to the area of the state and further upon the bases and amount of the total apportionment to the state. Alaska, predominantly dependent upon the area factor in the apportionment formula, had 45 percent less overall funds for these two systems than if the credit had not been allowed--assuming the state would have matched the Federal funds on the basic 50-50 formula. On the other hand, California, with her matching credit exceeding that for Alaska, had only 14 percent less overall funds for these two systems than she would have had if there had been no credit allowed and she would have matched the Federal funds on a 50-50 basis. In Nevada the overall budget was reduced 40 percent and in Utah 33 percent.

There is a definite general inverse relationship between the project matching credit, as a percentage of the Federal aid, and the total per-acre highway funds available for the two systems in a state. This relationship is graphed in Figure 3. California varies significantly from this generalization and Washington varies somewhat in the direction of California, although not to a degree which would seriously affect the general relationship. These two states, especially California, tend to override the reduction of funds, resulting from matching credit, with increased apportionments and requirements resulting from formula factors other than area.

There is no intent on the part of the writer to imply in any manner that the $73,107,000 of project matching credit should be disallowed. In some states--notably so in Alaska--the resulting requirement would not be feasible. On the basis of the matching credit shown in Table 10 and using the 1950 population figures Alaska, to meet Federal funds on a 50-50

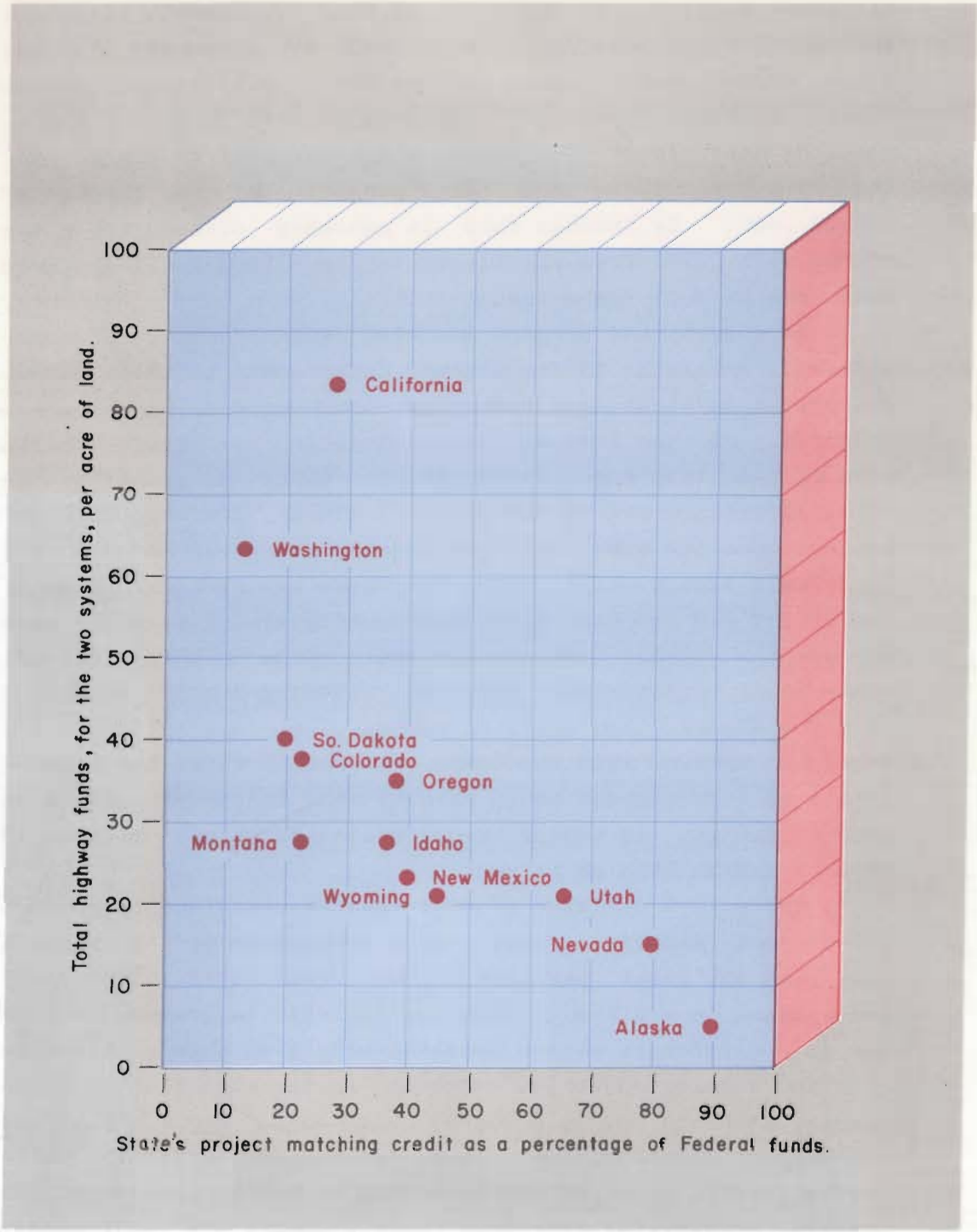


Figure 3. Percentage the state's project matching credit is of the Federal funds for financing Federal-aid primary and secondary systems including extensions in urban areas and the total finances per acre for these systems in the major public-land states for the fiscal year ending June 30, 1960[a]

(a) The lands referred to are nontaxable Indian lands, individual and tribal, and public domain lands (both reserved and unreserved) exclusive of national forests and nation parks and monuments.

basis, would have to raise her public finances to the extent of about $96.50 per capita merely to meet these requirements for the fiscal year ending June 30, 1960. For the fiscal year 1961 and using the 1960 population census this would be approximately $92 per capita.

There is also no intent on the part of the writer to imply or conclude in any manner that the Federal Government should make up the deficit in the states' finances resulting from the project matching credit. To do so would, in fiscal 1960, have called for more than $73 million of Federal funds either as additional funds for these two systems or reducing the funds to states not eligible for project matching credit. The project matching credit in effect recognizes that the burden of paying for roads to and in the Federal lands should not be placed entirely upon the states in which these lands are located and also that not as many dollars per unit of area are needed in the case of the Federal lands. This is, of course, only a general recognition and the extent and modifications needed to use or distribute the Federal funds in the most effective Federal interest could be determined only through detailed research and investigation of specific conditions.

Rural road mileages and Federal lands

The percentage of non-Federal land in a given state or area can have very significant effects on highway development and highway finance. The eleven western states are made up of only 51.1 percent non-Federal land compared with 96.7 in the rest of the 48 states.(1) In five of these states, less than half is non-Federal land. The three lowest states are Nevada with 13.7 percent, Utah with 29.7, and Idaho with 34.5.

It is apparent from the mileage of rural roads per thousand acres of non-Federal lands, shown in Table 11, that the existence of Federal land may have a real influence on the highway development. The eleven western states, although with great variation among the several states, have an average of 1.61 miles of rural roads per thousand acres of non-Federal land compared with 2.21 miles in the rest of the nation exclusive of Alaska. In general the states without public domain average about 0.4 miles more total rural road per section

(1) By "48 states" is meant the total 50 states less Alaska and Hawaii.

TABLE 11. MILES OF RURAL ROAD IN RELATION TO LAND AREAS OF DIFFERENT OWNERSHIP STATUS IN THE ELEVEN WESTERN STATES(1)

State	Mileage of rural roads (2)			
	Total miles	Miles per 1000 acres of:		
		Non-Federal land	Public domain plus non-Federal land	Total area of state
Arizona	30,601	.76	.58	.42
California	111,433	2.06	1.58	1.10
Colorado	71,596	1.69	1.42	1.07
Idaho	40,129	2.17	1.34	.75
Montana	73,225	1.12	1.02	.78
Nevada	43,455	4.47	.78	.61
New Mexico	60,325	1.19	.95	.77
Oregon	62,469	2.09	1.45	1.01
Utah	28,213	1.75	.70	.52
Washington	52,351	1.74	1.72	1.20
Wyoming	53,357	1.66	1.11	.85

(1) Alaska and Hawaii are excluded from this table.
(2) Mileages within reserved Federal lands and under Federal control are included.

of non-Federal land than do the states containing public domain. It should be borne in mind that this difference is the total rural mileage per 1,000 acres of non-Federal land but not all of this mileage is located on non-Federal land. If the mileages located on the non-Federal land were equal among the states on an acreage basis, those states with large amounts of public domain would show greater mileages per 1,000 acres because the mileages on the Federal lands would thus be assigned to the non-Federal lands. Nevada, for example, has an average of 4.47 miles of rural road per 1,000 acres of non-Federal but has only 0.61 miles per 1,000 acres of total area. In Idaho the rural road mileage is 2.17 per thousand acres of non-Federal but drops to 0.75 on the basis of total area. (See table 11.)

Calculating the road mileage on the basis of the state's total area tends to show an undue lack of roads in those states containing a large amount of reserved Federal land whose roads are not financed on a Federal-state, money-matching basis. Calculating the mileage on the basis of non-Federal land only certainly shows a development greater than actually exists in those states with large amounts of public domain.

There is a general direct relationship between the amount of non-Federal land in an area and number of miles of rural

roads within a given area. This relationship does not hold invariably for smaller areas, or even among states, but there is a significant difference between the eleven western states and the rest of the United States excluding Alaska, Hawaii, and Puerto Rico.

Although there is a general relationship between public domain and rural road mileage per 1,000 acres of non-Federal land, there are great variations among the states. Figure 4 shows that if there is any relationship among the individual states in this matter it is in the direction of more road mileage per area of non-Federal land in those states having larger portions of Federal land, but this begs explanation.

Assigning all of the rural road mileage to non-Federal land can be questioned both from the standpoint of economics and statistical procedure. Table 11 shows the rural road mileage on three bases for each of the eleven western states. If the rural roads in Nevada were assigned to the non-Federal land in the State the inference would likely be drawn that roads are relatively plentiful because this shows the comparatively large figure of 4.47 miles per 1,000 acres. The differences in the other major public-land states were much less pronounced. This method statistically shows a greater road development than actually exists on the non-Federal lands because a great amount of this mileage traverses the Federal land.

The State of Washington is the only one of the major public-land states that has as much as half of the national average (2.21) rural road mileage per square mile. All but four of the major public-land states have an average of less than 1 mile of rural road per 1,000 acres of area. Much of this is unquestionably caused by the nature of the land resources--not adapted to either intensive use or settlement--but much of it is also undoubtedly the result of the areas' being in earlier stages of development, including roads.

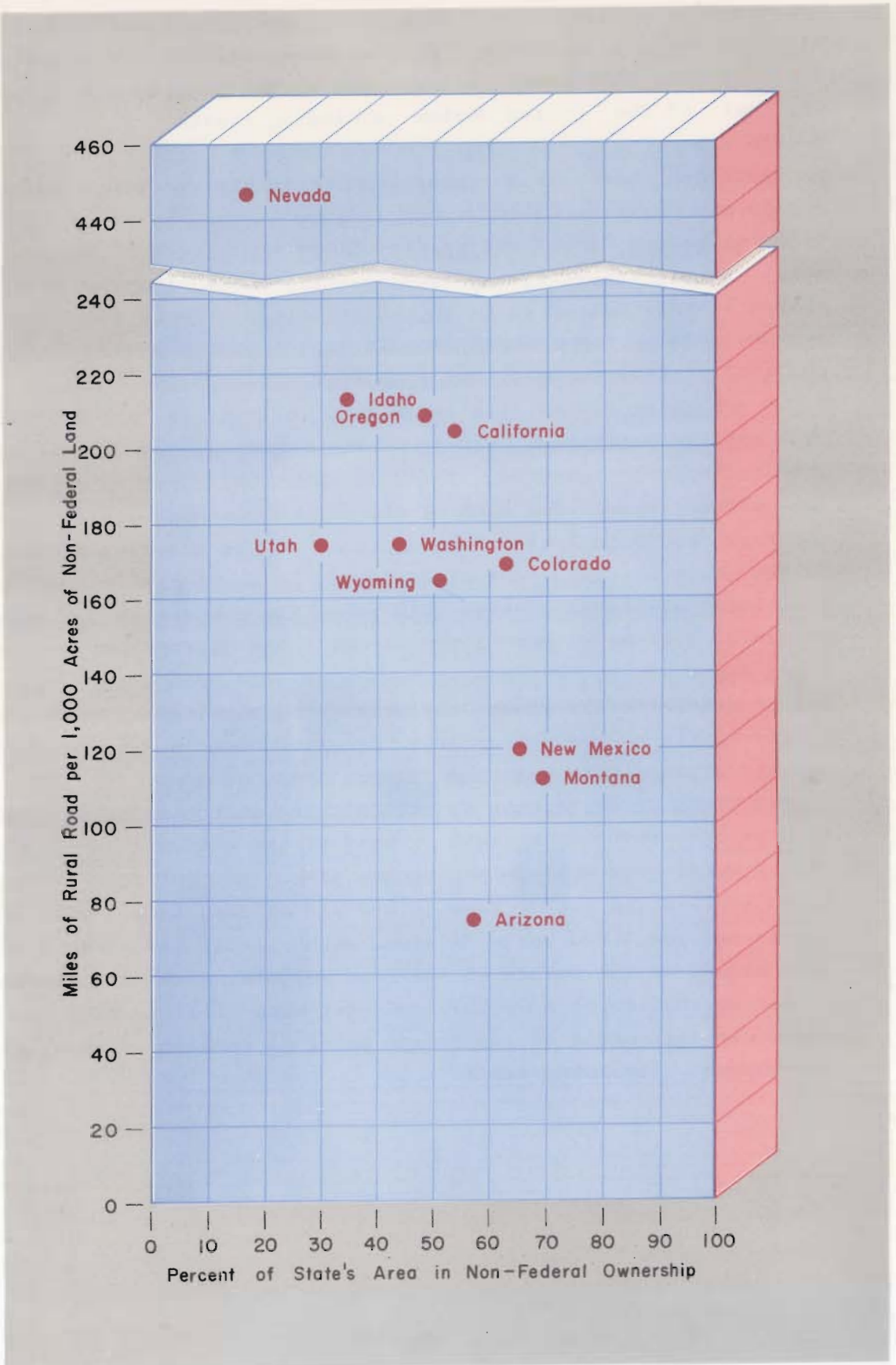


Figure 4. Miles of road per 1,000 acres of non-Federal land and percent of State's area in non-Federal ownership in each of the eleven Western States

Chapter III

SOME OF IDAHO'S ROAD PROBLEMS IN RELATION TO THE PUBLIC LANDS

The nature and degree of the road problem associated with public land depend on the use, amount, and location of the public land in relation to each other and in relation to the private lands. The land resources themselves would normally determine the use in a competitive economy. The location factor becomes quite complex in that the configuration of both natural terrain and ownership boundaries play important roles in highway planning and development. It would be virtually impossible to make allowance for all such factors in the federal-state matching formulas even if the factors could be reasonably evaluated.

Idaho receives a considerably greater-than-average allowance for public lands in the matching ratios. Table 12 summarizes the federal aids and the required state matching funds for Idaho and the average of all states by systems for the period 1954 to 1961 inclusive.

TABLE 12. FEDERAL-AID FUNDS AND REQUIRED STATE MATCHING FUND FOR IDAHO COMPARED WITH NATIONAL TOTAL BY ROAD SYSTEMS FOR THE 1954-1961 PERIOD.

Area and Road Systems	Federal		State	
	Amount (thousands)	Percent	Amount (thousands)	Percent
Idaho				
Total	$ 138,859	77.2	$ 41,002	22.8
Primary & secondary	57,434	63.3	33,250	36.7
Interstate	81,425	91.3	7,752	8.7
U.S. Totals				
Total	15,245,825	71.2	6,179,612	28.8
Primary & secondary	5,865,764	53.7	5,057,074	46.3
Interstate	9,380,061	89.3	1,122,538	10.7

(1) Source: Highway Statistics (The two volumes with summaries to 1955 and to 1958). Department of Commerce Bureau of Public Roads, 1957 and 1960.
(2) The figures for 1959 include D. and L. fund advances.

During the period, Idaho was required to supply $41 million to match the federal government's $139 million. Thus, Idaho

contributed 22.8 percent of the financing on federal-aid roads in Idaho whereas nationally the states in general were required to contribute 28.8 percent of the funds. This does not mean that a net benefit accrues to Idaho. It merely means that less revenue needs to be furnished from Idaho in order to be authorized to spend the amount of Federal funds apportioned to Idaho by formula for the three Federal-aid highway systems. In effect this project matching credit reduces the total revenue to the highway department.

The major Federal financial supports received by Idaho by reason of Federal lands being located in the State are as follows:

(1) Inclusion of the Federal land located in the State in the area factor in the highway apportionment formula--bringing $2,192,000 for the Federal-aid primary system and $1,457,000 for the Federal-aid secondary system in fiscal year 1960;

(2) Sharing in the Forest Highway Fund--Idaho's share was $3,360,000 in fiscal year 1961;

(3) Receiving funds from Federal appropriation for highways through public lands--not a regular program by formula but in three most recent fiscal years received a total of about $4,000,000 for use on the Lewis and Clark highway.

Besides these major items there is a continuing effort on the part of agencies administering Federal land in the State to develop the lands, including the building and maintenance of roads. Most noteworthy are the efforts of the Forest Service and the Bureau of Land Management. The forest development roads and trails in the State comprise very significant mileages of rural roads in the hinterlands of the State. Both of these agencies cooperate with State agencies and subdivision of the State in road development. Although the roads are very low-standard types the Bureau of Land Management and the Idaho Fish and Game Department have cooperated in building roads serving both grazing and hunting in the area of the public domain. Whether the Federal support is adequate depends largely on the effect of these lands on the local economy and whether the support should be increased or decreased depends on what effect this would have on the national economy. The primary responsibility for husbanding and developing the Federal lands is a national problem; but, because they are located within states, the individual state becomes a logical and interested partner.

The reduction in the State's matching requirements rather than being compensation to the State for serving the public lands for which the credit is allowed, is a type of adjustment granted to the State by reason of the lower need for roads and also because less revenue is obtained by the State from lands in Federal ownership than in private ownership.

The motor fuel taxes have been the principal source of matching revenue in Idaho as they have in the majority of the states. The comparative rates of these taxes to some degree indicate the local burden of road finance. Idaho initiated a motor fuel tax in 1923, and in only one year since that time was the Idaho rate below the average of all the states. Although the difference between the motor fuel rate in Idaho and the average national rate has been decreasing over time, the Idaho rate has been considerably higher. (See Figure 5.) Whether the difference is caused by difference in stage of development or by the proximity of federal land is not easily proven, but it does indicate a serious effort to finance roads.

GENERAL CONFIGURATION OF OWNERSHIP

In Idaho the public lands are generally in large blocks but are so situated that the majority of the private lands are in valley ribbons engulfed in a vast hinterland of public land These private lands in Idaho lie generally in a fish-hook pattern with the point of the hook pointing northeast at Yellowstone Park and the eyelet at the Canadian border. By road this "hook" has the formidable length of about nine hundred miles, (See Figure 6.)

In southern Idaho the geography of land use and ownership is determined mainly by the course of the Snake River, which flows through a large desert area. The extent of private land in this area is largely determined by irrigation from the Snake River or its tributaries. The amount of irrigated land along this fish-hook pattern varies according to the feasibility of getting water to the land. The private irrigated lands lie as islands and peninsulas in the vast desert of vacant, unreserved federal lands under the jurisdiction of the Bureau of Land Management. The irrigation development in this area began on small scale immediately following the Civil War but the great bulk of the development has been in the 20th century.

In northern Idaho the private lands are surrounded mainly by national forests. Some of the land now being farmed was natively prairie land--notably the Camas Prairie and the Palouse areas. Other farm and ranch lands were developed from

Figure 5. Rate of motor fuel tax in Idaho compared with the average of all states, for each year, 1919-1959[a]

(a) Source: Highway Statistics, Summary to 1955; and 1958 U.S. Department of Commerce, Bureau of Public Roads

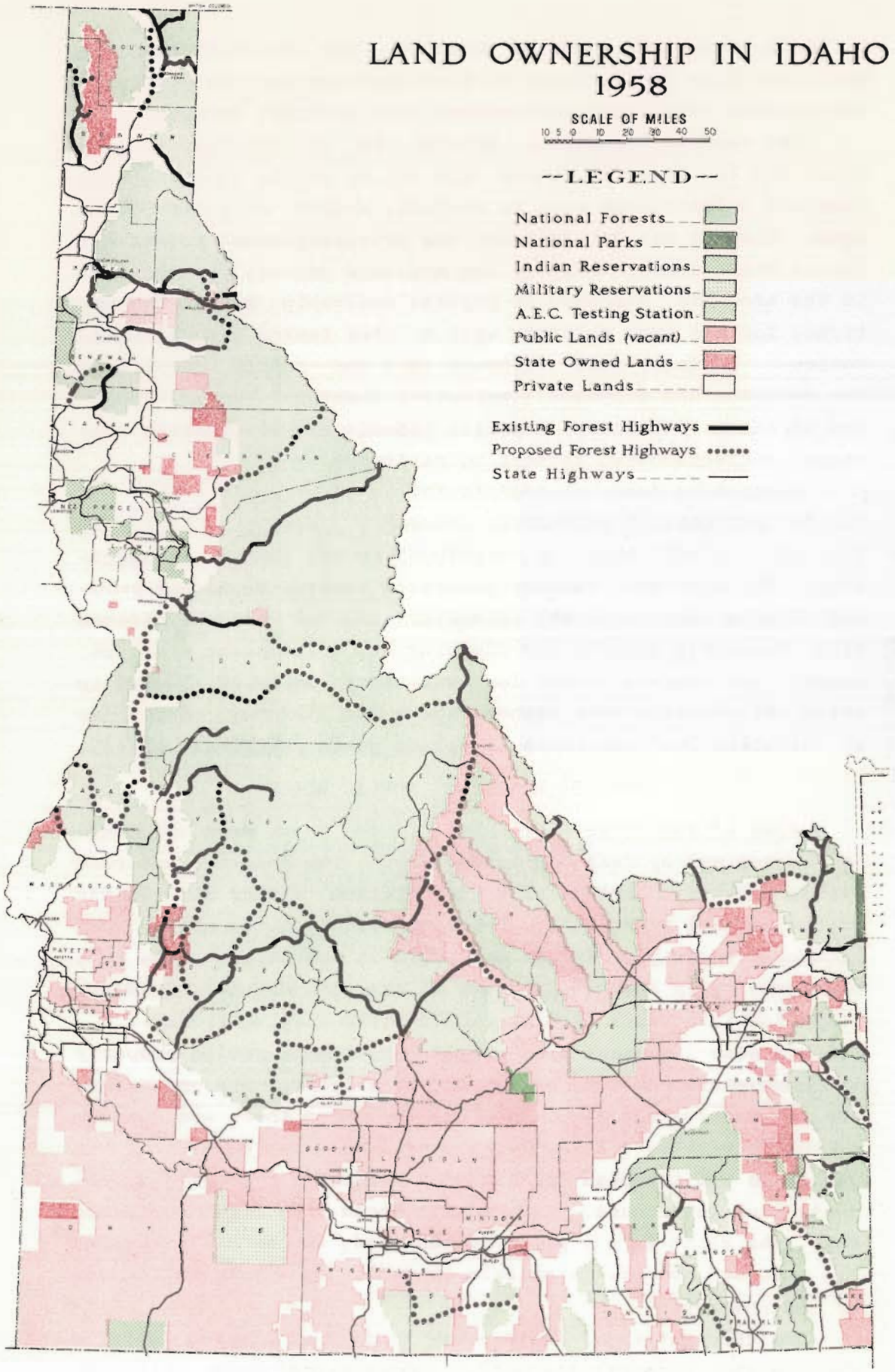


Figure 6. Land ownership in Idaho showing administering agency for public lands.

native forests and mountain meadows. The two major prairies mentioned form solid blocks of farm land but for the most part the private lands are interspersed with national forests.

The general boundaries between the privately-owned farm lands and the federally-owned land follow mainly along natural physical delineations such as canyons, ranges, or water drainages. This is not the case for the privately-owned forest and forest range lands. Much of the non-farm privately-owned land in the area was disposed to private ownership before the national forests were reserved with no view toward natural delineation. In fact, some railroad land and public school land was selected and disposed in geometric unnatural design--isolated sections (640 acres) to public schools and alternating sections in checkerboard pattern to railroads.

Changes in land use tend to follow natural delineation so, in the instances of arbitrary ownership lines, the changes in land use are not naturally coincident to the changes in ownership. The scattered land use generally creates an access problem of more than ordinary intensity and the non-coincidence with ownership adds to the planning and development problems. General provisions exist for exchanging isolated ownership units but compared with highway needs and planning, the process of "blocking out" ownership is taking place relatively slowly.

PRIVATE ROADS vs. PUBLIC ROADS

Many of the State's principal forest areas were originally "opened up" by railroad extensions. The logging railroad was an important artery of transportation either all the way to the sawmill or to water transportation to the mill. Some of these logging railroads are still in operation; some have been completely abandoned; some of the railroad beds have been converted into roads used by rubber-tired logging trucks.

In some instances these roads have become public property and completely part of the public-road system and under full public control and use. In other instances there are degrees of public rights--varying from the private owner permitting the public to use the road for goodwill reasons to expressed agreements for public use. In some instances the right to charge toll, the right to put gates on the road, and actually whether the road bed reverts to private or public ownership are matters of controversy.

Another matter of controversy is that of placing a private road on the property tax roll. Revenue-producing railroads rather consistently have been subject to the general property

tax. The railroads which have been converted to non-rail roads were generally not separate entities in revenue production and the tax problem appeared of importance only when they traversed more than one taxing jurisdiction.

The current private non-rail roads would logically be thought of in the same manner as the railroads. If the owner of the road charges or has the right to charge toll on his road, the road would be a separate revenue-producing entity and could be argued as being subject to the general property tax.

In general there is both conflict and coordination between the private and public roads. Normally one of the two types would be dominant and become the core for planning the integration of the two types, if any planning is done. Regardless of which is dominant the roads are perhaps not as well integrated as if they were either all public or all private. The ownership of the road generally affects its use. Different conditions will be revealed in the areas described in the following pages.

CRAIG MOUNTAIN AREA--LARGE PRIVATE HOLDINGS SURROUNDING SMALL TRACTS OF PUBLIC LAND

To be of the greatest economic value, any transportation system--whether public, private, or a combination of public and private--must be planned and built to serve the future use of the resources affected. Variations in potential road-user interests and differences in time-tables for resource development need to be resolved for greatest net benefit over time and greatest current value of the road. As a result of the democratic procedures which have developed, the resolution of these interests and differences is often facilitated into coordinated action easier under the more nearly normal conditions of many varying interests than in relatively few interests of distinct differences. This is especially true if the interests are in some degree of conflict.

Because there is so much geographic variation in the State's surface and resources, perhaps no single area could be selected for representing fairly the public-private road problem in Idaho. Some of the factors of importance exist in the Craig Mountain Area represented in Figure 7. The area shown is the southern panhandle of Nez Perce County lying between the Snake and the Salmon Rivers, which join at the southern tip of the area. This area was chosen to represent conditions of mainly private ownership with isolated tracts of pub-

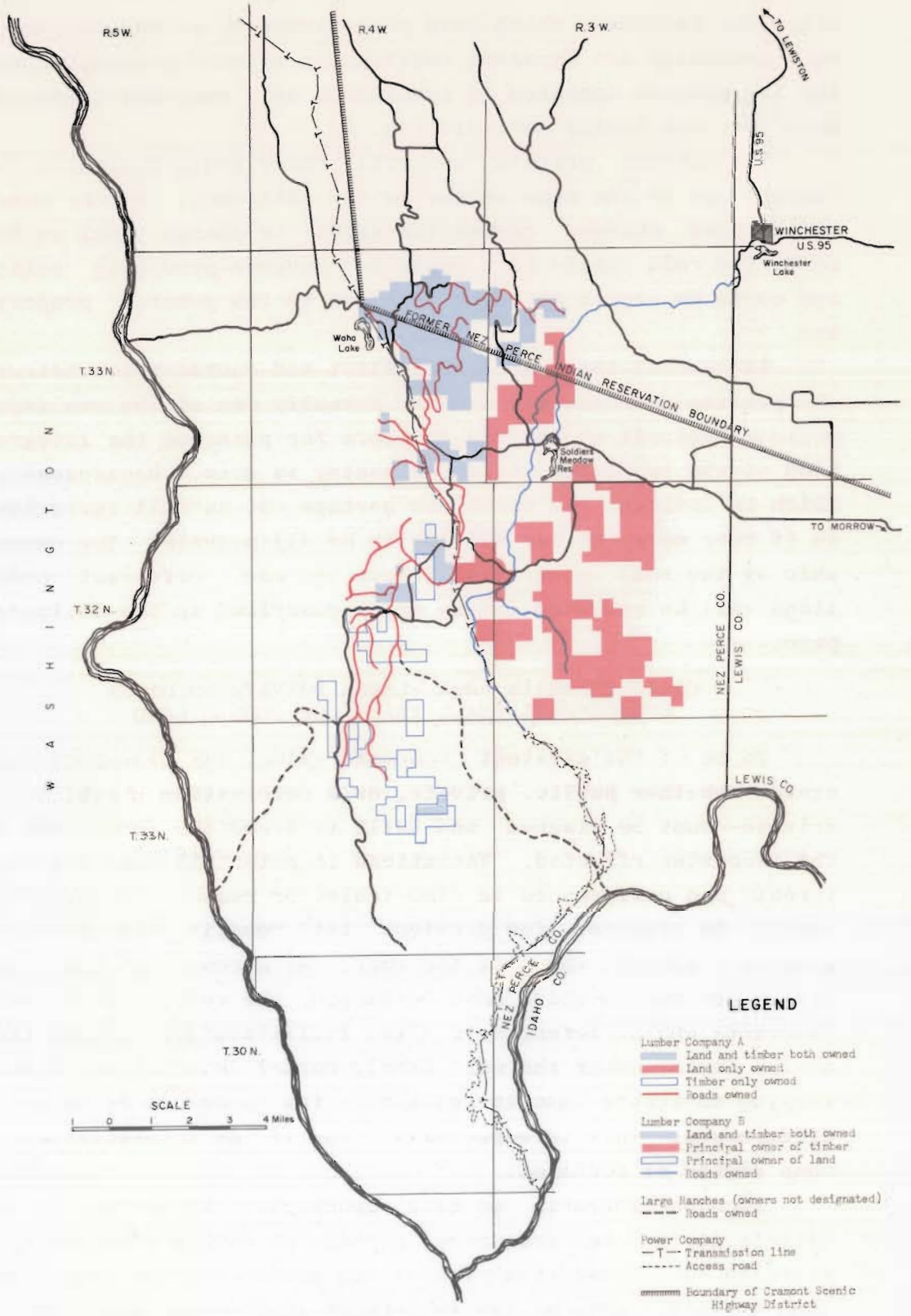


Figure 7. Craig Moumtain Area, in Nez Perce County, Idaho showing several factors related to local roads

lic land but the land resources being comparable to reverse conditions of ownership.

The area shown in the figure lies to the southeast of the Lewiston-Clarkston urban area. Waha Lake is approximately sixteen airline miles from the center of Lewiston, Idaho, representing a greater urban area of approximately 30,000 people. Lewiston, at the confluence of the Clearwater and Snake Rivers, is at the relatively low elevation of 739 feet above sea level and summers are relatively hot. Waha Lake, below the mountains to the south, lies 2,400 feet above sea level. Much of the topography has great variations from the higher mountains south of Waha Lake to the Hell's Canyon gorge of the Snake River, which is the deepest canyon in the United States.

The principal public north-south road in the Craig Mountain area is known as the Cramont Scenic Highway. From Waha Lake this extends in a general southerly direction and ends just short of Township 30 North. In popular language it would not be referred to as a highway because it is a low-standard road not always passable.

The current interests in transportation in the area can be grouped as follows:

(1) General public--recreational destinations of picnicking, hunting, and fishing;

(2) Forestry--two principal lumber companies in logging and other smaller interests in forest products;

(3) Cattle ranching--one predominant large land holding and a few lesser, but still fairly large, range operations;

(4) Domestic water supply--from Soldier's Meadow Reservoir for the city of Lewiston and its environs;

(5) Power transmission--running the full north-south axis of the area.

The general location of these interests is apparent from the figure except that the distributions of either range land or recreational resources have not been indicated.

The general public having the greatest interest in the Craig Mountain area would come primarily from the Lewiston-Clarkston and Lewiston Orchards area to the north and a smaller population from the Winchester area to the east. The only feasible access for the Winchester area at present is over a private logging road built by lumber company B. The location of Winchester is at an elevation of 4000 feet above sea level so there is not the incentive for travel for change in elevation as would be the case for the inhabitants of Lewiston. The high

country served by the Cramont Scenic Highway is almost uninhabited either by permanent or seasonal residents. Part of this is undoubtedly caused by the ownership of the land but part is also caused by the lack of easy access, which in turn is somewhat related to land ownership. Upon being asked why they did not use the Craig Mountain area to a greater extent for general recreational purposes, the typical answer of some of the Lewiston residents was that they did not want to cope with the alternate dust, mud, and snow problems entailed in going and coming. The query was directed in a manner which would elicit thinking of enjoying the resources (preponderantly natural) as they are, mainly on an outing basis, rather than making improvements which would entail investment.

There is big game in the area and during the deer season, (area not open to elk hunting) the travel becomes quite heavy. Some of the land owners voiced objection to various activities of hunters and fishermen. No effort was made, in this research, to evaluate either activities or objections.

The area shown is one of predominantly large private holdings with small interspersed tracts of public land not of great enough significance to enter into negotiations for roads. Each of the two lumber companies has built significant amounts of road to carry on its logging operations. The large ranch and the power company have also each built significant mileages of roads. In general these roads are single-purpose roads and are planned for the one purpose rather than resolving the various interests into a system.

In several instances, lumber company A has improved segments of the public road. In other instances, this company has built a new road closely paralleling the public road for several miles.

It is evident that road building and log haul have entered into decisions in forest management and woods operations. There is a general east-west division of logging area between the two major lumber companies. This is true despite the fact that company A owns the great majority of the land being logged by company B. The basis for the split is essentially that of company A logging the Snake River drainage and company B logging the Salmon River drainage. Road and hauling expenses are thus minimized.

Company B relies almost entirely on its own road system for logging this area. For the purpose of log hauling and tim-

ber management, this has distinct advantages both in finance and regulatory measures. The trucks are not subject to motor fuel taxes, load limits, or other public-road regulations. On segments of the road, meeting on the left, rather than on the right, is required to put the loaded logging truck on the "inside" toward the up-slope of the mountain. This practice keeps the very heavy log loads off the shoulder which, especially on the steeper sidehills, has been built up from earth fill. Because much of the hauling on this particular road is northerly on an east slope, meeting on the left side is most common. The public is oriented toward meeting on the right and the company gives this as a reason for not permitting the general public to use the road.

The final decision as to the efficacy of having built these roads as private roads rather than part of the public-road systems depends upon complex conditions. Ordinarily if there were only one owner and one use or user, conditions would be simplified. With a few interests the roads may be made most economical through private negotiations; road development may be blocked because of varied interests; or interests may go their own independent ways replicating facilities in an uneconomical manner. In the case at hand, there is replication of public and private roads--the private roads being constructed mainly to serve the major interest or use of the respective owners.

The interest of the owner is often more complex than might appear in the first analysis. If a company employs a large local labor force, then serving its own labor force takes on certain aspects of serving a general public. The road service is in the nature of a "fringe" benefit or perquisite to the employees. If the company's lobor force constitutes a large percentage of the local population, it is impracticable for the company to distinguish between its own employees and the general public. This becomes especially so if secondary industry and business are highly inter-locked with the industry of the road-owning company. Goodwill relations with employees of the inter-locked firms take on a nature much like that with the company's own direct employees.

One of the principal differences between public roads and private roads is the matter of predictable stability. Whether a road is built and maintained is always a human decision. Whether policies are going to remain constant is relatively

unimportant to resource uses which can efficiently be "here today and gone tomorrow". Some uses are less efficient than others under such conditions. Those uses requiring long-range planning and fixed investment are dependent upon predictable stability to a higher degree than those which can be altered or stopped with little loss of either plans or investment.

Presumably, especially if ownership is of corporate form, stability of road development and maintenance can be as great and predictable under private ownership as under public ownership. The degree of stability under each type of ownership depends on both the variation of interests and the decision-making organization. Rational private owners would logically provide both access and land use which would maximize the value of their holdings. With complete long-range information, this would in itself bring about a degree of stability. This would entail a mutual understanding, resolved interests, and a unified approach. The approach needs to be of a dynamic nature. Management of one of the major resources in the area in question stated that their policy of resource management has, over a period of time, changed from a "cut-out-and-get-out" basis to a sustained-yield basis. Decisions of this kind need to be made for the future; the owners need to be in accord; facilities such as roads need to be planned and developed in accordance with major land-use decisions.

In the absence of real market conditions, arriving at the highest and best use of resources and the attendant maximum value of the resources requires a logical approach. The logic needs to simulate the conditions of a real market. Owners of land in the Craig Mountain area relate activities--such as general vandalism, destruction of fences, fires, wildlife destruction, pilfering forest products and supplies, and spooking cattle--to recreational use of the resources. Under appropriate methods of investigation, the costs of such activities could be appraised in a quantitative manner. General experience in other areas indicates that the magnitude of such activities is not directly proportional to the number of recreationists using an area.

Some of the values and costs involved in attaining the maximum value of the resources of an area are more difficult to determine in a quantitative manner. The personal privacy and tranquility of the resident can be valued only on a personal basis by the resident. This, however, is not a unique kind of

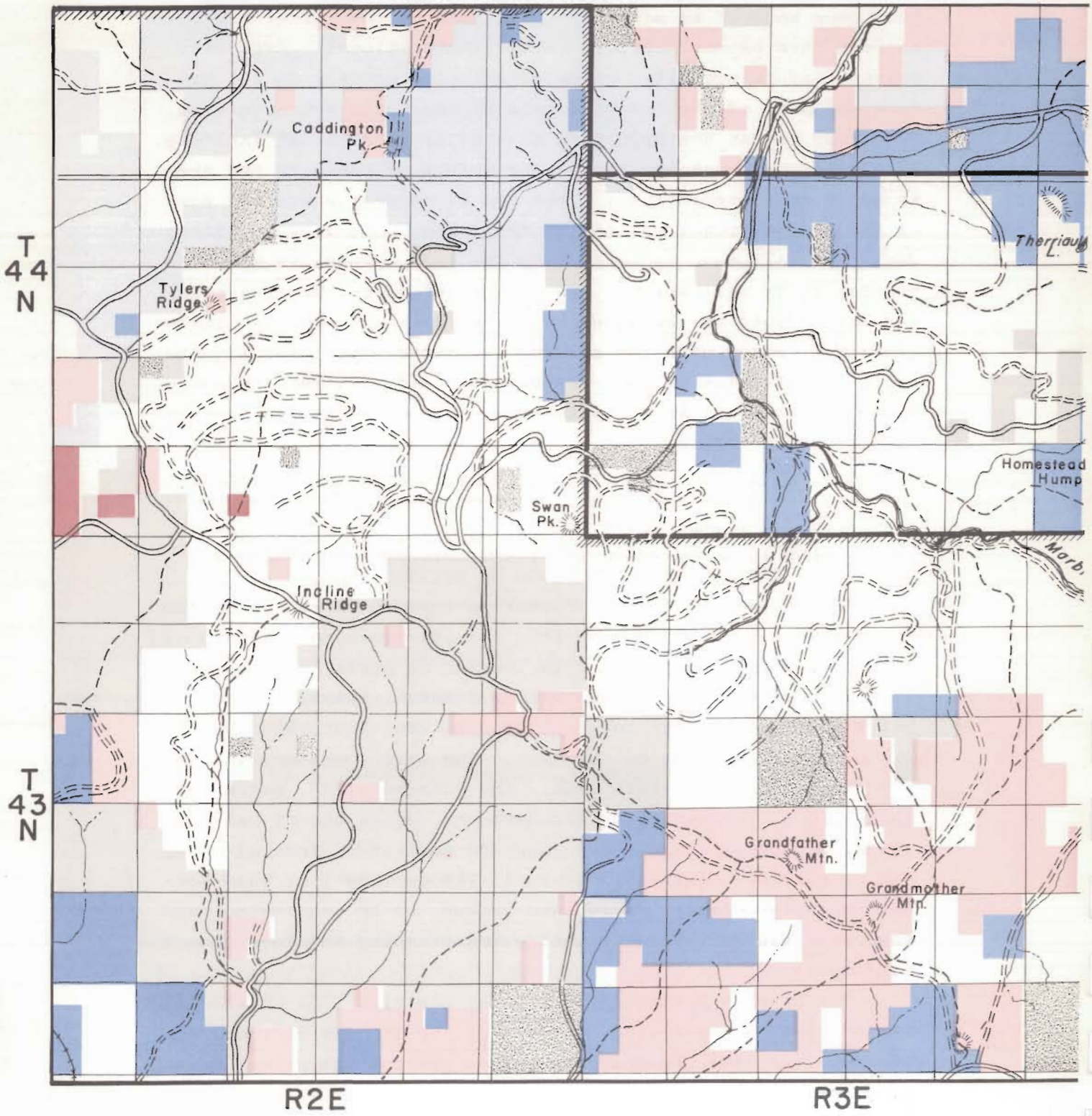
situation because any person must continuously balance the foregoing of one type of pleasure or income in order to attain another type. Fortunately, the great bulk of the situations have been reduced to monetary equations in the market and decisions have become habitual rather than rational. Evidently, privacy and tranquility weigh relatively heavily in the balance for some of the few residents of the Craig Mountain area.

Road access has been used as a major control of land use in the Craig Mountain area. The future of roads in the area is not highly predictable. When and if present users of some of the private roads relinquish their use, some very important decisions will need to be made by the land owners to whom the rights of way will revert. These decisions can have very important effects on the land use in the area and upon the integration of roads with the systems surrounding but serving the area. To minimize many of the ensuing difficulties and avoid misunderstandings, these decisions should be reached in advance of disturbing events.

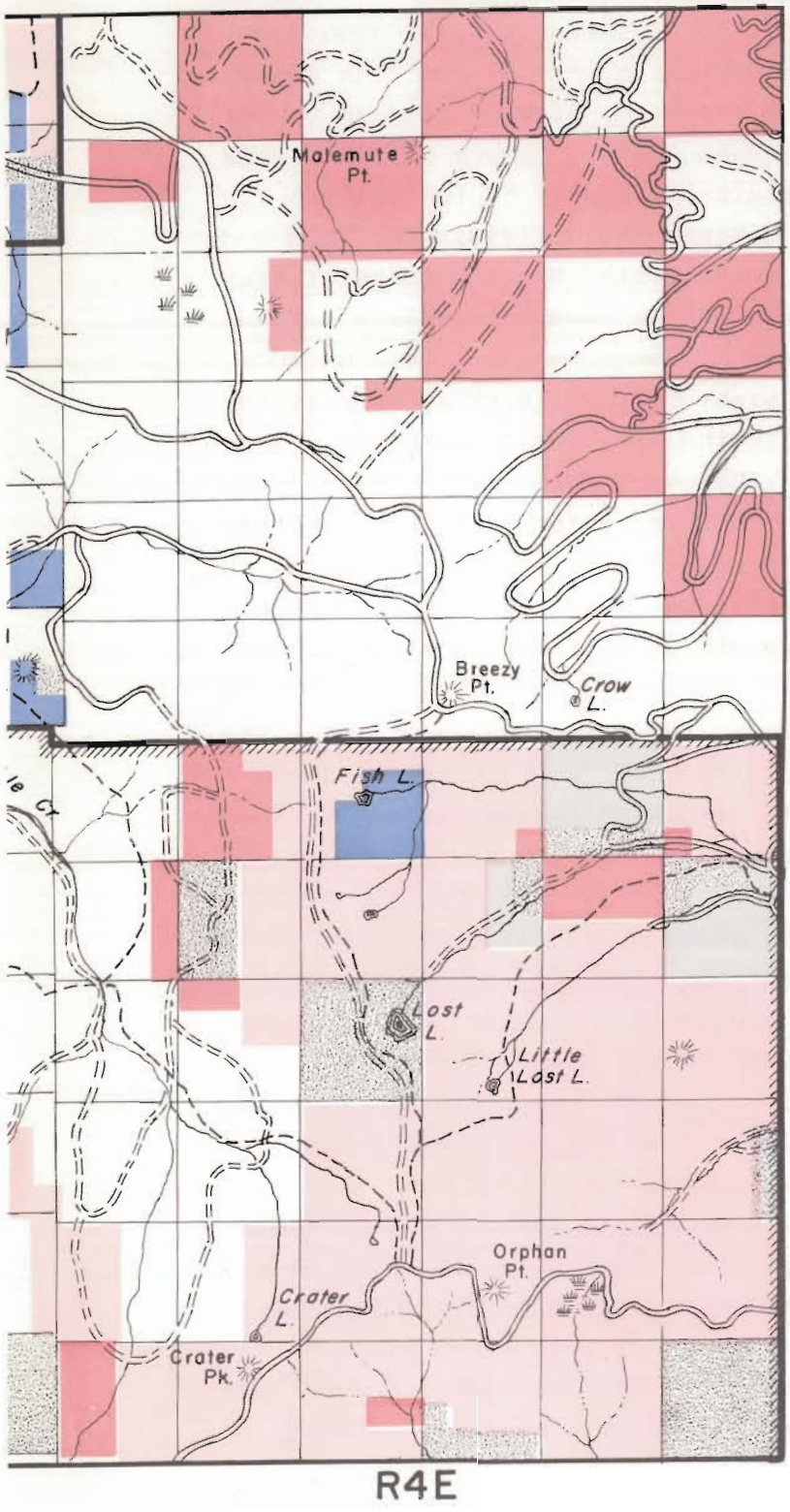
CLARKIA BETTER ROADS HIGHWAY DISTRICT--AN AREA WITH PUBLIC LANDS PREDOMINANT BUT INTERSPERSED WITH VARIOUS-SIZED HOLDINGS OF PRIVATE LAND.

The St. Joe National Forest is reputed to be one of the most unwieldy in the nation from the standpoint of pattern of land ownership. This forest is located in parts of four counties in northern Idaho--Clearwater, Benewah, Latah, and principally Shoshone--being bounded deep in the hinterland by the Bitterroot Mountains on the east. The east boundary is also the Idaho-Montana state line. The "crazy-quilt" pattern of ownership is augmented by checkerboard ownership of railroad lands, by interspersed state land and unreserved federal land, and by private holdings in general. The periphery of this forest is exceptionally jagged and broken up by ownerships and tenures of varied interests making road planning and development difficult.

The Clarkia Better Roads Highway District lies outside of the original proclamation boundary of the St. Joe National Forest. However, that boundary is not at present the actual boundary because of land exchanges and gifts to the Forest since it was reserved out of the Public Domain. Considerable acreage of the present forest lies within the District--the majority of the land in the area being publicly owned.



GURE 8. Land Ownership and Roads in a 6-township area which is part of the Clarkia Better Roads Highway District in the periphery of the St. Joe National Forest.



LEGEND

- Forest Service Trails
- Proposed Roads
- Existing Roads
- Forest Highway and Forest Development Project
- Proclamation Boundary
- Boundary of Clarkia Better Roads Highway District
- Forest Service
- Northern Pacific Railroad
- State of Idaho
- Potlatch Forest, Inc.
- Milwaukee Land Co.
- Other Private Land
- Public Domain

The area represented in Figure 8 was selected for study because it exemplifies many of the problems relative to road development. The hamlet of Clarkia lies near the center of Section 6, Township 42N, Range 2E, placing it only about one-half mile southeast of the southwest corner of the area shown. Clarkia is well served with a black-top highway from the northwest and to the southwest--Idaho State Highway No. 43. This highway barely crosses the southwest corner of the area in the figure. Four of the six townships shown (T44N, R2E; T43N and Ranges 2, 3, and 4E) are in the Clarkia Better Roads Highway District, which in total constitutes approximately 8.5 townships.

Although a relatively high-standard highway is adjacent to this area, the roads within the area are of relatively low-standard type. The area is, however, quite well roaded with roads of the type which are passable under favorable weather circumstances. In only a few areas is it possible to be much more than a mile from an established road. From an interpretation of road maps furnished by the U. S. Forest Service, it appears that only 37 of the 218 sections of land shown are not at some point traversed by a road. When the proposed roads are completed, this figure will be reduced considerably. Another aid in the access to this area is the extensive mileage of Forest Service trails, which serve the majority of the non-roaded sections.

Timber is the principal resource of the area. Generally this resource is fairly adequately served from the standpoint of the harvest of timber. The great majority of the roads, whether National Forest Development Roads or private roads, has been built out of stumpage sales. This procedure tends to make the road efficient for the timber chances particularly involved, but does not fully recognize other uses and other values. Ordinarily it is more difficult for the administrator of private land to recognize these "secondary" or less direct values than it is for the administrator of public land.

The land ownership pattern in this area makes planning and development, including transportation facilities, much more difficult than would be the case under a single ownership or authority. Not only are there various types of ownership, but the lands owned by single owners are broken up into scattered tracts.

From the standpoint of scattered tracts, the State of Idaho perhaps has the worst ownership in the area shown. The State is shown to own 26 separate tracts in the area. From map readings it is estimated that the State lands in these 6 townships totals to about 5,800 acres. None of the tracts is more than one section, ranging down to about 40 acres and averaging only about 223 acres per tract.

The Federal Government is the predominant owner of land in the area. Approximately 62 percent of the area is in federal ownership--43 percent in national forest and 19 percent public domain (unreserved federal land). Three-fourths of the privately-owned land is owned by three different private concerns. (See Table13.)

The checkerboard pattern of ownership of the Northern Pacific Railroad Company is mainly in the northeast part of the area shown. This pattern of ownership extends north and east covering an area of approximately 240 square miles if the total area were shown. The original philosophy of disposing public lands into private checkerboard ownership was that private initiative would develop the alternate sections and thus increase the value of the remaining public land. In areas

TABLE13. PRINCIPAL LAND OWNERSHIPS, ACREAGES AND NUMBER OF TRACTS, IN A 6-TOWNSHIP AREA IN THE PERIPHERY OF THE ST. JOE NATIONAL FOREST

Ownership	Number of tracts	Acreages(1)	
		Total	Av. per tract
Federal			
National forest	22	59,680	2,713
Public domain	32	26,160	818
State	26	5,800	223
Private			
Potlatch Forests, Inc.	16	17,480	1,093
Milwaukee Land Company	3	9,280	3,093
Northern Pacific R.R.	24	8,000	333

(1) The acreages were calculated from a map of holdings which was furnished by Mr. Ray Hilding, Supervisor of the St. Joe National Forest. Some of the privately-held acreage was checked against tax assessments. The acreages thus derived resulted in approximations close to the actual.

suitable to intensive development and settlement the philosophy was quite functional but in areas suitable to only extensive development in large operating units, such as the area shown, the results were not what might have been desired. In areas such as the one in question, the checkerboard system of granting land created fragmented ownership and, in most cases, fragmented operating units.

Even though the land held in private ownership is controlled by the checkerboard method of disposal to be essentially of the same nature and quality as the retained public land, the land use and the time schedule for development and operation would not likely be the same for private as for public land. This has serious ramifications in road development. The administrator of the public land, being responsible to the general public, can include the interest of the general public in his planning even though doing so may be a net cost to the immediate business enterprise for which he is responsible. The administrator of the private land can include the general public interest in his planning only to the extent that doing so will result in net income to his enterprise. Because of this difference, there is a tendency for multiple-purpose roads to be developed on the public lands and more nearly single-purpose roads to develop on the private land--albeit single purpose does not usually result in single use.

One of the most difficult man-made obstacles to road development in the checkerboard pattern of ownership is the acquisition of right of way for the roads. In this pattern it is absolutely impossible to traverse beyond the boundary of any single section of land without acquiring right of way from another owner. To minimize the amount of right of way which would need to be purchased, roads would traverse from one section to another at section corners--which would rarely be the best location for a road in rugged topography as occurs in the specific area under consideration. Several of the roads in the checkerboard area do cross over at section corners but whether this was caused by the right-of-way problem was not sufficiently investigated in this study. It is quite probable that this factor has influenced road location in some instances.

There is evidence that the predominance of federal land in this 6-township area has had significant influence on the road development. Many of the more significant roads traversing relatively large blocks of private land are classed as Forest

Development Roads. Although these roads have been built mainly for an immediate purpose of harvesting timber tracts (chances) on the public lands, the interests of the general public and other land owners have been considered. These roads are essentially part of the overall public-road systems. Ordinarily these roads have been built out of the proceeds of timber sales. Sharing of costs and acquisition of rights of way have been negotiated. As principal owner, the Federal Government has been in a position to bargain in the interest of the public--including the recreationist, sportsman, and local resident. A quite different road use is in effect in this area compared with that in the Craig Mountain Area which is predominantly in large private holdings.

Integrating Local Roads and Interests: In any locality the roads need to serve all the interests of the different potential road users in order to develop roads of overall maximum value. Ordinarily this would automatically mean that local roads provide logical access to the general public-road systems serving or being in a position to serve the locality. In some instances the access may be to other modes of transportation. Consideration of these factors entails planning and resolving interests.

In Idaho the "Good Road District" is vested with considerable authority in the area of planning, designing, financing, and building local roads. (See Idaho Code, 1947 Section 40-1610 and 40-1611.) It has the status of a public corporation for road purposes and may levy taxes for such purposes. The Clarkia Better Roads Highway District is one of these units. Generally throughout the State the number of "Good Road Districts" has been decreasing during recent years.

Although the Clarkia Better Roads Highway District has the legal authority to be a very effective instrument in the planning and development of local roads, it evidently has not been anxious to exercise its full authority or to increase its scale of operation. At present, the District takes year-round responsibility for about 19 miles of road and takes on the responsibility for keeping a few additional miles open to traffic in the winter season.

At the present time, the major project of this District is a bridge replacement at Clarkia. The District is trying to negotiate the financing of this improvement through requests for aid from other units or agencies of government.

The tax records of the District reveal its small-scale operation. From 1954 to date the levy has been at the rate of 50 cents per $100 of tax valuation. In that part of the six-township area over which the District has jurisdiction, the total assessed valuation is only $84,840. At the present rate of levy, this yields only $424.20 of taxes per year for roads. With 28,627 acres of private land in the area this amounts to less than one-and-a-half cents ($ .0148) per acre of taxable land per year. The actual value of the average land in the area is low, but the local public-road finance through local taxes is even relatively lower. An appraisal of the roads in the area makes it obvious that the financial support for roads channeled through the District is an insignificant percentage of recent expenditures for roads. During the fiscal year of 1959 the District had total receipts of $27,807.41 of which $19,664,59 was from the Forest Reserve Apportionment.[1]

Because decision-making and finance are ordinarily closely associated, it is probable that the District has not entered into the overall road decisions to a significant degree. There has become a rather common practice in areas of this type for land owners to negotiate roads in terms of primary, and often immediate, purposes. Frequently the large non-resident private land owner is more likely to go to the administrators of public land to negotiate road plans and development than he is to go to local units of government.

In the case at hand, it is obvious that the great bulk of the roads has been the result of such negotiation. Fortunately for the general public the more important roads in the area have at least a quasi-public status. Because of the proximity of the national forest land, many of the roads traversing significant distances over private land have been built, at least partly, out of stumpage values on national forest land and have been designated as Forest Development Roads. The State lands and public domain have also been influences in keeping the general area open to the public. This should not be construed to mean that all private land owners in the area are rigidly opposed to public access--in fact, the larger owners are quite

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[1] For more detailed information on finances and mileages of local roads in Idaho see Local Road Finance and Mileage Report, compiled by the Highway Planning Survey, Idaho Department of Highways in cooperation with U. S. Department of Commerce, Bureau of Public Roads. (The most recent issue at the time of this writing pertained to calendar year of 1959.)

interested in maintaining a local labor force which means permitting passenger traffic on the logging roads.

When small tracts of private landare completely surrounded by public land (isolated "islands") it is logical for the private owner to negotiate with administrators of public land in gaining access to his land. The area in question contains a great scatter of such "islands". (See Figure 9.) There seems to be a general consensus among the public administrators that the smaller islands are more bothersome than the larger blocks of private land. It also complicates the problems of the local highway district or planning agency to have these islands within its jurisdiction.

The answer to the question as to who should undertake the initiative in integrating roads and road interests at the local level should probably vary from one locality to another. It is obvious that in order to serve in a manner which will maximize the resources to be served, whoever takes the initiative must do so with adequate force to effect the necessary suitable compromises.

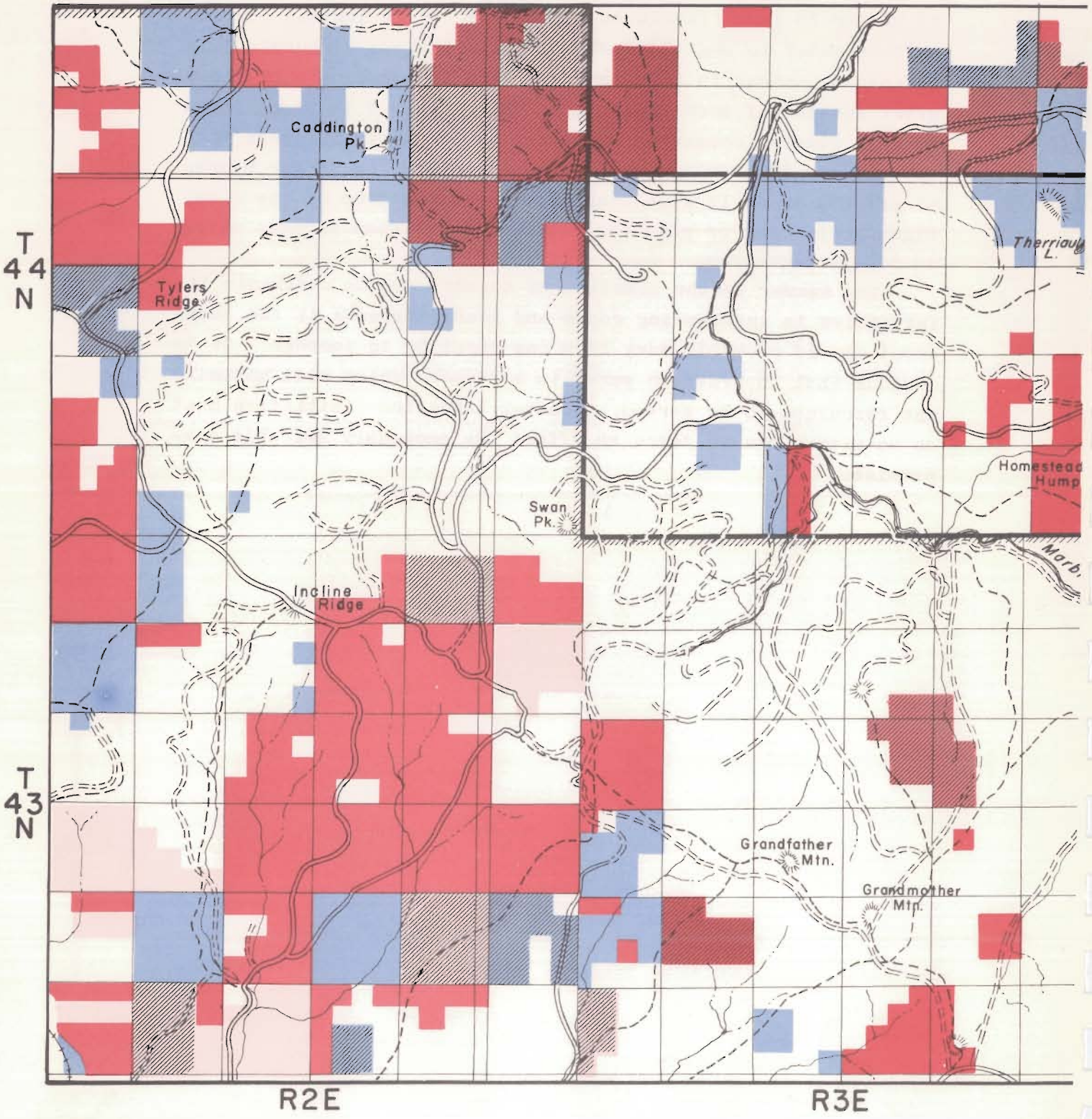
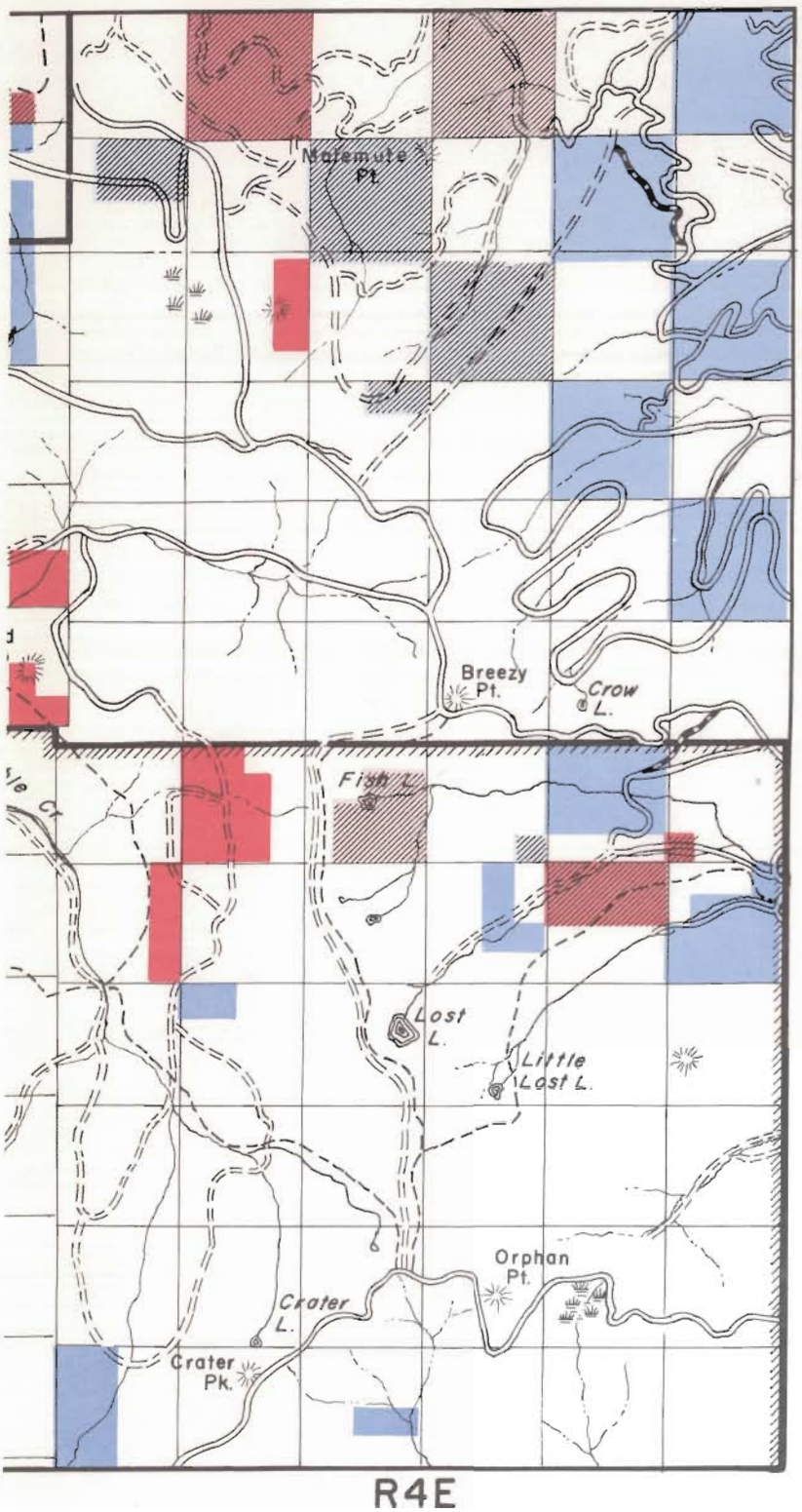


FIGURE 9. Distribution of assessed values of private lands in a 6-township area in the periphery of the St. Joe National Forest.



LEGEND

Forest Service Trails

Proposed Roads

Existing Roads

Forest Highway and Forest Development Project

Proclamation Boundary

Boundary of Clarkia Better Roads Highway District

Average Assessed Value per acre

- Less than $2.00
- $2.00 to $2.99
- $3.00 to $4.99
- $5.00 to $9.99
- $10.00 or more

Class of land (Assessor's)

- Dry grazing ..... Color only
- Some timber ..... Color plus diagonal lines

Chapter IV

EFFECTS SOME POSSIBLE RECLASSIFICATION OF FEDERAL LANDS WOULD HAVE ON FEDERAL AIDS TO ROADS IN IDAHO

There are several forces which could change the classification of Federal lands in Idaho. Some of these are already in effect but probably will change in intensity in the future. Some of them are arbitrary in nature and could change greatly with changes in political philosophy. Others could be of entirely new origin--such as in the areas of technological advancement and the discovery of new resources or new uses of known resources.

As a result of the rapid population growth which has been predicted to continue for some time in the United States, there will be a great pressure for putting some of the Federal lands in Idaho into more intensive use. Access and outlet to market have been problems of long standing in public land disposal and perhaps notably so for those Federal lands situated in Idaho. Pressures for roads to serve the interests and resources in the public-land area go hand in hand with interests for reclassifying Federal lands as to use and ownership. Some of these pressures are controversial in nature and to some extent offset each other.

Although a great deal of research could be done to forecast the future use and disposal of the public lands in Idaho, this report confines itself to the more immediate possibilities. Those considered could be accomplished without any great difficulty or change in public policy.

Under the present system of Federal aids for highways, the national forests are not included in the public lands which affect the Federal-State matching ratios. Federal aids to compensate states in which national forests are located have been allocated from a special appropriation called the "Forest Highway Fund." For several years, the total Forest Highway Fund to be allocated was $30,000,000. Idaho received $3,054,441 on the basis of the 1958 apportionment of this fund. Out of the national authorization for fiscal year 1961 of $33,000,000, Idaho received $3,360,000--which makes this a very important item in the State's highway budget.

Table 14 shows how the Federal-State matching funds would be affected by reclassifying the Federal lands in Idaho so as to treat either all or none or these lands the same as public domain and nontaxable Indian landin the project matching ratio.

Table 14. FEDERAL AND STATE FUNDS FOR THE THREE FEDERAL-AID HIGHWAY SYSTEMS FOR IDAHO IN THE 1961 APPORTIONMENT COMPARED WITH WHAT THEY WOULD HAVE BEEN HAD EITHER ALL OR NONE OF THE FEDERAL LANDS BEEN INCLUDED IN THE AREA OF PUBLIC LANDS FOR WHICH PROJECT MATCHING CREDIT IS ALLOWED

Item or Condition	Federal-Aid System ($1,000)[a]		
	Primary and Secondary*	Interstate	Total
Existing conditions			
Total Funds	$13,001	$13,354	$26,355
Federal	7,962	12,296	20,258
State	5,039	1,058	6,097
Matching Credit	2,923	172	3,095
If All Federal Lands Were Eligible For Project Matching Credit			
Total Funds	10,709	12,911	23,620
Federal	7,962	12,296	20,258
State	2,747	615	3,362
Matching Credit	5,215	615	5,830
If No Federal Lands Were Eligible For Project Matching Credit			
Total Funds	15,924	13,526	29,450
Federal	7,962	12,296	20,258
State	7,962	1,230	9,192

* Includes urban extensions

On the basis of the 1961 apportionment, the State funds were $5,039,000 on the Federal-aid primary plus the Federal-aid secondary systems, including extensions in urban areas. The State funds for the Interstate system were $1,053,000. If there had been no project matching credit--that is, the third condition shown in Table 14--the State's share of the primary plus secondary systems would have been $7,962, the same as the Federal share, and the State's share of the Interstate would have been $1,336,000, or 10 percent of the total funds. Under the present program and land classification the project matching credit to Idaho was $3,095,000--whereas this would have been $5,830,000 had all of the Federal lands in the State been ruled or classed as rural mail routes or star routes.

Under the present formula for apportioning the Federal aid to the three Federal-aid highway systems, no amount of reclassification of lands in the State of Idaho could increase the Fed-

eral apportionment to the State as a direct result of reclassification. All of the State's area regardless of land ownership is now included in apportioning the funds based on the relative areas of states. Unless the boundaries of the State were changed to include more area, the only way the State could receive a greater apportionment--assuming a fixed national fund--would be through increased population or increased road mileage classed as rural mail routes or star routes.

Reclassification of Federal lands in Idaho could have a long-run effect on the population of the State. Although the population growth of the State has been relatively slow the population "explosion" in the nation as a whole should bring increasing pressure for disposal of certain Federal lands to private ownership and more intensive use and settlement. Much of the public-land area of the State, as is the case in all of the major public-land states, would not support a greater population in private ownership and use but many areas could become more densely populated under private ownership. General national rural land-use policies pertaining to private lands as well as policies on public-land disposal could affect the rural population of the State significantly. This could become a real factor in both the financing and planning for roads. Many of the areas, albeit many of them would be relatively small "pockets", now planned predominantly on the basis of a single resource--notably timber--would need to be planned in terms of a more complex development and occupance than exists at present. In some of these areas, the transition would probably be quite rapid when the access barrier has been removed.

The classification of Federal land into "Wilderness" could have significant effect upon highway development. Except for local roads the lands considered for this classification do not seriously interfere with the State's highway systems in the current economy. The known resources and terrain are such that major roads would not exist in these areas. If either or both demand for roads and technology in road construction were to change radically such lands could, to some extent, be an obstacle to the most efficient long-run development. No Federal aids hinge on the classification.

On the basis of the present Federal-aid program, the only feasible reclassification of Federal lands in Idaho which would directly affect the amount of Federal aid to the State would be to change the national forest area in the State. Presumably some of this could occur through land exchanges, either private

or public, but if the area of national forest were to be increased significantly it would come from the public domain. The most feasible areas for this to take place would be in the northern 10 or 12 counties. Increasing the area and value of the national forests in the State would increase the apportionment from the Forest Highway Fund without decreasing other apportionments.

Chapter V

SUMMARY AND CONCLUSIONS

For various reasons the planning and financing of highways would be more difficult for those states in which there are extensive Federal lands than in other states if there were no offsetting factor in the Federal-aid program. It is obvious that great expanses of nontaxable, sparsely-settled public lands add to a given state's burden in the highway program. Because of the youthful economy in most of the public-land states the general situation is such that natural resources are abundant in relation to people and capital, and the demands for the limited capital are great even in developing privately-held natural resources but especially so when publicly-held natural resources are considered in addition.

In this report a state with more than 5 percent of its area in public domain and/or nontaxable Indian land has been referred to as a "major public-land state". Thirteen states qualify under this definition--being what is normally referred to as the 11 Western States and Alaska and South Dakota. In the 11 Western States more than one-fifth of the area is public domain and 49 percent is land owned by the Federal Government. In the other states, excluding Alaska, only about 3.3 percent of the land is Federally-owned. There is a great deal of variation in land ownership among the individual Western States--from 86.3 percent Federal in Nevada to 30.6 percent Federal in Montana. In Idaho 65.5 percent of the land is owned by the Federal Government--about one-third (32.6 percent) of which is public domain and about 58 percent national forest.

Recognizing what would otherwise either be a great financial hardship or an obligation not met in the states containing extensive Federal lands, and also recognizing the benefits accruing to the Federal lands as well as the more widespread benefits derived from highways integrated to a national level, the Federal Government makes several types of adjustments for the existence of Federal land within a State's boundaries. Of the greatest general importance either at national level or to most of the states in which large areas are located is the fact that one-third of the Federal funds for the Federal-aid primary and Federal-aid secondary systems is apportioned to the states directly in relation to the relative areas of states and that the

Federal lands are included in the individual State's area. This means that in the 11 Western States with 49 percent of the area in Federal ownership, approximately one-eighth (1/3 x 49 percent) of the Federal aid for these two highway systems comes to the States by reason of the Federal lands in these states. For the State of Idaho with 65.5 percent of the area in Federal ownership one-sixth of this aid is by reason of the Federal lands. Approximately one-twelfth of the total Federal aid to these systems was by reason of Federal land prior to and including the apportionment for fiscal year 1960 and beginning with 1961 this changed to about one-ninth because of a change in the aid to Alaska--explained later.

There are Federal aids, other than that involved in the apportionment to the Federal-aid highway systems, which are dependent upon the existence of Federal land in a state. Some of these are well-established by formula; some are for special emergencies or occasions; some are regularly channeled through highway departments whereas others are handled by Federal land agencies either directly or in cooperation with States or subdivisions of States; and some aid comes by reason of Federal lands in very indirect manners. A total compilation would be extremely difficult because in many minor instances aids for roads also contain other benefits or functions.

The Forest Highway Fund has been one of the more important highway aids to Federal lands. At present this is $33,000,000 at national level with about nine-tenths of it going to the major public-land states. This is a very important item to the State of Idaho receiving approximately 10 percent ($3,360,000 in 1961) of the national total and this being about 10 percent of the budget for the highway department. The use of these funds is required in relation to national forests. Idaho being second only to Alaska in area of national forest shares heavily in the funds for this reason.

Funds for public lands highways (USCA §§ 209) have been relatively important to Idaho recently although the national has been only about $3 or $3.5 million annually. During the 3 most recent fiscal years Idaho has received approximately $4 million to be used on the Lewis and Clark Highway. This is not a predictable source of significant income to a highway department.

Very important in road development in the hinterlands under Forest Service jurisdiction in the major public-land states --especially so in Idaho--are the forest development roads and trails built by the Forest Service either from appropriated

funds or timber income. These roads--besides being of primary value in managing, protecting and harvesting forests--serve the public both as access roads for sportsmen and as links between other public roads and also frequently join significant private roads. A determination of either the historical costs of these or their value to the local economy would be difficult but it is well known that it would be great.

The Bureau of Land Management builds low-standard roads in the public domain. Although the primary purpose of these is to protect and manage the public domain they often serve the public as routes of travel in the back country. In Idaho there has been considerable cooperation between BLM and State agencies--notably for fire protection, timber operation and management, and for wildlife management and harvesting.

The Bureau of Indian Affairs aids to varying degrees in road finances on the several Indian reservations in the major public-land states. The Bureau of Reclamation and Army Engineer Corps are significant sources of financial support for certain road projects but these may not be directly related to Federal land--at least not in the ordinary sense of compensating a state for vast areas of Federally-owned hinterland lying in a state. These two latter sources have been of importance in financing roads in Idaho.

Twenty-five per cent of the net value of stumpage cut from national forests is turned back to the counties from which the timber is cut. It is required that this must be used for roads and schools. To some of the counties in Idaho and more so to some of the local highway districts in the periphery of the national forests this is a significant item in financing the local roads. In some districts it is the principal item.

Of the three factors used for apportioning to states Federal funds for the Federal-aid primary and Federal-aid secondary systems the factor of greatest importance to the 13 major public-land states is area. In the 1960 apportionment these 13 states received $98.2 million from the area apportionment compared with $57.6 from the total of population plus mileage despite the fact that twice as much (one-third for each) was available nationally for the total of the population plus mileage. This varied considerably among the major public-land states--Alaska receiving about 6 per cent from non-area factors and California receiving about 64 per cent from the two non-area factors.

Evidently as an aid to development of the Federal-aid primary and secondary systems in Alaska, in 1959 the Federal-aid

Highway Act was amended to use all, rather than the heretofore one-third, of the area of Alaska in apportioning the one-third of the Federal funds apportioned on an area basis. An analysis of the effects of this legislation shows that the increase in Alaska's share, by including her total area, greatly decreased the funds to the major public-land states. This varied considerably among the states and, ironically, the more comparable state's condition to the conditions in Alaska the relatively greater the decrease suffered by the State. As a group the major public-land states other than Alaska lost 6.4 per cent of their Federal aid to these two systems whereas the other states lost less than 2.5 per cent. Several of the sparsely-settled states lost considerably more Federal aid through this amendment than was apportioned to them out of the one-third based on Population. Idaho lost $602,000, approximately 90 cents per capita, in Federal aid to the primary and secondary system. How important the incidence of decrease in funds will be in the development of the highway systems, and concomitant development in the sparsely-settled states suffering the greatest increases could not be determined in this study. It appears, however, that a major effect of the amendment is to invest Federal funds in one underdeveloped area by reducing such investment in somewhat comparable underdeveloped areas. It appears that the efficacy of this would bear detailed investigation.

What this report terms project matching credit is based on the Federal law (USCA §§ 120a) which reads in part and essence that Federal funds on projects on the primary and secondary systems "....shall not exceed 50 per centum of the cost of construction, except that in case of any State containing nontaxable Indian lands, individual and tribal, and public domain lands (both reserved and unreserved) exclusive of national forests and national monuments, exceeding 5 per centum of the total area therein, the Federal share shall beincreased by a percentage of the remaining cost equal to the percentage that the area of all such lands in such State, is of its total area." The 13 states containing these conditions are referred to as major public land states in this report. In the year ending June 30, 1960, the project matching credit amounted to $73,107,000 which meant that the matching requirements in these 13 states were reduced by that amount. In effect this preferential treatment results in less funds being required by the State and less funds for highway finance in these states. For fiscal year 1960 this resulted in a reduction of $3,281,000 in Idaho. In Alaska the

reduction amounted to 45 percent of what the budget would have been without this treatment. In some states--notably Alaska where it would have amounted to about $96.50 per capita on the 1960 census--bringing the matching requirement up to a 50-50 basis would appear to be a real hardship on the State. It appears that the matching credit program should receive continuous research to discover modifications which would assure the best use of Federal funds. It seems that investigations as to the efficacy of a straight-line relationship between the credit and the land base and the land base used for this purpose should receive attention!

Two areas in Idaho in which private and public lands are interspersed were studied. The interspersion causes additional problems in planning, financing and developing roads. The dominant ownership tends to dominate road policy in these areas. Where there is one primary land use cutting across all lands regardless of ownership the problems and issues seem quite well resolved. Where the land use is more complex and the resource potential less well determined the issues do not seem clear and it appears that much study of land owners' interests and potential land users' interest is needed to maximize the value of the land. In these hinterland areas where these conditions occur, the cost, value and effect of road improvements will be major determinants.

Granting a continued rapid population growth in the United States, and throughout the world, the pressure for more intensive use of land will increase. These pressures will be especially strong against the resources of the extensive public lands in the major public-land states. The decreasing timber supply and the growing needs for water are already vividly impressed in the public mind. Potential increases in demands for outdoor recreational and agricultural resources, although not so firmly established, are nevertheless very much of the horizon. Determining the future intensity and locale of these pressures, and how to resolve them into maximum-value combinations, is a top-effort problem for public and private land owners as well as those responsible for planning and financing access to these resources.

According to most of the measures ordinarily used, Idaho's economy has recently moved forward at a slower rate than in several other states or areas--notably in some areas in warmer climates. However, Idaho is well endowed with resources destined to become generally scarce--water, timber, scenery, wild-

life, and agricultural resources. Many controversies exist on how to proceed in development. Many of the controversies are certainly the result of differences in "sense of value", but just as certainly many of the controversies exist because reliable facts, for determination of potentials, are missing or can not be interpreted objectively. The problem is not unique to Idaho.

Financing and planning roads will have profound effects on resource uses far into the future. Although the major public-land states have special problems and interests by virtue of proximity to the public lands, the problem is national in scope. In view of the magnitudes of both the costs and the benefits, much research should be done to assign to the most reasonable degree feasible the costs and benefits to different resource uses before the major costs are incurred. The research needs to be broad in concept and detailed in facts. It will need to consider the interests of many groups and the responsibilities of several agencies of the Federal and State governments.