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Draft Environmental Impact Statement

BONNEVILLE POWER
ADMINISTRATION

GARRISON-SPOKANE 500-kV TRANSMISSION PROJECT

U.S. Department of Energy

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Appendix D

Social and Economic Considerations

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ABSTRACT

The Garrison-Spokane 500-kV Transmission Project's socioeconomic impacts would be both positive and negative and of short- and long-term duration. The magnitude of the employment, demographic, income, and fiscal impacts would be approximately the same for each route alternative, but the actual geographic incidence of the impacts would depend on the route selected for construction. The project's social effects would vary by route alternative and are the most important aspect of the socioeconomic assessment in a study area such as that of the Garrison-Spokane project.

The project's employment impacts would consist of about 200 local workers who would be hired to clear the right-of-way in 1984 and as many as 650 nonlocal workers who would construct the transmission line and substation facilities in 1934, 1935, and 1936. The project would generate a maximum of two operations-period jobs.

It is anticipated that every 100 nonlocal workers would be accompanied by about sixty-seven family members. The nonlocal workers and their families are expected to live in places where daily commuting distances to work sites are minimized and where motel and camping facilities are available. Because the nonlocal construction workers would primarily be filling rooms and spaces that would otherwise remain vacant, their impact on lodging and camping facilities would be positive. However, temporary lodging shortages could occur in a few isolated areas. The construction workers and their families would place little additional burden on the public facilities and services in the communities where they would live.

Construction workers' and contractors' expenditures for food, drink, lodging, recreation, and other goods and services would have positive effects on local commercial establishments. After these expenditures work their way up through the economic hierarchy, the total income effect in the study area would be about $45 million.

The project's construction-period agricultural income effects of land removed from production would vary by route alternative but would not exceed $256,000 for the entire length of the line. BPA would compensate farmers and ranchers for these agricultural income losses. Similarly, the operations-period agricultural income effects of land removed from production would not exceed $5,000 annually. Construction period income losses on forestry would be negligible, and operations period productivity losses would not exceed $245,000. These losses would be largely offset by the positive effects that new access roads would have on timber management practices.

The project's fiscal effects would consist of about $750,000 of personal income tax revenues paid to the states of Montana and Idaho and about $669,000 of sales tax revenues paid to Idaho and Washington.

Because BPA is a tax-exempt government agency, the project would not generate property taxes for local counties or other tax jurisdictions. If the project were constructed by a private entity, it would generate from $3.8 to $5.4 million in local property taxes.

The social impacts of the project are more noteworthy than the economic/demographic impacts and better serve to differentiate the route alternatives' potential effects on the human environment. The social effects are best understood in light of the study area's social conditions, which include: (1) the small town and rural environment in which nearly half of the area's population resides, (2) the scenic qualities of much of the area, (3) the importance of agricultural and forest resources, and (4) the importance of outdoor recreation activities. Based upon interviews with previously affected landowners and with those landowners who could be affected by this project, several general conclusions regarding social impacts can be drawn.

During the preconstruction period, local landowners would realize social effects in the form of concern and uncertainty over the processes of route and final center-line selection and right-of-way acquisition. Their concerns stem from anticipated participation in a negotiation process and from the permanence of the siting decision. When a right-of-way has not been established, many landowners are expected to view its acquisition and establishment as an intrusion on their private property rights. Their feelings may be complicated by the possibility of condemnation, which would make it difficult for them to refuse to negotiate.

During the construction period, farmers and ranchers are most concerned about potential damage that construction activity could have on existing land and roads. They are also concerned about construction effects on livestock and the general stress of coping with the inconvenience posed by the construction process. Homeowners' concerns are focused on the potentially disagreeable aesthetic aspects of the construction process, such as noise, dust, loss of privacy, and on the difficulty of accepting the line's existence on or near their property.

During the operations period, evidence suggests that the project would have different social effects on homeowners, farmers, ranchers, users of public land. Homeowners are most concerned about the project's visual effects and remain highly uncertain about its potential health and property value effects. Farmers are most concerned about the project's potential interference with irrigation and farm machinery, and about its effect on their ability to develop or subdivide the land in the future. Ranchers are most concerned about the perceived, but unproven, biological effects of a transmission line on their stock and about access road gate management problems. Both farmers and ranchers are concerned about the physical safety of working around a high voltage line and about the potential trespassing problems that could result from new access roads. Some recreationists who use public land may object to the project on visual grounds, but others may appreciate the fact that new access roads would open up new areas and therefore increase recreational opportunities.

Although it is difficult to aggregate and compare the social effects of the project, the summary impact measures employed clearly indicate that the least-impact Taft route would minimize social impacts. The route would cross significantly fewer miles of private and reservation land and would cause less total inconvenience by land use type. The route would also minimize crossings of areas that are sensitive because of their regional or national importance. Consequently, because it minimizes social impacts, the least-impact Taft route is preferred from a socioeconomic standpoint. Using a similar argument, the Taft (south) and Taft (north) routes are preferred for similar reasons over the other Washington Water Power Company plans. Of the two, the Taft (south) route is slightly more preferable from a socioeconomic perspective.

BPA has initiated two important steps to mitigate the project's socioeconomic impacts. First, the interdisciplinary siting process has attempted to minimize inconvenience and visual effects by siting the route alternatives on as much public land as possible and by avoiding current and planned concentrations of people and sensitive agricultural areas when the alternatives would cross private land. Second, BPA has opened a Missoula field office to facilitate contact with local landowners and governments who must plan for the impacts that are likely to result from the project.

In addition to these steps, BPA could further mitigate socioeconomic impacts by (1) consulting landowners on final center-line locations, (2) sensitizing construction contractors and maintenance personnel to local agricultural and forestry practices and concerns, and (3) providing prompt responses to landowner complaints during the construction and operations periods. Finally, BPA could monitor the socioeconomic impacts of the project and continue to research and disseminate information on health and safety and land value effects.

1. INTRODUCTION

1. INTRODUCTION

1.1 Overview of Appendix D: Social and Economic Considerations

The Bonneville Power Administration's (BPA) proposed Garrison-Spokane 500-kV Transmission Project would have a variety of impacts on the surrounding natural and human environments. The impacts would be both positive and negative and of short- and long-term duration. They would occur primarily in a study area that includes western Montana, northern Idaho, and eastern Washington.

This report identifies and analyzes the project's potential socioeconomic impacts on the human environment. It describes salient features of the existing socioeconomic environment and compares the magnitude, intensity, duration, and context of socioeconomic impacts for the different route alternatives and plans defined by BPA. And finally, the report identifies and recommends mitigation strategies to reduce or eliminate potential impacts and also identifies those adverse impacts for which mitigation would not be feasible. Taken together, these steps comprise the process of socioeconomic impact assessment.

As explained in this report, the project's potential socioeconomic effects include both economic/demographic and social impacts. The economic/demographic sections of the report focus on the magnitude of the project's potential employment, income, population, and fiscal effects. The social sections focus on the distribution of these potential effects among study area residents and on their perceived social consequences.

The economic/demographic and social effects resulting from a public entity's construction of a 500-kV transmission line in a predominantly rural environment differ importantly from the development of other large-scale energy resource projects. First, unlike fixed-site projects such as power plants and coal mines, a 500-kV line does not involve large work forces at a single location over a several-year period of time. This means that direct effects are distributed over many jurisdictions and communities, rather than being concentrated in a few, and that the effects of construction are months rather than years in duration. The geographically distributed and highly transient nature of the construction work force, combined with the very small permanent work force, virtually eliminate the kinds of population-driven impacts (affecting housing, public facilities and services, and the net fiscal balances of jurisdictions) that characterize most energy development projects. Moreover, compared to some linear land use projects, such as highways and railroads, the amount of land taken out of use by a transmission line is small, and the consequent direct economic effects are correspondingly small.

The social effects of a 500-kV transmission line are the most important aspect of the socioeconomic impact assessment in a study area such as that of the Garrison-Spokane project. It is rare that social impact considerations so clearly dominate economic/demographic considerations. Furthermore, the most significant social effects are associated with personal perceptions and values rather than with "objective" social indicators such as rates of crime and divorce. To aid in the social impact assessment process, BPA authorized Mountain West Research to analyze the socioeconomic impacts of existing 500-kV transmission lines on communities and individual corridor residents in the Northwest (Mountain West Research, Inc., Transmission Line Construction Worker Profile and Community/Corridor Resident Impact Survey: Final Report, 1981). This research, combined with a thorough review of North American research findings concerning transmission line impacts on land values (Mountain West Research, Inc., Transmission Line Effects on Land Values: A Critical Review of the Literature, 1981), enabled new information to be incorporated in the Garrison-Spokane impact assessment.

1.1.1 Objectives of the Report

The objectives of the socioeconomic technical report can be briefly stated as follows:

1) To provide the technical backup for all descriptions, analyses, and conclusions contained in the socioeconomic sections of the Garrison-Spokane 500-kV Transmission Project revised EIS.

2) To provide a detailed description of the methods, assumptions, effects, impacts, and appropriate mitigation measures that comprise the socioeconomic impact assessment of the various route and plan alternatives being evaluated in connection with the Garrison-Spokane project.

1.1.2 Contents of the Report

The socioeconomic technical report is organized into seven chapters.

1. Introduction
2. Methodology
3. Description of Existing Environment
4. Short- and Long-term Impacts
5. Comparison of Route Alternatives by Impact Category
6. Mitigation and Enhancement
7. The Washington Water Power Company Alternative Plans

Bibliography

The Transmission Line Construction Worker Profile and Community/Corridor Resident Impact Survey and the Transmission Line Effects on Land Values papers referred to above are available under separate cover. In addition, a more detailed description of the existing environment by geographic region is provided in Garrison-Spokane 500-kV Transmission Project: Description of the Socioeconomic Environment (Mountain West Research, Inc. 1982).

The remainder of Chapter 1 describes the Garrison-Spokane 500-kV Transmission Project in terms of those characteristics that influence or produce socioeconomic effects. A more detailed presentation of the segment and route alternatives being evaluated for the EIS may be found in BPA's description of the proposed action.

1.2 Project Description

1.2.1 Introduction

This section familiarizes the reader with the proposed BPA Garrison-Spokane 500-kV Transmission Project and with transmission line projects in general, focusing on those aspects of transmission line projects that might influence the nature and intensity of socioeconomic impacts. The section begins with a description of the project's purpose, proposed route alternatives, and costs. This is followed by a brief description of the right-of-way easement acquisition process. It continues with a general description of the transmission line construction process and an outline of the Garrison-Spokane project's construction schedule and labor requirements. The section concludes with a description of the completed project's physical characteristics and operations period procedures and employment.

1.2.2 Project Purpose

The BPA Garrison-Spokane 500-kV Transmission Project is proposed to assist in transmitting power from Colstrip Units 3 and 4 in eastern Montana to the Montana Power Company's 230-kV system in western Montana and to BPA's 500-kV and 230-kV systems in the Pacific Northwest. The line is needed to support both Pacific Northwest and Montana power demands, which BPA expects will increase by 3 to 4 percent annually between 1981 and 1990. The transmission line would stretch approximately 270 miles from a proposed substation near Garrison, Montana to the Bell substation near Spokane, Washington. According to BPA's present plans, construction would commence in March 1984 and be complete by September 1986. BPA expects to energize the eastern half of the line in 1985 and the western half in 1986.

1.2.3 Proposed Route Alternatives

The proposed transmission line would consist of a 500-kV double-circuit line from a substation near Garrison, Montana to an existing substation at Hot Springs, Montana or to a new substation that BPA would construct at either Plains or Taft, Montana. A 500-kV single-circuit transmission line would be constructed from the substation site selected above to the Bell substation in Spokane, Washington. BPA has designated several route alternatives between Garrison and each of the intermediate substations in western Montana and between the intermediate substations and Spokane. An interdisciplinary team composed of BPA personnel, U.S. Bureau of Land Management and Forest Service representatives, and other representatives compared these routes. In 1980, they selected least-impact routes from the intermediate substations to the Bell substation. In September 1981, they selected least-impact alternatives from the proposed Garrison substation to each of the intermediate substations. In November 1981, they selected the least-impact Taft alternatives as the overall least-impact route from Garrison to Bell. The least-impact alternatives for each of the three plans are listed in Table 1-1. The least-impact routes are displayed in Figure 1-1. A brief description of the least-impact routes follows.

1.2.3.1 Hot Springs Plan

The two least-impact alternatives from the proposed Garrison substation to the Hot Springs substation are the same except for an approximately twelve-mile stretch northeast of the Missoula area. The alternatives leave the proposed Garrison substation (which is located five miles west of Garrison) and run due north across the Clark Fork River and Interstate 90. The alternatives then turn west, running one to three miles north of Interstate 90 to a point north of Bearmouth. From here they parallel an existing 230-kV transmission line that runs south of the Potomac Valley across the Blackfoot River to a point near Lockwood Mountain. From here the least-impact alternatives temporarily diverge. One alternative follows an existing transmission line and crosses the Rattlesnake Valley at a point approximately 1.5 miles north of the current Missoula city limits, and the other crosses the Rattlesnake Valley two miles further north. The two alternatives converge near Grant Creek and parallel two existing transmission lines in a northwesterly direction to the Hot Springs substation.

The least-impact alternative from the Hot Springs substation to the Bell substation leaves Hot Springs and runs west to a point north of Plains, where it parallels the Clark Fork River to Thompson Falls. The alternative runs due west from Thompson Falls, passing into Idaho and crossing the Coeur d'Alene River just north of Pritchard. It then continues west across the Panhandle National Forest, passes two miles north of Hayden Lake, and joins two existing transmission lines five miles northeast of Rathdrum. The alternative parallels these lines in a southwesterly direction into Washington and then due east to the Bell substation.

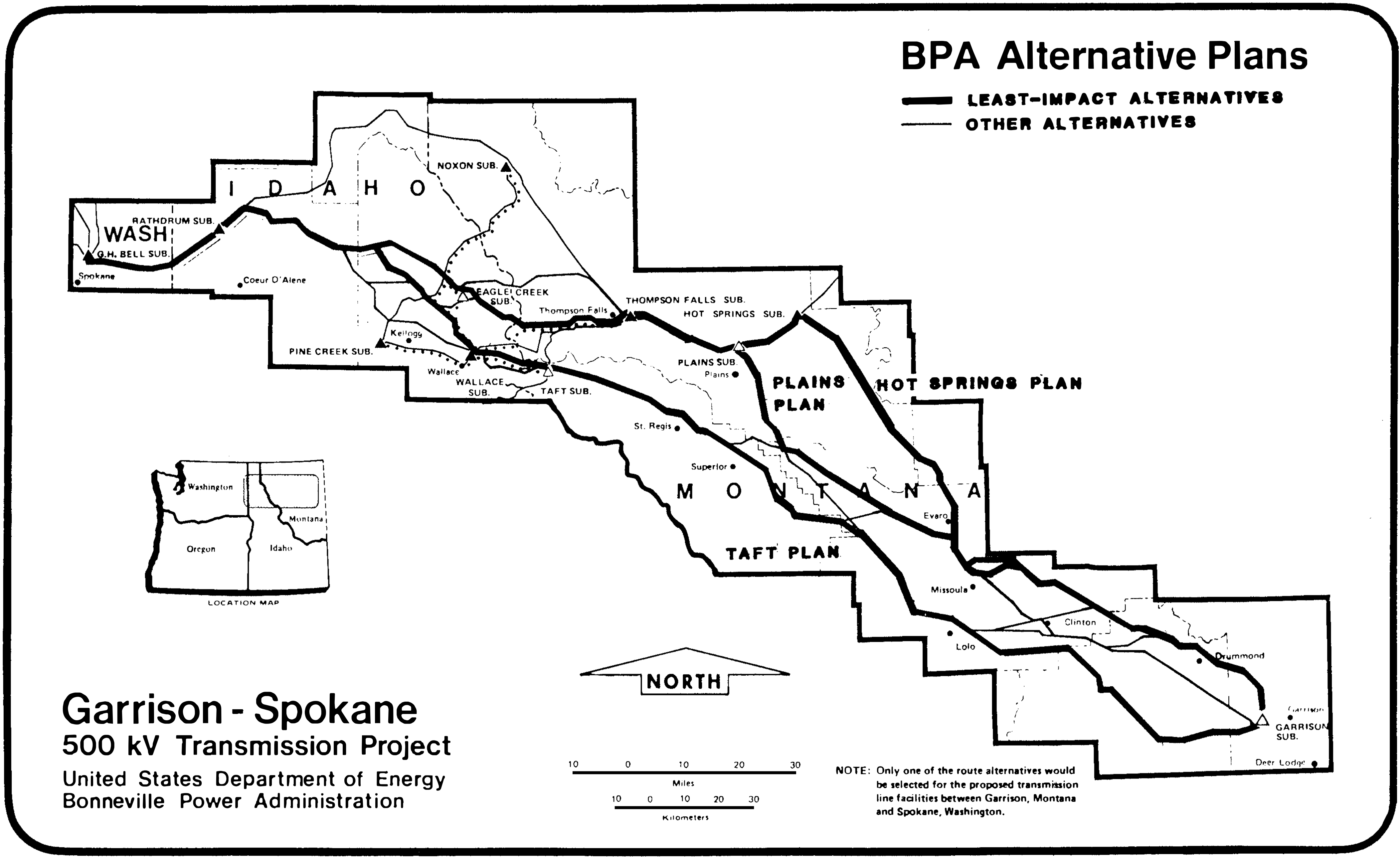
1.2.3.2 Plains Plan

The two least-impact Plains alternatives are identical to the two least-impact Hot Springs alternatives except in one area where they temporarily diverge and use different substations. After crossing the Rattlesnake Valley, the Garrison-Plains alternatives leave the least-impact Hot Springs alternatives at a point ten miles north of Missoula and run north of the Ninemile Valley. They cross the Flathead River and run north of Paradise to the proposed Plains substation. The least-impact alternative from the proposed Plains substation runs northwest to a point where it joins the least-impact Hot Springs alternative and continues to the Bell substation.

1.2.3.3 Taft Plan

The least-impact Taft alternative runs southwest from the proposed Garrison substation across the Deer Lodge National Forest and crosses route 10A about a mile north of Maxville, where it turns northwest and runs to a point near the mouth of Rock Creek. After crossing Rock Creek, the least-impact alternative runs west to a crossing of the Bitterroot River and route 93 halfway between Missoula and Lolo. It then turns northwest, crossing the Clark Fork River and Interstate 90 east of Alberton. The line continues through the Lolo National Forest, staying two to five miles north of the interstate for its entire length, to a proposed Taft substation near the Idaho state line.

FIGURE 1-1



Source: Bonneville Power Administration.

The least-impact Taft-Bell alternative enters Idaho through Mullan Pass, crosses a mining claim area northeast of Wallace, and enters the Coeur d'Alene National Forest. The alternative crosses the Coeur d'Alene River west of Pritchard and continues northwest to a point near McDonald Peak, where it joins the least-impact Hot Springs-Bell alternative described above.

1.2.3.4 Other Alternatives

As noted in Table 1-1, several other alternatives exist for each least-impact alternative. Generally, these other alternatives stay within ten miles of the least-impact alternatives. In many cases they are the same as the least-impact routes except for areas where the alternatives diverge for several miles.

1.2.3.5 Substations

The Garrison-Spokane Transmission Project would require expansion of the proposed Garrison substation and the Bell substation in Spokane. In addition, one intermediate substation would be required. If either of the least-impact Hot Springs plans were selected for construction, the Hot Springs substation would be expanded. However, new substations would need to be constructed at either Plains or Taft if either of these plans were selected.

1.2.4 Project Cost

The cost of the Garrison-Spokane 500-kV Transmission Project can be separated into line costs and substation costs. The line cost would depend on the plan selected, ranging from about $152.8 million for the least-impact Taft plan to $157.9 million for one of the least-impact Plains plans. The least-impact Hot Springs plans would cost about $154.2 million. These cost estimates are for the least-impact routes only. The costs for alternative routes under each plan can be expected to vary.

The cost of the Garrison substation expansion would be about $10.7 million. The cost of the intermediate substations would vary significantly. The Hot Springs expansion would cost about $8.7 million, and the new Plains and Taft substations would cost about $10.5 million and $19.3 million, respectively. The Taft substation would be constructed on rough terrain; its higher cost reflects significant site development and access road costs.

If the Washington Water Power Company were to select the Eagle Creek plan (see Appendix A), then BPA would construct part of the substation that would be required at Eagle Creek, Idaho. This part of the substation would cost about $5.2 million.

1.2.5 Preconstruction Process

1.2.5.1 Right-of-Way Negotiations

The selection and acquisition of a right-of-way easement is a prerequisite for the final siting and construction of a transmission line. Once a route is selected, the U.S. Department of Justice, acting on behalf of the Bonneville Power Administration, institutes procedures to acquire the right-of-way easement. An easement may be acquired through outright purchase or, if necessary, through exercise of eminent domain and condemnation proceedings.

Property owners may refuse to accept the government's offer to purchase easements. However, if the two parties cannot reach agreement and the government chooses to use its powers of eminent domain, the conflict usually centers on the amount of compensation offered for the easement. Although just compensation has been determined to be the fair market value of the property at the time of the taking, the methods of appraisal and factors considered when determining fair market value are still controversial. More information on transmission lines and land values is available in Electric Transmission Line Effects on Land Values: A Critical Review of the Literature (Mountain West Research, Inc. 1981).

1.2.6 Transmission Line Construction

This section provides a general outline of the transmission line construction process and then focuses on the construction schedules and labor requirements of the proposed Garrison-Spokane 500-kV Transmission Project. Construction schedules and labor requirements are first specified for the transmission line facilities and then for substations. The transmission line requirements are presented on a total project basis and then broken down into geographic and skill components.

1.2.6.1 Construction Process[1]

Most of BPA's transmission line construction work is performed by private companies under contract to the agency. The transmission line construction process involves a sequence of clearing, footings installation, tower assembly and erection, conductor stringing and tensioning, and site restoration. The tasks are accomplished by separate crews which typically follow each other down thirty- to fifty-mile segments or "schedules." Each task is briefly outlined below.

Clearing

The clearing operation removes from the right-of-way trees that would interfere with the transmission line and establishes access roads to tower sites. Trees may be cleared using power saws or tractors equipped with a clearing blade. Once cleared, larger trees are sold, and smaller trees and brush are burned or chipped. Access roads from existing highways and rural roads are constructed. They are typically twelve to sixteen feet wide, and their length varies from one-fourth to four miles of road per mile of line. To accommodate cutting and filling operations, access road easements are typically fifty feet wide.

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[1]The information for this section was drawn from The Role of the Bonneville Power Administration in the Pacific Northwest Power Supply System (Portland, Oreg.: Bonneville Power Administration, July 1977).

Footings installation

The next step in the construction process is footing excavation and installation. Footing excavations vary in size but typically have a volume of between 100 and 300 cubic yards for high voltage steel tower lines. They are usually dug with a large backhoe but may be dug with a clamshell or by hand in areas where access is restricted. Tower footings may consist of steel grids or plates that are buried in the ground or of steel-reinforced concrete.

Tower assembly and erection

Steel lattice towers are usually assembled in a 150-foot by 150-foot area within the right-of-way. The towers have six major components, each of which is assembled separately: four leg extensions, body, and bridge. Generally, individual tower assembly varies from one to several days in duration and is accomplished by assembly crews who are frequently assisted by a small crane. The components are lifted into place with a large crane and bolted together by an erection crew. A typical tower erection crew can average five towers per day and is occasionally assisted by helicopters in environmentally sensitive areas. However, the rate of progress can be greatly reduced by poor access or rugged terrain.

Conductor stringing and tensioning

Conductor stringing is accomplished by means of a flexible nylon rope or steel cable "sock line." The sock line is threaded between towers using ground equipment or a helicopter and then is used to draw the conductor from a reel through a two- to three-mile section of transmission line. After stringing is completed, the conductors are tensioned between specially reinforced dead-end towers using track laying and other tensioning equipment.

Site restoration

After construction is complete, the ground around the tower sites is reshaped to fit the natural landscape and reseeded. Farmers whose land has been compacted by construction activity receive compensation for loosening the soil by subsoiling and replanting their crops. If no longer needed, access roads are reseeded and allowed to revegetate.

Substations

Substation facilities on 500-kV transmission lines are usually built by construction contractors, who spend approximately eight working months grading the site, installing concrete and steel structures, and building a control house. When this work is finished, BPA crews spend about four months installing additional equipment, making final electrical connections, and testing and energizing the equipment.

1.2.6.2 Construction Schedules[1]

BPA currently expects to initiate work on the Garrison-Spokane line by clearing rights-of-way on the eastern half of the selected route in March through October 1984. The transmission line facilities construction would commence in March 1984 and be completed by September 1985, when the double-circuit line between Garrison and the intermediate substation is scheduled to be energized. The intermediate substation is scheduled to be built (or expanded) in late 1984 and early 1985. Clearing of the western rights-of-way would also be completed in March through October 1984. However, construction of the western half of the transmission line facilities would not be undertaken until April 1985. The western construction would be completed by September 1986 when the line would be energized between the intermediate substation and the Bell substation in Spokane. More specific timing and geographic details for the construction schedule are provided below.

Once selected for construction, a route alternative would be divided into lengths (called "schedules") for construction purposes. Construction of all schedules would take place simultaneously, with workers beginning at one end of the schedule and proceeding toward the other end. The workers would begin each day by assembling at reporting stations where they would check in with the contractor, receive orders, and acquire a contractor vehicle or other transportation to the work site. Reporting stations would be located near existing communities and often also serve as storage areas for contractor vehicles, equipment, and materials.

Construction schedules are typically thirty to fifty miles in length, depending on topography, vegetative cover, and engineering considerations. They are frequently designed to begin and end at discernible points such as substations or road or river crossings. Although BPA has not established construction schedules for the route alternatives, they have assisted Mountain West Research in establishing probable schedules, reporting stations, and construction timetables for the network of route alternatives as a whole. These construction schedules are approximately thirty to fifty miles in length and have been adjusted to fit local topography, forest cover, and engineering considerations.

Table 1-2 presents the timetable, counties, and reporting stations that have been assumed for each schedule. As noted, clearing for all schedules is expected to occur between March and October of 1984. Construction of the three eastern schedules is expected to take place in 1984 and 1985. Although construction on the three western schedules is planned for 1985 and 1986, BPA notes that it could start in 1984. This revision would be especially required if the Taft plan is selected. The Taft substation would be further west than the other alternative substations, requiring the completion of four schedules before its energization in 1985.

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[1]Information for this section provided by Al Leonard, Bonneville Power Administration Construction Division, 11 and 25 August 1981.

Table 1-2 also shows the counties and reporting stations that have been assumed for each alternative plan. All three plans would probably utilize the same reporting stations and cross the same counties for schedules 1, 2, 5, and 6. However, the plans differ in their use of schedules 3 and 4. The Hot Springs plan would pass through Missoula, Lake, and Sanders counties and probably establish reporting stations in St. Ignatius and Thompson Falls. The Plains plan would cross Missoula and Sanders counties and probably would establish reporting stations in Missoula and Thompson Falls. Finally, the Taft plan would cross Missoula and Mineral counties and establish reporting stations in Missoula and St. Regis.

Construction or expansion of any of the five substations under consideration would take place over two construction seasons. Site grading, foundation work, and some equipment installation would take place during June through October of the first year, and the remaining construction work would be undertaken and finished in March through July of the second year. BPA's current plans call for the Garrison substation to be expanded in 1984 and 1985. The intermediate substation at Hot Springs, Plains, or Taft would also be expanded or constructed during 1984 and 1985. The Bell substation would be expanded in 1985 and 1986 (Ackley 11 August 1981:personal communication). Substation construction contracts would be awarded independently from transmission line contracts, and the work might or might not be performed by the contractors responsible for constructing the transmission line facilities.

1.2.6.3 Labor Requirements[1]

This section presents an estimate of the work force for the entire length of the transmission line and then breaks down the estimate into its schedule, crew, and craft components. Finally, the substation construction work forces are briefly discussed.

When interpreting the work force estimates, two assumptions must be kept in mind. First, the total work force estimates assume that the transmission line will be approximately 260 to 270 miles in length and will be constructed across an average type of terrain common to western Montana, northern Idaho, and eastern Washington. The actual construction work force on any particular schedule depends on the length and topography of the route selected and thus could vary from the average estimates presented here. Second, these estimates assume that construction tasks for the transmission line will be completed during a thirty-one month period by workers who average a sixty-hour work week. However, construction projects are frequently subject to schedule or weather delays that shift start-up dates but not deadline dates. Such complications would result in three general changes:

1) The duration of construction would be shortened.
2) The number of workers would increase as the number of work sites expanded.

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[1]Information for this section provided by Al Leonard, Bonneville Power Administration Construction Division, 21 September 1981.

3) The size of the peak construction work force would be larger, and the duration of the peak would be longer because of the increased overlap of construction activities, such as tower erection and conductor installation.

These changes could increase the number of workers who would reside in a given town during the construction period and could change the time frame in which the temporary influx would occur.

Project requirements

Total labor requirements by task and month are presented numerically in Table 1-3 and graphically in Figure 1-2, which differentiate clearing and construction tasks. The thirty-one-month construction schedule illustrated in Figure A would require a total of 5,905 person-months or an average of 190 workers per month. These figures imply that approximately twenty-two workers would be required for each mile of line and that an average of nine miles would be constructed every month.

An individual worker's employment period would average eight months for clearing crews and from four to twelve months for tower construction and stringing crews. Supervisory personnel would be assigned to schedules for the duration of their construction, with local employment lasting about eighteen to twenty months. Some workers would probably increase their employment periods by working on more than one schedule or by participating on two or more crews within the same schedule.

As shown in Table 1-3, construction employment would peak at 385 workers in September and October 1984 when all six of the construction schedules were being cleared and when towers were being constructed on the three eastern schedules. After the completion of clearing in late 1984, tower construction activity would slow down because of the winter and holiday seasons, causing employment to fall to approximately 100 workers in December 1984 and January 1985.

As planned tower construction and conductor-stringing operations accelerate on all six schedules in 1985, total employment is forecast to rise to a June-July 1985 peak of 275 workers. Construction employment is expected to decline in late 1985 with the completion of schedules 1 through 3 and the onset of winter. In 1986, employment on the three western schedules would remain constant at 129 workers from February through June and then decrease rapidly as the schedules near completion in July and August.

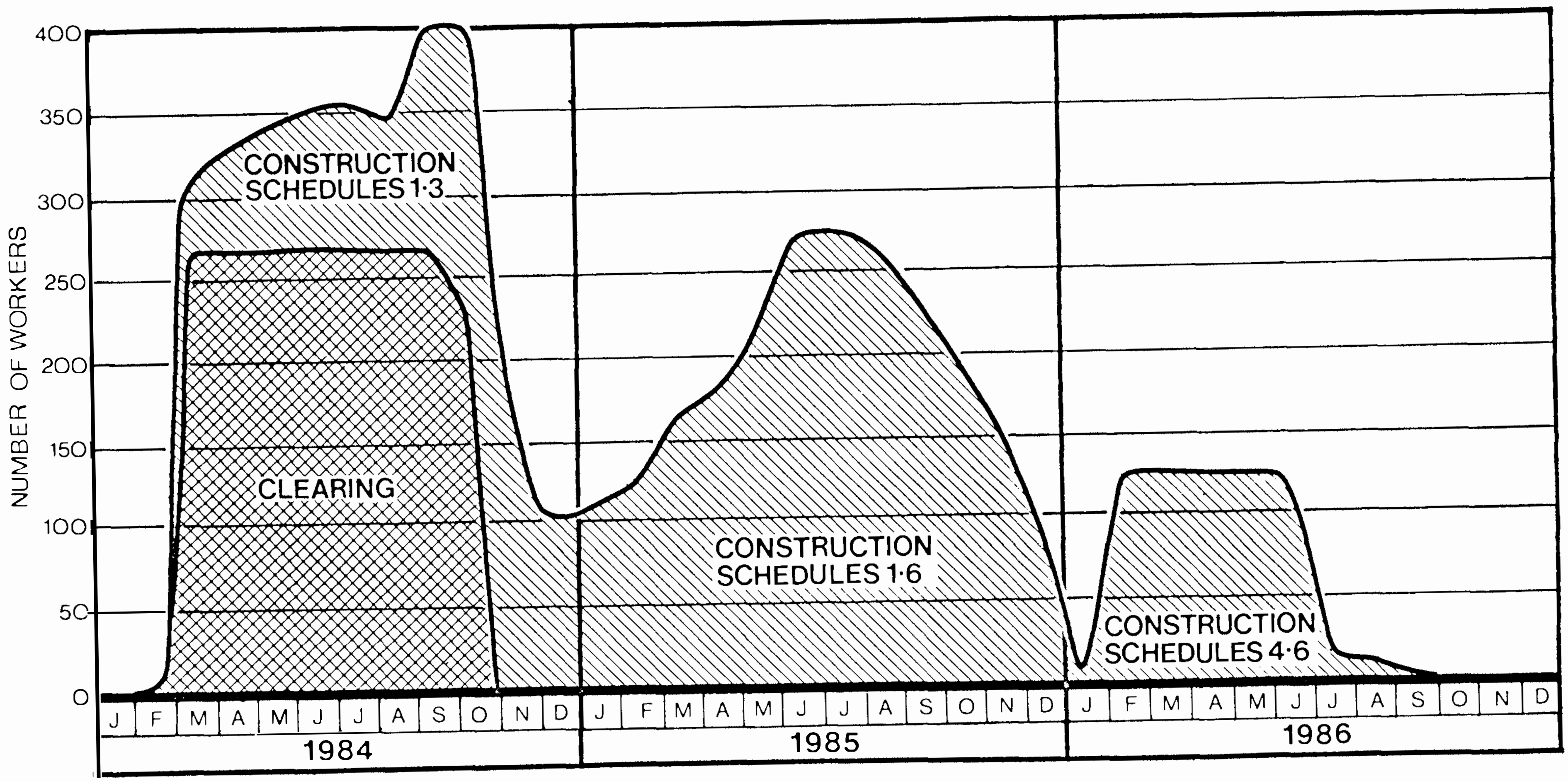
Construction schedules requirements

Table 1-4 presents construction labor requirements by task and month for the six proposed construction schedules. Although the approximate schedule lengths range from thirty to sixty miles, estimated labor requirements vary only from 842 person-months for Schedule 2 to 1,185 person-months for Schedule 4. This apparent contradiction is explained by the fact that terrain and forest cover were taken into account when establishing schedule boundaries and estimating labor requirements. In areas of steep terrain and/or dense forest cover, schedule lengths were

FIGURE 1-2

Total Labor Requirements by Month

BPA GARRISON-SPOKANE 500-KV TRANSMISSION PROJECT



SOURCE: Al Leonard, BPA Line Construction Division, August, 1981.

shortened. In flat and/or sparsely forested areas, schedule lengths were increased. Hence, it is possible for schedules with very different lengths to have relatively similar labor requirements.

The tasks listed under each construction schedule were described in Section 1.2.6.1. Although each task can be accomplished by one crew, several crews are frequently assigned to each schedule. Multiple crews may work together, or they may work independently on different sections of the line. The labor requirements associated with each type of crew are described in more detail in the next section.

Crew size and skill requirements

As noted in the previous section, each transmission line construction task is performed by a specific type of crew. These crews have common skills, but the mix of skills for each crew is different. Table 1-5 outlines typical crew sizes and the mix of skills that have been assumed for crews working on the Garrison-Spokane project.

Substation requirements

Table 1-6 presents labor requirements for the planned expansions of the Garrison and Bell substations and for the possible expansion of the Hot Springs substation or the construction of a new substation at Plains or Taft. Because substation contruction and expansion processes are very similar, the labor requirements are assumed to be the same. In addition, the labor requirements have been assumed to be the same for all sites. The actual labor requirements for each site might vary by a few persons from these estimates.

Table 1-7 presents the skill requirements associated with each of the three major substation tasks outlined in Section 1.2.6.1. The first two task groups would be performed by construction contractors, and the final task group would be performed by BPA crews. Again, the skill mix associated with each task group could vary by site.

1.2.7 Operations Period[1]

This section describes those aspects of transmission line operations that could influence socioeconomic impacts. The physical characteristics of the completed project are detailed first, followed by a description of maintenance and right-of-way management and operations period labor requirements.

1.2.7.1 Physical Characteristics

The proposed Garrison-Spokane 500-kV transmission line would use a 125-foot right-of-way that would occasionally parallel the right-of-way of existing transmission lines. In most areas, the new right-of-way would be acquired from existing landowners in the form of easements. However, in other areas, BPA would construct the line on easements that

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[1]Information for this section provided by Don Sprague, Bonneville Power Administration Division of Operations and Maintenance, 11 August 1981.

have already been acquired. Land under easement is usually controlled by the landowner but subject to rights obtained by BPA in the easement agreement. These agreements usually prohibit building large structures, growing tall trees, storing flammable materials, or other activities that might endanger the towers or conductors. A 125-foot right-of-way implies that 15.15 acres of easement would be required per mile of transmission line.

The 500-kV transmission line would be supported by steel lattice towers attached to the ground by four footings and spaced four or five per mile. The double-circuit towers between Garrison and the intermediate substation would be of a stacked-type configuration and stand about 175 feet tall, supporting six conductors that would be stacked in three layers of two. The lowest layer of two conductors would be attached to the tower about 86 feet above the ground, sagging no lower than 35 feet above the ground. The single-circuit towers between the intermediate substation and the Bell substation would be of a delta-type configuration, standing about 130 feet tall and supporting three conductors. Bases for both types of towers would occupy an area that would vary in size, but average 35 feet square.

Substations

Substations are used to route electrical energy, to transform higher voltages to lower voltages for local use, and to supply individual utilities or industrial customers. Substations are also used as storage areas for line maintenance equipment and supplies.

Substations consist of a control house (which provides shelter for meters and other control and communications equipment), transformers, and current breakers (which control electrical flows and protect the system from overloading). Substations vary considerably in size. However, it is expected that any new substations or substation expansions for this project would occupy eight to ten acres.

1.2.7.2 Maintenance and Right-of-Way Management

BPA performs both routine and emergency maintenance on its electrical equipment and towers, substations, access roads, and rights-of-way. Electrical equipment and towers are inspected four to eight times a year, by helicopter or from the ground, and are repaired when necessary. Repair activities include repainting airway-marked structures, replacing insulators, repairing frayed conductors, and repairing steel towers. Access roads are graded, seeded, ditched, and rocked to prevent erosion and ensure access to transmission line facilities at all times of the year. Rights-of-way are managed to prevent tall-growing vegetation from interfering with the conductor. This is accomplished by applying herbicides and introducing low-growing species.

1.2.7.3 Operations Period Employment[1]

BPA expects maintenance on the Garrison-Spokane line to be handled by crews currently employed by its Spokane, Washington and Hot Springs and Missoula, Montana offices. Maintenance might also be performed by crews who would be based at the proposed Garrison substation. Any vegetation control would be handled by private contractors. Therefore, operation of the line would not result in any new employment.

Although the Bell and Garrison substations would employ maintenance personnel during the project's life, the substation expansions necessitated by the Garrison-to-Bell portion of the line would not result in any additional operations employment. If selected for expansion, the Hot Springs substation would not add any new employees. If constructed, the Plains substation would be maintained by the Hot Springs substation's crew. Because of its isolation, the Taft substation alternative would require a two-person full-time crew. At most, two people would be employed from the operation of the project, and this would occur only if the Taft plan were selected.

1.2.8 Abandonment[2]

Although the economic life of the transmission line and substation facilities have been estimated at thirty-nine and twenty-eight years, respectively, their useful lives might be much longer. However, at some point the transmission facilities might no longer be useful and might be abandoned.

In the past, when BPA transmission line facilities were no longer useful, they usually were replaced with higher-voltage and higher-capacity facilities. For example, 230-kV facilities have frequently been replaced with 500-kV facilities. The decision to abandon or replace the Garrison-Spokane 500-kV line would be affected by the technological and economic conditions of the time and cannot be accurately forecast today.

When transmission lines are replaced, the contract for construction of the new line includes removal of the old one. Old poles, steel, and conductor are removed and scrapped or salvaged. Tower footings are removed or buried.

Substations are very infrequently removed. Substations no longer needed by BPA are usually released to one of its customers. If removal is necessary, the electrical equipment is removed and reused or

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[1]Information for this section provided by Don Sprague, Bonneville Power Administration Division of Operations and Maintenance, 11 August 1981.

[2]The information for this section was drawn from The Role of the Bonneville Power Administration in the Pacific Northwest Power Supply System, Appendix B: BPA Power Transmission (Portland, Oreg.: Bonneville Power Administration, July 1977).

scrapped. Concrete and fixtures may be removed before the site is abandoned or left for another industrial use.

Because abandonment is usually associated with the construction of another line, its socieconomic effects are difficult to isolate. However, the time and labor expenses associated with abandonment are certain to be less than the project's construction costs. The impacts on other resources would be similar to construction impacts but would be likely to occur over shorter periods of time.

TABLE 1-1

Number of Least-impact and Alternative Routes
by Intermediate Substation

	Route Alternatives					Route Alternatives				
	Least-impact		Other		Intermediate	Least-impact		Other		
Substation	Number	Route Symbol(s)	Number	Route Symbol(s)	Substation Alternatives	Number	Route Symbol(s)	Number	Route Symbol(s)	Substation
Garrison	2	G-HS-1 G-HS-2	3	G-HS-3 G-HS-4 G-HS-5	Hot Springs	1	HS-B-1	3	HS-B-1 HS-B-2	Bell
Garrison	2	G-P-1 G-P-2	3	G-P-3 G-P-4 G-P-5	Plains	1	P-B-1	3	P-B-1 P-B-2 P-B-3	Bell
Garrison	1	G-T-9	16	G-T-1 G-T-2 G-T-3 G-T-4 G-T-5 G-T-6 G-T-7 G-T-8 G-T-10 G-T-11 G-T-12 G-T-13 G-T-14 G-T-15 G-T-16 G-T-17	Taft	1	T-B-4	5	T-B-1 T-B-2 T-B-3 T-B-5 T-B-6	Bell

Source: Mountain West Research, Inc. 1981.

TABLE 1-2

Construction Schedule Estimates
BPA Garrison-Spokane 500-kV Transmission Project

Schedule Number	Construction Period Clearing	Construction Period Construction	Plan: Hot Springs County(s)	Hot Springs Reporting Station	Plains County(s)	Plains Reporting Station	Taft County(s)	Taft Reporting Station
1	March 1984 - October 1984	March 1984 - September 1985	Powell Granite	Drummond	Powell Granite	Drummond	Powell Granite	Drummond
2	March 1984 - October 1984	March 1984 - September 1985	Missoula	Missoula	Missoula	Missoula	Missoula	Missoula
3	March 1984 - September 1984	March 1984 - September 1985	Missoula Lake	St. Ignatius	Missoula	Missoula	Missoula	Missoula
4	March 1984 - October 1984	April 1985 - September 1986	Lake Sanders	Thompson Falls	Sanders	Thompson Falls	Mineral	St. Regis
5	March 1984 - October 1984	April 1985 - June 1986	Shoshone	Kellogg	Shoshone	Kellogg	Shoshone	Kellogg
6	March 1984 - October 1984	May 1985 - June 1986	Kootenai Spokane	Coeur d'Alene	Kootenai Spokane	Coeur d'Alene	Kootenai Spokane	Coeur d'Alene

Source: Al Leonard, Bonneville Power Administration Construction Division, 25 August 1981:personal communication.

TABLE 1-3

Total Labor Requirements by Task

Task	1984												1985											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Clearing			270	270	270	270	270	270	270	230														
Footings			20	20	30	30	20	10	10	10	10	10	5			20	40	50	50	30	30			
Assembly				24	24	36	48	48	60	60	60	36	17	12	12		48	108	108	96	84	84		
Erection									32	32	32	8	32	24	24	12	12				24	56	56	24
Conductor										40	50	30	45	80	100	120	100	100	100	120	60		90	60
Supervision			9	11	11	11	12	13	13	13	10	7	7	9	9	13	16	17	17	17	17	11	9	9
TOTAL			299	325	335	347	350	341	385	385	162	91	106	125	145	165	216	275	275	263	215	151	155	93

Task	1986											
	J	F	M	A	M	J	J	A	S	O	N	D
Clearing												
Footings												
Assembly												
Erection												
Conductor		120	120	120	120	120	20	20				
Supervision	9	9	9	9	9	9	3	2	2			
TOTAL	9	129	129	129	129	129	23	22	2			

Source: Al Leonard, Bonneville Power Administration, Construction Division, 21 September 1981:personal communication.

TABLE 1-4

Labor Requirements by Construction Schedule and Task

Schedule and Length	Task	1984 J	F	M	A	M	J	J	A	S	O	N	D	1985 J	F	M	A	M	J	J	A	S	O	N	D	1986 J	F	M	A	M	J	J	A	S	O	N	D	Total Person-Months	Percent of Total
1	Clearing			40	40	40	40	40	40	40	40																											320	32.3
	Footings			10	10	10	10	10																														50	5.0
(40	Assembly				12	12	12	12	12	12	12	12		5	12	12																						125	12.6
miles)	Erection									12	12	12		12	12	12	12	12																				96	9.7
	Conductor										20	20	10	10	20	20	40	40	40	40	40	40																340	34.3
	Supervision			2	3	3	3	3	4	4	4	4	2	2	3	4	4	3	3	3	3	3																60	6.1
	TOTAL			52	65	65	65	65	56	68	88	48	12	29	47	48	56	55	43	43	43	43																991	100.0
2	Clearing			40	40	40	40	40	40	40	40																											320	37.9
	Footings			10	10	10	10																															40	4.8
(30	Assembly				12	12	12	12	12	12	12	12																										96	11.4
miles)	Erection									12	12	12		12	12	12																						72	8.6
	Conductor										20	20	10	10	20	40	40	20	20	20	40																	260	30.9
	Supervision			2	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3																54	6.4
	TOTAL			52	65	65	65	55	55	67	87	47	12	24	35	55	43	23	23	23	43	3																842	100.0
3	Clearing			40	40	40	40	40	40	40																												280	27.7
	Footings					10	10	10	10	10	10	10	10	5																								85	8.4
(50	Assembly						12	24	24	36	36	36	36	12																								216	21.3
miles)	Erection									8	8	8	8	8																								40	4.0
	Conductor											10	10	25	40	40	40	40	40	40	40	20																345	34.1
	Supervision			2	2	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2																46	4.5
	TOTAL			42	42	52	64	77	77	97	57	67	67	53	43	42	42	42	42	42	42	22																1,012	100.0

TABLE 1-4 (cont.)

Schedule and Length	Task	1984												1985												1986												Total Person-Months	Percent of Total
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
4	Clearing			60	60	60	60	60	60	60	60																									480	40.5
	Footings																10	20	20	20	10	10																90	7.6
(50	Assembly																	24	36	36	36	36	36															204	17.2
miles)	Erection																					8	24	24	8													64	5.4
	Conductor																							30	20		40	40	40	40	40	20	20					290	24.5
	Supervision			1	1	1	1	1	1	1	1						1	2	3	3	3	3	3	3	3		3	3	3	3	3	3	2	2				57	4.8
	TOTAL			61	61	61	61	61	61	61	61						11	46	59	59	49	57	63	57	31	3	43	43	43	43	43	23	22	2				1,185	100.0
5	Clearing			50	50	50	50	50	50	50	50																											400	40.3
	Footings																10	10	20	10	10	10																70	7.1
(40	Assembly																	12	36	36	36	24	24															168	17.0
miles)	Erection																					8	16	16	8													48	4.8
	Conductor																							30	20		40	40	40	40	40							250	25.3
	Supervision			1	1	1	1	1	1	1	1						3	3	3	3	3	3	4	3	3	3	3	3	3	3	3							54	5.5
	TOTAL			51	51	51	51	51	51	51	51						13	25	59	49	49	45	44	49	31	3	43	43	43	43	43							990	100.0
6	Clearing			40	40	40	40	40	40	40	40																											320	36.2
	Footings																	10	10	20	10	10																60	6.8
(60	Assembly																	12	36	36	24	24	24															156	17.6
miles)	Erection																					8	16	16	8													48	5.4
	Conductor																							30	20		40	40	40	40	40							250	28.2
	Supervision			1	1	1	1	1	1	1	1							3	3	3	3	3	4	3	3	3	3	3	3	3	3							51	5.8
	TOTAL			41	41	41	41	41	41	41	41							25	49	59	37	45	44	49	31	3	43	43	43	43	43							885	100.0
	PROJECT TOTAL			299	325	335	347	350	341	385	385	162	91	106	125	145	165	216	275	275	263	215	151	155	93	9	129	129	129	129	129	23	22	2					

Source: Al Leonard, Bonneville Power Administration Construction Division, 25 August 1981:personal communication.

TABLE 1-5

Construction Labor Requirements by Skill

Task	Crew Size	Skills Required: Skill	Number
Clearing	40	Grader Operator	1
		Oilers	5
		Cat Operator	7
		Truck Driver	5
		Loader Operator	1
		Backhoe Operator	1
		Skidder Operator	2
		Mechanic	1
		Faller	7
		Bucker	4
		Choker Setter	4
		Fire Watcher	2
Footings	10	Transit Worker	1
		Equipment Operator	1
		Oiler	1
		Chainman	2
		Laborer	4
		Foreman	1
Assembly	12	Assemblyman	8
		Equipment Operator	2
		Oiler	1
		Foreman	1
Erection	8	Groundman	2
		Lineman	3
		Equipment Operator	1
		Oiler	1
		Foreman	1
Conductors	10	Lineman	4
		Groundman	2
		Equipment Operator	2
		Oilers	2
		Foreman	1
Supervision	3	Supervisor	1
		Office Worker	1
		Mechanic	1

Source: Al Leonard, BPA Line Construction Division, 25 September 1981:personal communication.

TABLE 1-6

Substation Construction Labor Requirements

Substation	1984 J	F	M	A	M	J	J	A	S	O	N	D
Planned Expansion												
Garrison						10	10	16	16	16		
Bell												
Alternatives												
Hot Springs[a]						10	10	16	16	16		
Plains						10	10	16	16	16		
Taft						10	10	16	16	16		

Substation	1985 J	F	M	A	M	J	J	A	S	O	N	D
Planned Expansion												
Garrison			16	16	16	7	7					
Bell						10	10	16	16	16		
Alternatives												
Hot Springs[a]			16	16	16	7	7					
Plains			16	16	16	7	7					
Taft			16	16	16	7	7					

Substation	1986 J	F	M	A	M	J	J	A	S	O	N	D
Planned Expansion												
Garrison												
Bell			16	16	16	7	7					
Alternatives												
Hot Springs[a]												
Plains												
Taft												

Source: Dick Ackley, BPA Substation Construction Division, 11 August 1981:personal communication.

[a]Expansion of existing substation.

TABLE 1-7

Substation Labor Requirements by Skill

Task	Crew Size	Skills Required: Skill	Number
Site Grading and Foundation Work	10	Equipment Operator	2
		Carpenter	3
		Concrete Mason	2
		Sheet Metal Worker	3
Steel Structure and Control House Installation	16	Equipment Operator	1
		Lineman	9
		Welder	2
		Laborer	3
		Superintendent	1
Electrical Connections, Testing, Energization	7	Electrician	2
		Crane Operator	1
		Oiler	1
		Carpenter	2
		Foreman	1

Source: Dick Ackley, BPA Substation Construction Division, 11 August 1981:personal communication.

2. METHODOLOGY

2. METHODOLOGY

2.1 Introduction

This chapter presents the methods used to identify and analyze the socioeconomic impacts of the proposed action. Although the social impacts of the Garrison-Spokane project are anticipated to be the most important, economic, demographic, fiscal, lodging, and land use impacts have also been examined in the interests of rigor. The first step in the assessment of socioeconomic impacts was to determine which components of the socioeconomic environment would most likely be affected by the proposed action. The second step determined the characteristics of the Garrison-Spokane 500-kV Transmission Project that would most likely affect these key socioeconomic components. Both of these issues were clarified through research regarding (1) the effects of transmission lines on communities and landowners during and following construction, and (2) the characteristics of transmission line construction workers.

The results of this research are reported in the Transmission Line Construction Worker Profile and Community/Corridor Resident Impact Survey: Final Report (Mountain West Research, Inc. 1981). The relationship between the key characteristics of the project and the sensitive elements of the socioeconomic environment is reviewed below.

2.1.1 Key Characteristics of the Proposed Action Affecting the Socioeconomic Environment

The characteristics of the proposed action that affect sensitive elements of the socioeconomic environment are categorized below in terms of the three project phases identified in the project description (see Section 1.2): preconstruction, construction, and operation and maintenance.

2.1.1.1 Preconstruction

Preconstruction activities concern final center line selection, tower location, and right-of-way acquisition. During interviews with landowners affected by other 500-kV lines (Mountain West Research, Inc. 1981), as well as at public meetings held by BPA, several farm and ranch operators expressed their concern and uncertainty about the process of route and final center line selection and land acquisition. Conse quently, the adverse impacts that would result from preconstruction activities are primarily social (see Section 2.3 below).

2.1.1.2 Construction

The socioeconomic impact assessment of any major construction activity requires that several questions be answered.

1) What proportion of the work force would be local residents or residents of the surrounding region?

2) What proportion of the nonlocal work force would be married? Of those, how many would bring their families? What would the likely family composition be?

3) What would be the lodging preferences of the nonlocal part of the work force? Where would they stay? For how long? In what type of lodging?

4) What expenditure patterns by the local and nonlocal members of the work force could be anticipated?

5) What secondary employment effects could be anticipated?

6) What socioeconomic impacts on local communities could be expected to occur due to the temporary presence of a significant number of outsiders?

Answering the first question requires knowledge of (1) the project's skill requirements as compared with the available skills of the local labor force, (2) the hiring practices of the transmission line construction contractor and the associated labor unions, and (3) the wages likely to be offered. Adequate response to the second question implies familiarity with the characteristics of the nonlocal work force. The third question requires information about nonlocal workers' housing preferences and habits, as does the fourth question. On the other hand, the fifth and sixth questions require first-hand information from other communities and landowners that have been affected or are currently being affected by transmission line construction crews.

Useful data on the demographic and economic characteristics of transmission line construction workers did not previously exist. Although data on pipeline construction workers were available (Mountain West Research, Inc. 1979) and showed the characteristics of pipeline workers to be quite different from those on fixed-site projects, it was not known whether transmission line workers shared their characteristics. Because of the relatively small crew sizes and the different skill requirements of transmission line projects, it was hypothesized that some important differences would exist between workers on major pipeline facilities and transmission line workers. Therefore, under BPA sponsorship, Mountain West undertook primary research on transmission line worker characteristics and their impacts on communities.

The primary research was organized around three elements:

1) A survey of transmission line construction workers at ongoing projects (Satsop-Centralia 500-kV line, Washington (BPA); Midpoint-Malin 500-kV line, Oregon (Pacific Power and Light)), together with an investigation of impacts being experienced in communities that either served as reporting stations or housed a significant number of construction workers

2) A post-construction impact assessment study of ten communities in the Pacific Northwest (Tenino, Washington; Burns, Buchanan, Beatty, Bonanza, Arlington, Maupin, Oregon; and Orofino, Bovill, and Clarkia, Idaho)

3) Telephone and personal interviews with pipeline construction supervisors and BPA construction personnel

Results of the construction worker survey

The construction worker survey was designed to provide data on the economic/demographic characteristics of construction workers considered most essential to the assessment of impacts upon local communities. These characteristics include:

1) Local/nonlocal composition of the work force[1]
2) Location and type of housing utilized by the workers
3) Occupation, age, and marital status of the workers
4) Number of children age eighteen or under
5) Number of nonlocal workers accompanied by their families
6) Percentage of pay spent locally by nonlocal workers

The survey administered 191 questionnaires at six construction sites in the Pacific Northwest. Of these, 175 questionnaires were returned for a response rate of 91.6 percent. Two comments should be made in interpreting the results of this study: first, because workers were surveyed at only six construction sites, the sample is somewhat smaller than in most studies of other types of construction workers; and second, the workers involved in clearing the rights-of-way were not surveyed, although such workers would compose about 36 percent of the Garrison-Spokane 500-kV Transmission Project work force.

The results of the transmission line construction worker survey are summarized in Table 2-1. Table 2-2 compares these results for nonlocal transmission line workers with those from three other construction worker studies. Although the characteristics of transmission line construction workers were in many cases similar to those of pipeline workers, both types of workers generally are older and have smaller families than their counterparts at fixed-site projects. Although the transmission line work forces were composed of a higher percentage of nonlocal workers than the fixed-site work forces, the nonlocal workers were less likely to be accompanied by their families. The lodging patterns of transmission line workers differed markedly from workers on other types of construction projects. Travel trailers, vans, and RVs accounted for 46.3 percent of the nonlocal transmission line workers' lodging, and motels accounted for 27.8 percent. Finally, for every 100 nonlocal transmission line workers, a total temporary population influx of 167.7 persons would be expected.

Results of the community/corridor resident impact survey

The community/corridor resident impact survey was designed to elicit information on community residents' and rural landowners' perceptions of preconstruction-, construction-, and operations-period effects of 500-kV transmission line projects. In the community effects component of the

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[1]A local worker is defined as one whose local place of residence remains the same before and after starting work on the project.

survey, interviews were held with opinion leaders, retailers, and public officials in five recently affected communities and five communities with ongoing transmission line construction projects. These individuals were questioned about the transmission line construction workers' impact on local infrastructure and about their social relationships with the workers. In the corridor resident component of the survey, interviews were held with approximately thirty individuals who owned land or maintained residences adjacent to or near transmission line corridors. These individuals were questioned about the effects of transmission line siting, right-of-way acquisition, and construction processes and about the effects of the lines' physical presence in their area.

The community effects component of the survey indicated that a limited number of adverse impacts can be anticipated from the presence of transmission line construction workers. In general, community residents regarded transmission line workers as reasonably decent, well-behaved, friendly people whose expenditures benefited the local communities. This general conclusion is supported by the following community survey results:

1) The construction work force's expenditures for food, drink, lodging, recreation, and merchandise made significant short-term contributions to local income. In no case was there any evidence of long-term effects on the economic character of the community.

2) Workers placed important demands on transient lodging facilities, but the construction projects did not have permanent adverse effects on rental housing.

3) Transmission line construction workers living in a community created little additional burden on sewer, water, school, medical, fire protection, or law enforcement facilities and personnel.

4) The construction projects did not change the availability or skill characteristics of the local labor force.

5) Aside from isolated cases of rowdy behavior, the transmission line construction workers did not create friction with community residents.

6) The community residents' concerns during the operations period were generally confined to the unpleasant visual appearance of the transmission lines.

The corridor resident component of the survey identified several different types of adverse effects that are associated with transmission line siting, right-of-way acquisition, construction, and operations processes. These processes were found to have important effects on the corridor residents, on the relationships between corridor residents, and on the relationships between corridor residents and the project sponsors. The corridor residents' perceptions can be summarized as follows:

1) Some respondents along alternative routes stated they had been manipulated into conflict positions and that some of the resulting tension had lasted for many years.

2) Several respondents felt they had been misled by the utility representatives who negotiated the right-of-way easement agreements. Respondents claimed that, in certain cases, the utility representatives had not informed landowners of the possible upgrading of lines or of the fact that additional lines might be added in the same corridor.

3) A few landowners expressed frustration with their perceived lack of ability to influence center line or tower siting decisions.

4) Several farmers and ranchers expressed concern about the transmission lines' physical presence and the adverse effect it had on land use flexibility and convenience in using farm machinery and irrigation equipment. They also noted cases where new access roads had led to trespassing, poaching, and animal containment problems.

5) Several owners of residential and subdividable land expressed concern about transmission lines' effects on property values.

6) Many respondents expressed anxiety about the health and safety effects of the lines. They worried that the lines might have long-term biological effects and were concerned about the safety of working near high-voltage transmission lines.

7) Respondents frequently commented upon the visual unpleasantness of nearby transmission line(s).

Important Impacts. Recognizing that the community and corridor resident impact surveys were limited to a representative sample of local residents, the categories of potentially important impact are expected to be the following:

1) Lodging. Transient lodging facilities[1] must house or accommodate between 300 and 500 nonlocal construction workers,[2] plus those families that accompany the workers, for periods of four to twelve months.

2) Restaurants, cafes, bars. These establishments must feed and entertain the nonlocal work force.

Categories in which the survey data indicates there will be little or no impact are:

1) Law enforcement services.

2) Fire protection services.

[1]These facilities include hookups for RVs/campers.

[2]Total transient lodging demand due to the project will be somewhat greater due to the presence of a variety of state and federal inspectors, the number of which has not been estimated in this report.

3) Emergency medical care services.

4) Schools. Although the number of school age children per schedule could total twenty to twenty-five, school capacities along the right-of-way appear adequate to accommodate this temporary increase.

5) All capital facilities. These include school, water supply, sewerage, and solid waste disposal facilities.

6) Mental health services.

7) Recreational facilities. While on a job, construction workers typically work ten hours per day, 6 days per week; thus, they have little time for recreation.

Due to the short-term nature of construction period impacts, it would not be prudent to make capital investments in public services and facilities to accommodate the construction workers. Moreover, experience indicates that such investments are simply not required.

2.1.1.3 Operation and Maintenance

The most important operations period effects would be of a social nature and result primarily from the physical presence of the transmission line. The potential effects that would be associated with the facility's existence over a period of years include the following:

1) Inconvenience effects on certain land uses. In areas where sprinkler-irrigated agriculture is practiced, the presence of transmission towers would require the farmer to break strings of pipe more frequently than normal. In areas where dryland and irrigated agriculture are practiced, mechanized operations around the tower bases would be disrupted somewhat, and aerial spraying activities would become more difficult. In an area of undeveloped, subdivided land, the line's presence might render some lots undevelopable and require replatting parcels along the right-of-way.

2) Increased perception of and potential for trespass. Perceived or actual trespass could be due to the necessity to cross private land to inspect, maintain, and repair the line as well as the possibility that unauthorized persons could use the additional access roads to enter private property.

3) Visual intrusion of the line. This could be a significant impact, especially in areas where the pristine nature of the landscape is particularly valued.

4) Perceived biological effects. The possibility of these effects is mentioned as a concern by those living in residential areas near the line and occasionally by owners of livestock or agricultural operations.

5) Benefits to grazing and timber lands. Users of these lands would benefit because they would be afforded better access to them via BPA's access roads.

6) Revenues foregone by local taxing jurisdictions. This effect relates to the opportunity lost by local taxing jurisdictions because the line would be constructed by a tax-exempt federal agency and not by a taxable private utility. The importance of the revenues foregone by each county and local taxing jurisdiction can be expected to vary.

Both employment and income effects during the operation and maintenance phases of the project would be negligible. There would be no effects on public facilities and services, housing, or community structure.

2.1.2 Definition of the Study Area

The study area appropriate to the socioeconomic impact assessment of the Garrison-Spokane project was identified to include the following:

1) All communities that have a capacity to provide worker lodging and are within thirty road miles of proposed reporting stations for the route alternatives and substations

2) Population concentrations and individual properties that would be directly affected by one or more of the route alternative.

The above criteria were applied to the various route alternatives, and the resultant area was then redefined along county boundaries. The reason for using county boundaries in the final definition is that much of the economic, demographic, and fiscal data required for the impact analysis are available only at the county level. The resultant study area is comprised of the following counties:

State	County
Montana	Powell
	Granite
	Missoula
	Lake
	Sanders
	Mineral
Idaho	Shoshone
	Kootenai
.	Bonner
Washington	Spokane

The transmission line route alternatives are located in all of the above counties except Bonner County. Bonner County was included in the study area because of its proximity to the western end of the route and consequent potential for construction worker impacts.

2.1.3 Components of Analysis

The remainder of Chapter 2 presents the specific methods used to assess the impacts of the proposed action and to identify appropriate mitigation measures. The assessment methods can be grouped into two principal components:

1) Economic and Demographic Analysis (Section 2.2)
2) Social Analysis (Section 2.3)

The economic and demographic assessment methods are further broken down into the categories of employment, lodging/housing, demographic, income, agricultural and forestry productivity, property values, public facilities and services, and fiscal elements. Each subsection briefly describes the anticipated impacts and then presents the methodologies used to forecast their magnitude and significance.

2.2 Economic and Demographic Analysis

2.2.1 Employment

The employment effects of the proposed action will be measurable only during the construction phase. Moreover, according to BPA, the project's total labor requirements would be approximately the same for all alternatives. The basic question to be answered is how much local employment will be created directly and indirectly by the project. Based upon interviews with BPA construction personnel (Leonard 21 September 1981:personal communication) and the recent survey of transmission line workers on several projects in the Pacific Northwest (Mountain West Research, Inc. 1981), assumptions have been made regarding the proportions of local and nonlocal workers on the project.

The local/nonlocal composition of the work force is an important variable influencing the nature and intensity of socioeconomic impact. If all of the workers on a project are local, very few adverse socioeconomic impacts can be expected to occur. If all of the workers are nonlocal, then depending upon the size of the work force, the duration of their stay in an area, and the size and absorptive capacity of the affected community, adverse socioeconomic impacts may occur.

The most important factors influencing the proportions of local/-nonlocal workers in the work force are (1) the skills required for the job, (2) the availability of workers with these skills in the local area, (3) whether the construction contractor hires only union employees, and (4) whether the contractor's office is located inside or outside the local area. With the exception of clearing activities, transmission line construction requires specialized skills.

BPA's representative (Leonard 21 September 1981:personal communication) indicated that approximately three-quarters of their clearing crews would be hired locally. This is likely to be the case given the amount of timber clearing required and the present availability of labor with this skill in the study area. However, tower erection, conductor stringing, and tensioning crews are likely to contain more than 90 percent nonlocal workers (Mountain West Research Inc. 1981), except near a large metropolitan area such as Spokane. To be conservative, it has been assumed that the construction work force (including that for substations) will be comprised of 100 percent nonlocal workers, except on

Schedule 6 and at the Bell substation near Spokane, where the work force is estimated to be 90 percent nonlocal. The employment effects of the proposed action are presented in Section 4.2.1.

2.2.2 Lodging/Housing Effects

The assessment of lodging impacts along the Garrison-Spokane route alternatives involves comparing (1) the available supply of transient lodging within commuting distance to the work site to (2) the nonlocal transmission line work force's demand for transient lodging along each of the alternative routes. Because the transmission line construction activities are scheduled to proceed westward over time, it is necessary to incorporate the changes in time frame and location in the estimates of supply and demand.

Before presenting the assumptions that were used to derive housing supply and demand estimates, it is necessary to establish an overall framework for the transient lodging analysis. The transmission line construction work force has been assumed to assemble at the reporting stations presented in Table 1-2 on a daily basis. The substation construction work forces presented in Table 1-6 will assemble at their respective substation sites on a daily basis. When selecting their overnight accommodations, it is likely that all nonlocal construction workers will choose to locate in larger places with more amenities and to minimize their daily commuting distances (Mountain West Research, Inc. 1975). A recent survey of transmission line workers in the Pacific Northwest indicated that nonlocal transmission line workers were willing to commute daily from transient lodging facilities located up to thirty miles from their reporting stations (Mountain West Research, Inc. 1981). Hence, the transient lodging analysis included lodging units that were located up to thirty miles from each reporting station and substation site. The only exceptions to this rule were in Missoula and Coeur d'Alene, where it was assumed that workers who reported there would not seek accommodations outside these communities. Consequently, these inventories included local lodging units only. The following sections explain the methodology used in determining supply and demand for each construction schedule.

2.2.2.1 Supply

The supply of transient lodging facilities that would be available for construction workers consists of the known inventory of hotel/motel units and commercial campground RV/camper hookups. U.S. National Forest campgrounds were not included in this inventory because the Forest Service discourages nonrecreational use of its facilities. The inventory of motel/hotel units was established through personal communications with local chambers of commerce and hotel/motel operators. The inventory of commercial campground hookups was determined from a current directory of campgrounds and camper services (Trailer Life 1981).

When determining construction worker impacts on transient lodging, it is important to distinguish between the inventory and the actual availability of transient lodging. This difference is extremely important in the study area, where demand from summer recreationists and fall hunters results in 80 to 90 percent occupancy rates for many hotels/motels and commercial campgrounds from June through November. Seasonal occupancy rates for hotels/motels and commercial campgrounds in all counties of the study area were determined in personal interviews. These rates were used to estimate the reservation patterns that would result from tourist and commercial demand, and the remaining lodging units in each community were assumed to be the maximum potential supply available for nonlocal transmission line workers.

2.2.2.2 Demand

Nonlocal transmission line workers' demand for transient lodging is defined as the estimated number of nonlocal transmission line workers, as determined in the employment impact analysis. This approach assumes that each nonlocal worker occupies one unit. In actuality, it is expected that there would be some double occupancy among single workers and married workers without family present, while married workers with spouse present would occupy one unit, and married workers with spouse and children present would occupy more than one unit. In general, the one worker per unit assumption probably overestimates the number of units that would actually be required.

2.2.2.3 Impacts

The balance of supply and demand by construction schedule and month is presented in tables 4-5 to 4-7 in Chapter 4. The tables reflect the lodging demands made by both transmission line and substation construction workers.

Several types of impacts would occur in the scenario presented in tables 4-5 through 4-7. In most cases, construction workers would occupy rooms/hookups that otherwise would be vacant. In these cases, the construction workers' economic impact on local lodging facilities would be positive. The impact of construction workers' lodging expenditures is incorporated into the income analysis described in Section 2.2.4.

In a few isolated cases, construction worker demand is expected to exceed local supply. A lodging shortfall would occur, and either construction workers or tourists would be forced to either select another type of overnight accommodation or look elsewhere for lodging. Because construction workers remain in one place for several months, they are more likely to secure transient lodging units when demand exceeds supply than are tourists, whose demand for a particular unit usually lasts only a few nights.

Although the actual effect of displacing tourists in unknown, an adverse economic impact is possible. In the short term, an adverse impact might result if the workers' local expenditures for other goods and services did not entirely supplant those that would have been made by the displaced tourists. In the long term, adverse impacts might result if tourists did not return to the area because they had difficulties in finding lodging. While the shortfall in lodging can be quantified, the possible impact due to conflict with tourists would be small and can only be noted. The effects of the proposed action on transient lodging are presented in Section 4.2.2.

2.2.3 Demographic Impacts

Empirical evidence indicates that transmission line construction workers have a lower rate of family accompaniment than do fixed-site workers, since transmission line workers follow a moving construction site and do not settle in any one location for an extended period of time. Construction of a substation for BPA would consist of several short-term tasks; nonlocal workers with varying skills would be brought in to perform most of them. Because of their short-term employment, it is assumed that the characteristics of family accompaniment for substation workers are the same as those of transmission line construction workers. Surveys at six reporting stations along two transmission line construction projects in the Pacific Northwest indicated that for every 100 nonlocal transmission line workers, a total population influx of 167 persons (including 37 children) can be expected (Mountain West Research, Inc. 1981.)

In the previous section on transient lodging, it was noted that nonlocal construction workers would choose to locate in larger communities with more amenities and to minimize their daily commuting distances. The demographic analysis uses local communities' supply of transient lodging units as a proxy for amenities. It also attempts to minimize commuting distances to reporting stations and allocates nonlocal transmission line workers to communities for each construction schedule and substation. The percentage allocations of nonlocal workers to communities are presented in tables 2-3 and 2-4. The demographic effects of the proposed action are presented in Section 4.2.3.

2.2.4 Income Effects

During construction, the Garrison-Spokane project would have a positive effect on local income due to:

1) Wages paid to any previously unemployed local worker who was hired on the project,

2) Local expenditures made by nonlocal workers,

3) Local purchases of goods and services made by the construction contractors (the so-called "indirect" effects), and

4) Multiplier effects on the local area from number 1-3 (also termed "induced" or "secondary" effects).

This section will first describe the methodology used to determine wages of all project workers, whether local or nonlocal. Then the methodology used to estimate the local expenditures of nonlocal workers and construction contractors is briefly described. Finally, the overall framework used to determine multiplier effects on the local area from all of the income generated by the above wages and expenditures is presented.

2.2.4.1 Project Wages

Total wage and salary payments for local and nonlocal workers were estimated using wage rates obtained from the Federal Register.[1] These craft-specific wage rates were applied to the employment estimates presented in Section 1.2.6. The wage rates accounted for distances from pay "zone centers" and assumed that workers would work an average of sixty hours per week and be paid double time for hours beyond forty per week.

2.2.4.2 Local Expenditures of Workers

Empirical evidence from several transmission line construction sites in the Pacific Northwest indicated that nonlocal workers spent approximately 40 percent of their income in or near their local communities of residence. The other 60 percent was saved or sent to their permanent residences. (Mountain West Research, Inc. 1981.)

2.2.4.3 Local Expenditures of Construction Contractors

BPA anticipates construction work on the Garrison-Spokane 500-kV Transmission Project would be carried out on an installment contract basis. Under this type of contract, BPA would procure most of the materials, and the construction contractor would be paid to install them. When installing these materials, the construction contractor would probably purchase significant amounts of fuel, vehicle parts and services, and small tools in communities near the construction site. BPA estimates that about 5 percent of the total project cost (presented in Section 1.2.4) would be spent in local communities by construction contractors (Leonard 21 September 1981:personal communication).

However, because many of the above items would actually be produced outside the region, not all of the purchases would represent income to the affected states. Consequently, it is assumed that only two-thirds or 67 percent of these purchases would be the value added by the local economic sectors. The value added represents local income to each state and would thus create induced income as well. When value added and this induced income are added, the result is the total income effect of local contractor purchases.

2.2.2.4 Multiplier Effects

Original research (Chalmers, et al. 1981) provides a viable framework in which to analyze the income effects on the local economy of the

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[1]U.S. General Services Administration, Federal Register, Vol. 46, No. 128, 6 July 1981; Vol. 46, No. 152, 7 August 1981; Vol. 45, No. 251, December 1980.

BPA Garrison-Spokane project study areas. The model divides industries into two general sectors: basic and nonbasic. Basic industries are those that export their production outside the region, while nonbasic industries are those that provide goods and services to local area residents. A six-tiered regional trade hierarchy is established that classifies counties by the type of goods they provide and the size of market they serve. Sixth-order counties are the major regional centers, supplying all types of goods and services to its residents and to the surrounding area. Spokane is the only sixth-order county in the study area. Fifth-order counties are slightly smaller and do not supply all the goods and services their residents demand. For such goods, residents of fifth-order counties must travel to the nearest sixth-order market. No fifth-order counties are present in the study area, but Missoula and Kootenai counties are fourth-order counties. This hierarchy extends down to second-order and first-order counties, which usually offer little more than essential goods and services. In the study area, Shoshone County is a second order county. First-order counties include Powell, Granite, Lake, Sanders, and Mineral counties.

When income is injected into a first-order county, some will be spent in the same county, generating more income and jobs. But some portion of this additional income will find its way to the nearest second- and third-order counties, increasing their incomes and employment bases. The higher a given county's order, the greater is the expansion of income and employment due to increases in its own basic income. This is because the higher order counties offer a larger selection of goods and services, and thus their circuits of income and expenditures are greater.

By assuming that demand for goods and services are independent of the hierarchy, the following table demonstrates how a dollar injected into various counties will be multiplied throughout the regional economic system.

In all Montana counties, each dollar of basic income would induce an additional $1.09 of income somewhere within the regional economy. In Idaho counties, the total induced income would be $1.18, while in Spokane County it would be $1.30. The differences between the total induced factors are a result of wage and economic structure differentials that exists within the region. The distribution of induced income depends on where the dollar originates.

The induced income or multiplier effects were calculated by applying the coefficients shown in Table 2-5 to the adjusted earnings by locality of transmission line workers. Earnings by locality were determined in the residential allocation analysis (see Section 2.2.2). The income effects of the proposed action are presented in Section 4.2.4.

2.2.5 Agriculture and Forestry Productivity Effects

2.2.5.1 Agriculture

The proposed project would have both shortand long-term economic impacts on agriculture. In the short term, transmission line construction would temporarily render land unproductive. In the long term, land would be taken out of production by the installation of tower bases, and transmission line facilities would interfere with agricultural activities. In principle, right-of-way acquisition payments and land purchases made by BPA would fully compensate landowners for net income losses caused by the project. This subsection outlines the methods used to estimate the magnitude of shortand long-term production values foregone for both cropland and rangeland. Note that actual net income losses that could be attributed to this project would consist of production values foregone less production expenses that would have been incurred.

Cropland: short-term effects

The short-term production values foregone on cropland were determined by applying regional averages of irrigated and nonirrigated crop mixes and prices to the amount of cropland in each corridor. The regional crop mix consists almost entirely of irrigated and nonirrigated winter wheat, spring wheat, barley, and hay (primarily alfalfa). The average crop values per acre for the irrigated and nonirrigated crop mixes in the study area are $415 and $235, respectively (Skogley 24 August 1981: personal communication). The analysis assumed that productive cropland would be taken out of its present use for one complete growing season and that 5 percent of all cropland would be in fallow and therefore unproductive during the construction period.

Cropland: long-term effects

Assuming that transmission line towers would be spaced approximately one-quarter of a mile apart, four thirty-five-foot-square tower bases would be installed on each mile of agricultural land. If each tower base removed a fifty-foot-square area from production and 25 percent of all agricultural land was in fallow, then .22 acres of productive land would be lost per mile of line. When this ratio is used with an assumed thirty-nine-year project life and an annual discount rate of 10 percent, the result is an estimate of the present value of the expected annual production losses for the life of the project. The present value concept takes inflation into account and translates all future production losses into a current dollar amount.

The economic effects that would result from transmission line interference with irrigation and other agricultural activities would vary on a site-specific basis and thus are very difficult to estimate. The interference effects on agricultural productivity are a necessary input to estimating the economic impact of the project because they increase production costs and lower yields. However, the difficulty in assessing site-specific agricultural effects makes estimating the associated economic impacts impossible.

Rangeland: short-term effects

The economic analysis of construction period effects on ranching activity conservatively assumed that twenty acres of pasture are required to support one animal unit[1] for one year and that when rangeland is crossed, each mile of line removes fifteen acres of pasture from production for one year. These are "worst case" assumptions, and the results of the analysis should be considered an upper band, which probably overstates the actual effect.

The analysis assumed that ranchers would have to forego raising that number of animals for which pasture would not be available because of the transmission line. In fact, herds probably would not be reduced because of the transmission line corridor, but additional feed might have to be purchased or remaining pasture grazed more intensively. Since it is difficult to estimate these losses and since their magnitude would be almost negligible, a very conservative assumption -- that the total value of these animal units will be lost -- has been made. Because almost all of the rangeland that would be crossed by the proposed route alternatives is located in Montana, the 1980 Montana average price of $580 per animal unit was assumed across the study area.

Although many people in the study area have expressed concern about the behavioral and biological effects of transmission lines on range land and animals (see Section 3.3), research on the subject has not provided enough evidence to substantiate these concerns. Hence, the economic value of any long-term rangeland productivity losses is not calculated here.

Another long-term productivity effect of the proposed action would be conversion of forest land to rangeland. However, because of the uncertainties in predicting such conversion, the effects will not be quantified here.

2.2.5.2 Forestry

The proposed project's short-term economic impact on forestry would include removal of timber for: (1) a 125-foot-wide corridor right-of-way and (2) access roads. The long-term adverse economic effects would include loss of these lands' productive capacity for timber growth and interference with timber management practices. The long-term beneficial economic effects would include additional harvests of mature timber and improved access for fire control. Because a large portion of the access roads would be constructed within the 125-foot right-of-way and many other roads would eventually be built by the U.S. Forest Service or private timber owners, this economic analysis will not consider timber removed for access roads (Wachsmuth 6 October 1981:personal communication). Interference with timber management practices pertains mainly to conflict with logging operations and disruption of multiple-use manage-

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[1]Due to the difficulty of defining whether the transmission line will pass through cattle or sheep range, the rangeland effects calculations assume that the range crossed is used for cattle grazing and the animal units represent cattle.

ment practices. Neither of these adverse economic effects will be considered here. The project would have economic impacts on forest land owned by the U.S. Forest Service, the U.S. Bureau of Land Management, the states of Montana and Idaho, and private concerns.

In principle, BPA's payments for right-of-way would fully compensate state and private owners for the current market value of the timber harvested. As specified in a September 1981 agreement, BPA would stack harvested timber next to the cleared right-of-way on Forest Service and BLM land, and it would be marketed by the managing federal agency. However, BPA payments would not compensate federal, state, or private owners for losses in the land's long-term productive capacity. (Pond September 1981:personal communication).

Short-term effects

The analysis of short-term economic impacts on forestry has applied U.S. Forest Service production and price data to all forest land affected by the project, regardless of whether it is publicly or privately owned. While this method utilizes gross averages of very different species, qualities, and densities of timber, it yields an order-of-magnitude estimate that is useful in comparing the short-term economic impacts of alternative routes.

The analysis assumed that Montana forest land would yield the Lolo National Forest average of 8,000 board-feet (MBF) per acre when harvested by the clear-cut method. The Idaho Panhandle National Forest's average of 25,000 thousand board-feet was used for the Idaho forest land. The analysis also assumed that future timber prices in 1980 dollars would be equal to the Lolo and Idaho Panhandle National Forest 1978-1980 averages of $55.13 and $94.24 per MBF, respectively. (Combes 16 September 1981:personal communication.)

Long-term effects

The analysis of long-term forestry impacts applied U.S. Forest Service estimates of the net present value of future timber growth to BPA data on the number of acres of high-, moderate-, and low-productivity forest land that would be crossed by the alternative routes. The Forest Service net present value estimates for highly and moderately productive forest land are $98 per acre and $76 per acre, respectively. Harvesting and management costs exceed the value of expected timber growth on low-productivity land, which was assigned a net present value of zero. The Forest Service estimates take into account the expected revenues and costs associated with the different levels of productivity and assume a 100-year regeneration period. Because this regeneration period is longer than the expected project life, these estimates may be considered high. However, they provide order-of-magnitude measures that are useful in comparing the productive capacities of the timber resources that are impacted by the alternative routes.

The agricultural and forestry effects of the proposed action are presented in Section 4.2.5.

2.2.6 Property Values

As part of the soecioeconomic impact assessment of the Garrison-Spokane 500-kV Transmission Project, Mountain West Research, Inc. carried out a detailed review of previous research literature regarding the effect of transmission lines on property values. In principle, the cost of the encumbrance and inconvenience caused by a transmission line right-of-way crossing a particular land parcel is established by appraisal and compensated through the right-of-way acquisition payment. Beyond these costs, the literature is not conclusive about whether or not property values are adversely affected by transmission lines and, if so, by how much, under what conditions, and for which kinds of property. Much of the literature reports that transmission lines have little or no effect on property values, while a smaller number of studies report reduced values for residential property. Among this latter group are those that were judged to be the best designed from a scientific research point of view (Mountain West Research, Inc. 1981). The contradictory nature of findings in the literature makes generalization unwarranted for the purpose of this impact assessment.

2.2.7 Facilities and Services

Based upon the results of the community impact survey (Mountain West Research, Inc. 1981) and the small size of the construction work force, no adverse impacts on public facilities and services are forecast to result from the proposed action.

2.2.8 Fiscal Effects

The potential fiscal effects of a transmission line project are the following:

1) Increased property tax revenues resulting from an increase in the tax base

2) Income tax on the sponsoring corporation after the transmission system is operational

3) Income taxes on construction and operation workers

4) Sales tax on local purchases made by the construction contractors and the workers

5) Use tax on equipment used in the construction process

6) Property taxes on workers' personal vehicles and on construction equipment and vehicles

7) Liquor and cigarette taxes

8) Fuel taxes

9) Changes in state and local public services, health, education, and road maintenance budgets caused by project-generated demands

Of these items, property tax revenues are usually the most significant to the local jurisdictions. Items 2-4 do not provide major revenues to local jurisdictions, and items 5-9 will be relatively insignificant because of the proposed project's small work force and short construction period.

The Bonneville Power Administration's status as a government agency exempts it from both property taxes and corporate income taxes. Since corporate income taxes would be highly speculative for this type of transmission facility and small when compared to total tax collections, they will not be included in this analysis.[1]

The property taxes that would be paid if the project were sponsored by a private utility have become a more significant issue because they represent an "opportunity lost" or "revenues foregone" to local counties and taxing jurisdictions. Consequently, the fiscal analysis will determine the project's short- and long-term property tax liabilities under the assumption that the project sponsor was a private utility.

In addition, the fiscal analysis will estimate personal income and sales taxes that would be paid on project-related income and local purchases. The methodologies for the property, personal income, and sales tax analysis are outlined below.

2.2.8.1 Property Tax Revenues Foregone

Assessed value

For purposes of property taxation, all the states centrally assess the property of public utilities by the "unit value method." The unit value method evaluates the system in terms of three general concepts of value -- cost, income, and market value of the corporate enterprise. The specific use and definition of these three concepts vary with circumstances and the judgment of the assessor.[2] In order to estimate revenues foregone because of BPA's tax-exempt status, cost is the most reasonable measure of system value. The choice of this measure reflects the difficulty of predicting a project's income or market values when the future of this resource industry is, at best, uncertain.

BPA's January 1982 cost estimates for the least-impact routes and substations of each plan were presented in Section 1.2.4. The revenues foregone analysis used more detailed September 1981 cost and mileage data for every route segment that could be included under each plan. These data have been used to determine the total cost of each route alternative and tend to overstate the revenues foregone under the Taft plan, whose cost estimate has been reduced during late 1981.

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[1]Corporate income tax collections in both Montana and Idaho account for approximately 2 percent of total tax receipts (Mountain West Research, Inc. based on Montana Tax Foundation, Inc. 1981 and Idaho State Tax Commission 1980).

[2]For a more complete discussion of assessment procedures, see International Association of Assessing Offices, Demonstration Appraisal: Natural Gas Pipeline System, Chicago, 1975.

Although BPA has provided estimates for the cost of building the transmission system, little is known about the tangential costs associated with the operation and maintenance of the system upon completion of the construction activity. In this analysis, these tangential costs are assumed to be insignificant relative to the total cost of construction and are not included in the system's total value. Thus, only the estimated costs necessary to construct the system are considered here.

2.2.8.2 Allocation of Value to States

The next step in the valuation process is to allocate an equitable portion of entire project value to each state. Again, this may be accomplished by using any combination of the three measures of unit value, but only costs are considered here. The cost measure is preferred because it is difficult to allocate the income or market value of a private utility to specific segments of a particular alignment. Therefore, each state's allocation factor is simply the ratio of costs incurred in the state to total project costs. When this factor is applied to the system's total value, the resulting value allocated to the state equals the total costs incurred in that state.

2.2.8.3 Allocation of Value to Counties

In Washington and Idaho, the assessor would apportion the state's value to individual taxing districts along the right-of-way on the basis of the company's investment in the county. In Montana, the state's value is apportioned to taxing districts on the basis of transmission line miles in the district times the average cost per mile of the entire line in Montana. In all states, the assessed valuation of the substations are allocated solely to the county where the substation is located.

2.2.8.4 Taxable Value

In Washington, the assessed value of a utility is adjusted by a county equalization ratio to yield taxable value.[1] In Idaho, the taxable value is equal to the assessed value. In Montana, the taxable value is equal to 12 percent of the assessed value (Hoffman 22 July 1981:personal communication).

Once taxable valuations are determined for each county, local mill levies must be applied to obtain the tax liability. The central issue here concerns which mill levies are most appropriate for calculating property tax liabilities. Since there are many distinct, overlapping taxing districts within each county, it is not possible to explicitly consider each taxing district along the transmission line route. Thus, an estimated average county rate that takes account of the right-of-way's general avoidance of cities, towns, and other special taxing districts has been used.

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[1]Spokane County 1980 equalization ratio for personal property is .963 (Washington State Department of Revenue 1981).

Such an average mill rate is computed and reported in Table 2-6. It explicitly ignores city and town levies; therefore, it is lower than the overall average county mill rate. For this analysis, it is assumed that the completion of the transmission line and substation facilities would coincide with the start of a taxing period. Thus, the projected amount of property tax foregone is based upon the total cost of the completed system.

2.2.8.5 Long-term Effects: Cumulative Revenues Foregone

The long-term value of the proposed project is very uncertain. If constructed by a private utility, the project's value would depend on, among other factors, the profitability and market value of the company. Because of this inherent uncertainty, two alternative scenarios for long-term property tax revenue foregone are presented.

The conservative approach assumes that income and market value of the private utility would not increase during the project's life and that tax assessors would allow the straight-line depreciation of its assets. Under this assumption, transmission line facilities are allowed to depreciate at 2.56 percent annually over the assumed thirty-nine-year project life, and substations are allowed to depreciate at 3.56 percent over their assumed twenty-eight-year life.

A less conservative approach assumes that the value of the private utility would increase enough to compensate for the depreciation associated with the project operation. Thus, this scenario assumes that the taxable value of the project remains constant over its life. The actual revenues that would be foregone because of BPA's tax-exempt status would probably be between these two extremes.

2.2.8.6 Personal Income Tax

Personal income estimation procedures were discussed in Section 2.2.4. For the purpose of income tax calculation, the total wage and induced income effects of the transmission line project are multiplied by .032 in Montana and .0209 in Idaho.[1] These numbers represent the average tax rate paid on gross income in Montana and Idaho in 1979. Washington does not have a personal income tax.

2.2.8.7 Sales Tax

Since Montana does not have a sales tax, the proposed project would have sales tax effects only in Idaho and Washington. Sales taxes would result from construction worker and induced income expenditures and from local purchases made by construction contractors.

The Idaho and Washington sales tax rates of 3 and 5 percent, respectively, are applied to construction worker expenditures and induced income effects in each state. However, because construction contractors working on government contracts are exempt from sales taxes in

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[1]Mountain West Research, Inc., 1981 based on Montana Tax Foundation, Inc. 1981 and Idaho State Tax Commission 1980.

Washington, the sales tax rate is applied only to local purchases by construction contracts in Idaho.

The property tax revenues foregone, personal income, and sales tax effects of the proposed action are presented in Section 4.2.6.

2.3 Social Analysis

2.3.1 Information Sources

In order to assess the social impacts of the construction of the proposed 500-kV transmission line, it was first necessary to identify potential social impacts as a basis for developing the assessment strategy and research instruments. Although information on the social effects of transmission line siting is limited, potential impacts and areas requiring attention were identified from analyses of other transmission line construction sites (Mountain West Research, Inc. 1978, 1979, 1979, 1981; Jackson, et al. 1978); from reports of public involvement meetings conducted by the Bonneville Power Administration in the early planning stages, and from the literature on the social effects of other types of large-scale projects (Mountain West Research, Inc. 1975, 1977, 1978, 1979). Additional information on issues and concerns particular to the proposed project was gleaned from economic and demographic data, from local newspaper articles, from letters to BPA from private citizens and organizations, and from the previous experience of officials involved in the planning process for the proposed project.

These sources were reviewed by BPA and Mountain West Research, Inc. personnel, and a list of potential social issues and concerns affecting the impact populations was compiled. The major social effects requiring assessment were identified during this process and are described in the following section.

2.3.2 Problem Statement/Issues

2.3.2.1 Community Cohesion/Conflict

The siting and construction of a new transmission line has the potential for creating conflict within a community, as landowners along alternative routes frequently perceive themselves as having been manipulated against one another in conflict-type situations. A community is a sensitive entity; its members share common perceptions and concerns. Where the sense of community is strong, people share a common identification and interpersonal relations are conducted in a harmonious and constructive fashion. Community members form social groups and organizations to help their members, they support local social institutions (schools, churches, and service groups), and they work to maintain the quality of life and distinctive character of their community.

However, if neighbors are placed in conflict with one another or if they feel that they are being unfairly imposed upon, the sensitive community structure can be weakened. The quality of life within the community may degenerate, interpersonal relations may become more antagonistic, and social institutions may suffer from divisiveness and/or apathy. Where alternative routes for the transmission line are geographically close, landowners often try to ensure that the line will not cross their property. Since at least one group must live with the consequences of the transmission line for a considerable period of time, the construction of a line may create long-term division in a community.

In a larger frame of reference, the process of route selection may cause different communities to compete against each another in trying to influence the final route selection. People in remote mountain valley communities may feel that they are being exploited by larger, more populated communities because of their size and location. Residents of these remote communities may feel an increased the sense of alienation from the region and state.

When right-of-way negotiations involving the siting of a line and the compensation for easement are undertaken, additional possibilities for confict and mistrust are created. The extent of this conflict and mistrust will largely depend upon the existing relationship among the affected residents and the manner in which the negotiations are conducted by the project sponsor.

Thus, it is important to identify communities along the proposed route that may be impacted by the proposed transmission line and to assess the effects the siting and construction process may have upon these communities' structure and integration.

2.3.2.2 Duration of Land Ownership

Analysis of the social effects of similar transmission line projects has suggested that the length of time that landowners have owned their land may affect their attitudes about the construction of a new transmission line across their property. In many areas of Montana, farmers and ranchers can trace the ownership of their land back through generations, often to a relative who homesteaded the land a century ago. In these cases, the land is not simply owned but often has become a part of the family's heritage.

This identification with the land makes any transfer of ownership or modification of land use take on heightened social significance. These considerations are particularly pertinent in areas where the right-ofway was granted many years ago. While the current owners might wish to respect their elders' decisions to grant the right-of-way, they may also feel that current considerations should be applied to current decisions, perhaps through renegotiation of the right-of-way agreement.

On the other hand, newcomers to the communities often purchased their land knowing that the right-of-way had already been granted. Thus, while not necessarily wanting to have the line constructed on their land or believing that such construction is likely to occur, they have purchased the problem along with the land. Consequently, their objections to the utilization of the right-of-way will differ from those of the "oldtimer" owners.

From a different perspective, the available evidence suggests that owners of residential lots, residential acreages, and part-time and full-time farming operations would be impacted differently by the construction of a transmission line across their property (Mountain West Research, Inc. 1981). Residential landowners would be affected more by any visual, health, and property value effects of the transmission line. Farmers would experience these impacts but would also have their source of income and livelihood affected by any changes in farming practice necessitated by the line. These differential effects upon landowners have the potential to create conflict between landowners and within communities.

2.3.2.3 Employment of Local Residents

Participants in public involvement meetings have often asked what benefits they may expect from the construction of a transmission line in their area. Many have observed and a survey of construction line projects (Mountain West Research, Inc. 1981) has confirmed that, for the most part, highly skilled labor is needed for the construction of transmission lines and few local people are employed because they lack the union membership and the particular skills required by large construction firms. Since construction of the line is usually contracted to large firms located outside the project area, most of the benefits that accrue locally are from the expenditures of transient workers and the contractor's purchase of small equipment and supplies.

Residents of communities that are likely to be affected may be more receptive to the construction of the transmission line if they perceive that their community or region will receive some benefit. Thus, local acceptance may be enhanced if local people are employed by the project. In addition, public involvement participants have suggested that local people may be more sensitive to the local environment and consequently less destructive than clearing crews from other regions.

2.3.2.4 Effects Upon Private Landowners

Although almost everyone in a community is affected to some degree by the construction of a transmission line, landowners and residents who live or work near the line are generally more affected than those more distant. Some of the special concerns of persons who live along the right-of-way were identified and are discussed below.

<u>Biological, health, and safety concerns and effects</u>

Research to date by electrical utilities, government agencies, universities, and private contractors has not conclusively established any short- or long-term biological effects from living or working near large transmission lines. Because many people do not consider the questions resolved, biological, health, and safety concerns and effects have become additional concerns in siting large transmission lines, particularly near residential areas. Ranchers as well as residential landowners often want more complete information about the long-term biological and health effects of high-voltage lines.

Large transmission lines cause relatively few accidents among the general population. However, farmers with intensive irrigation systems close to the proposed rights-of-way are concerned about the danger of working around the lines with farm and irrigation equipment. Unless properly grounded, sections of metal irrigation pipe near high-voltage lines can transmit shocks to workers. Furthermore, several farmers reported knowing of one or more cases where farm workers were killed because they inadvertently touched an irrigation pipe to a high-voltage line. Although these cases involved smaller distribution lines and the proposed lines would be of sufficient height to prevent direct contact with irrigation pipes, landowners have expressed concern about the potential adverse effects of the electrical field and the possibility of a tower collapsing or of lightning striking the towers.

Use of existing rights-of-way

The exact location of the proposed transmission line's final center line is one of the most controversial issues in the construction of the proposed facility, since it determines not only who will sustain the consequences of the construction but how great those consequences will be. Several segments of the proposed routes would parallel BPA easements that were acquired many years ago. Public opposition to using previously negotiated rights-of-way is centered around the following factors:

1) If the right-of-way was acquired years ago for a smaller transmission line which may or may not have been constructed, the proposed 500-kV line appears to violate the intended use of the right-of-way.

2) In some areas, the present right-of-way is too narrow for the size of the line to be constructed. Some landowners expect that the towers and lines will overhang upon private land in an umbrella fashion.

3) Maintenance agreements for the old right-of-ways have not always been honored by utility companies, discouraging current cooper ation.

4) The nature of full-time farming operations has changed a great deal within the last two decades. Thus, instead of the small problems that would have been created then, the line could now cause problems of greater magnitude, particularly in cases where large-scale irrigation and mechanized farming are involved.

5) These are specific legal questions about the rights of BPA and landowners to use of the right-of-way.

As a result, some landowners have expressed a desire that BPA renegotiate the right-of-way agreements and consider other alternatives.

Access roads

Transmission lines must be maintained, and maintenance requires the construction and use of access roads, which can create two types of problems. First, where the lines would cross private land, maintenance crews would have to be able to cross fields on a regular basis. Construction and maintenance sometimes requires the use of heavy equipment, which can leave wheel ruts, compact the soil, damage crops, and disrupt irrigation and farming patterns. Several farmers have indicated that some utilities' workers have occasionally been careless and damaged fields and property. Second, other farmers and ranchers have noted that new access roads increase their land's susceptibility to public tres pass. Examples of unwanted trespass were noted both in cases where access was unrestricted and in cases where the landowner and/or the transmission line operator had employed access control measures.

Land use patterns

It is inevitable that the construction of a transmission line will impact land use. Where the line crosses farmland, farmers and ranchers may have to reorganize their operations to allow for the construction and continued maintenance of the new line. This often creates considerable inconvenience for them. In some instances, field size may have to be reduced and cropping systems and irrigation systems may have to be changed.

Homeowners may have to accommodate the new use of the right-of-way, possibly change their plans for the construction of outbuildings, and cope with visual presence and uncertain health effects of living near the high-voltage line. Plans to subdivide or develop land may be drastically impacted.

2.3.2.5 Effects on Users of Public Land

When transmission lines cross public land (and particularly U.S. Forest Service land), their corridors and access roads can have social effects on recreationists. Some recreationists may object to the cor ridors and access roads because they reduce the scenic quality of the wilderness areas or because they open up remote areas to increased public use. These recreationists may support their views with evidence of erosion or watershed damage that can result from access roads and increased vehicular use. Other recreationists may take the opposite viewpoint that corridors and access roads have positive social effects because they open up new areas and therefore increase recreational opportunities.

The above viewpoints highlight the importance of incorporating access requirements in evaluating the social effects of a new trans mission line when it crosses public land. They also stress the importance of access road gates and other measures that may be used by the managing public agency in support of its recreational goals.

2.3.2.6 Political Considerations

In the public involvement meetings, a number of people questioned the appropriateness of constructing the transmission line at all. Issues that have been raised include the following:

1) Whether the transmission lines should be constructed by a government agency, which does not pay property taxes, or by a private concern, which would return some tax revenue to the state and local governments

2) Whether and to what extent BPA plans coincide with the requirements of the Montana Major Facilities Siting Act and whether should BPA voluntarily comply with them

3) Whether and to what extent forecasts of electrical demand and the need for power are accurate and valid, and whether power generated in Montana should be exported to other states

4) Whether and to what extent local residents' needs and considerations will effectively enter into BPA's decision-making process

Many western Montana residents have questioned whether additional energy development should be encouraged in Montana and whether it is appropriate for western Montanans to be inconvenienced by a transmission line whose benefits would accrue primarily to out-of-state residents. Although these questions are more an expression of values and prefer ences than requests for objective information, it is important to assess them, since people's values will influence their acceptance and perceptions of the project and its effects.

2.3.3 Description of the Existing Environment

The issues identified above provided the basis for developing an interview schedule and designing a research strategy for the description of the existing environment and the assessment of the impacts of the transmission line's construction upon different types of people in communities along the routes.

2.3.3.1 The Nature of the Field Data

The purpose of the social component of the project was to (1) identify the social impacts that might be created by the construction of the proposed transmission line and (2) estimate the extent of impact upon persons in the area. As such, the data collected from the field interviews reflect the people's perceptions of the line, not the line's actual effects. The researchers recorded what people believed or expected would occur, based upon the information respondents had at the time of the interview. In the discussion of the interview results, an attempt was made to identify major inconsistencies or areas of disagreement. An important part of the description of the existing environment is to document the perceptions and expectations of the local population. Unless these perceptions are modified, they are likely to influence local response to the proposed project.

In several instances, proposed routes were still being surveyed, which obscured the impacts. In some areas, people were not aware that an alternative route had been identified for their area; thus, respondents may not have seriously evaluated the impacts at the time of the interview. However, certain patterns emerged with some clarity. It is these patterns that provide the substance of the description of the existing environment and the assessment of potential impact.

2.3.3.2 The Interview Schedule

Based on the review of potential effects described above, the research approach focused on face-to-face interviews with residents in communities likely to house the transmission line construction workers and with residents along the alternative alignments. An interview schedule was developed to guide these interviews.

The interview schedule[1] contained six descriptive items to enable the classification of respondents into categories for analysis. They are as follows:

1) Town of residence
2) Route segment
3) Type of land owned or utilized by the respondent
4) Whether the respondent lived near existing transmission lines
5) Distance of respondent's residence from the proposed right-of-way
6) Sex of respondent

Sixty additional questions were developed in a structured open-ended interview format to assess the respondents' potential concerns. The questions focused upon the following:

1) The type of utilities existing on the respondents' property and their impacts upon the respondent, with special emphasis upon land use effects

2) The nature of the right-of-way agreement and respondents' atti tudes about its propriety

3) Respondents' sources of information about the construction of the transmission line

4) Respondents' relations with BPA regarding the construction of the transmission line

5) The effects of the transmission line upon existing and potential land use

6) Respondents' attitudes about the proposed siting

7) The effects of construction and construction workers on the local area

8) Respondents' preferences for the location of the line

9) Respondents' expectations of the transmission line's effects on health, the area's visual quality, and the local community

10) Respondents' major concerns about the location of the trans mission line

11) Respondent's general values pertaining to the construction of the transmission line

12) The action the respondents expect to take if the transmission line is constructed on their property

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[1]See Mountain West Research, Inc., Garrison-Spokane 500-kV Transmission Project: Description of the Socioeconomic Environment.

In addition, the interviewer was prepared to supplement the topics from the interview schedule with questions pertinent to the persons interviewed. For example, for interviews with members of the Federated Confederated Salish and Kootenai tribes, questions were prepared that pertained to the anticipated and actual effects of right-of-way negotiations and the line on the tribes' autonomy and self-determination. Similar questions based on findings from the community survey (Mountain West Research, Inc. 1981) were prepared for use in interviews with community officials and spokespersons. However, no formal interview schedule was prepared for these more specifically focused interviews.

2.3.3.3 Data Collection Procedures

Formal interviews

The formal interviews were conducted during July 1981 in twelve areas where the route alternatives cross privately-owned land. In each area, the interviewer first sought to identify potential respondents by contacting knowledgeable persons in the area. These potential respondents and others were then selected on an available basis as the interviewer followed the potential right-of-way through the area. In each area, the interviewer attempted to select respondents who represented a variety of land use types and who were geographically spaced along the potential right-of-way. Other respondents, such as nurserymen or residential developers, who might incur more unique types of impacts, were also interviewed when appropriate.

The fifty-two formal interviews conducted in this manner typically lasted about forty-five minutes each and took place at or near the respondents' residences. The data from the interviews were recorded on th open-ended interview schedule presented in Appendix D for subsequent analysis. The data from these interviews were then summarized to compile the statement of findings presented in Section 3.3.

Although efforts were made to select respondents at random, it was neither economically feasible nor efficient to ensure that the sampling process conformed to the strict requirements of statistical random sampling. Thus, although the findings from the sample can be expected to roughly approximate the local population's land use parameters, they are not a precise representation of them.

Informal interviews and other data sources

In addition to the formal interviews, approximately sixty-five informal interviews were conducted to provide particular or corroborational information. Informal interview respondents were selected on a purposive basis and included spouses of respondents, workers, local businessmen, employees of various agencies, newspaper personnel, and community spokespersons.

Information from the informal interviews was used to provide and support the background description of communities and assess the accuracy of the formal interviews but was not included in the statistical summaries of interview results.

Articles, editorials, and letters to the editor in local and regional newspapers were reviewed to provide additional information on the nature and intensity of local issues. Records of public involvement meetings were reviewed for a similar purpose.

2.3.3.4 Characteristics of Respondents

Of the fifty-two respondents who were formally interviewed, forty-eight resided on property along the proposed alignments. Four respondents who did not live near the proposed alignments but had a special interest impacted by the construction of the transmission line (such as spokespersons for the Confederated Salish and Kootenai tribes or major land developers) were also interviewed.

Type of land owned by respondents

Although the respondents might use any particular parcel of land for several different purposes, the type of land owned by respondents has been classified into four categories:

1) Nonfarm residential
2) Irrigated farmland or rangeland
3) Nonirrigated farmland or rangeland
4) Other uses

As shown in Table 2-7, twenty of the respondents were classified in the "nonfarm residential" category. Thirteen were classified as "nonirrigated farmland or rangeland."[1] Another five respondents represented other types of land uses. Of the twenty-seven respondents who were classified in the two agricultural categories, fourteen stated that ranching composed some part of their operations. However, because very few of these individuals were engaged exclusively in ranching, they cannot be separated from the larger agricultural categories.

Distance of respondent's residence from the proposed rights-of-way

Residents were often very concerned about how close the proposed electrical transmission line would be from their residence. Since landowners along the proposed rights-of-way were selected for interviewing, the proportion of landowners who would be living fairly close to the transmission line was naturally rather high. The estimated distance of the respondents' residence from the proposed rights-of-way is presented in Table 2-9.

Sex of respondents

Where possible, an attempt was made to interview the head of the household. In most cases, husbands were interviewed and wives provided

[1]In tables 2-7 and 3-2 to 3-17, the titles of these classifications have been shortened to "irrigated farmland" and "nonirrigated farmland."

corroborating information. Based on the results of the interviews, it was found that their responses were usually very homogeneous in terms of their opinions about the construction of the transmission line, although some differences have been noted in the literature, especially with regard to perception of attitude toward risk (Kasperson, et al. 1980; Duncan 1976). The sex distribution of respondents is reported in Table 2-10.

2.3.4 Assessment of Impacts

The above sections have identified several types of social issues and concerns that were expressed by respondents in the study area. These issues and concerns will be used to identify what components of the social environment would be most likely to be affected by the proposed action. At the same time, they will also be used to determine those characteristics of the proposed action to which the key social components would be most sensitive.

The use of interviews to assess the proposed project's social impacts is complicated by three factors. First, because people are capable of reflective thought and purposive action, precise forecasts of their response to a proposed action are not feasible. This is particularly true, as in the EIS process, when local respondents who could potentially be affected by the action can explicitly forecast social impacts to evoke response and mitigation actions from project sponsors and regulatory agencies. Consequently, the social analysis will simply identify the principal causal relationships between project characteristics and the social environment that, if not modified, would result in social impacts.

Second, even when respondents have identified relationships between key project characteristics and sensitive components of the social environment, these relationships may involve characteristics of the proposed project and the existing environment that are relatively difficult to alter. For these, only the probable impacts can be identified. In others, however, the outcome is dependent upon actions and responses made by the project sponsor and the affected public. For these, the best that can be done in terms of an assessment is to identify the range of impacts in terms of probable actions and responses and to clarify their consequences. For example, the impacts of transmission line construction on owners of irrigated agricultural land will depend upon the manner in which the right-of-way negotiation is handled, the nature of the compensation payment, the conduct of the construction crews, and the specific location of the towers relative to the irrigation system and the field. Although each of these factors could be controlled to minimize impact, it is not possible to forecast which might be controlled and what the social consequences would be. Nevertheless, it is possible to forecast that if these factors are not controlled, affected landowners will experience frustration, economic costs, and continuing inconvenience and will evaluate the project's effects as strongly negative.

Finally, even when the above uncertainties are resolved, it may not be feasible to quantify the identified key project characteristics and social sensitivities for proposed route alternatives.

The socioeconomic assessment team has taken all of the above difficulties into account and developed a method that uses BPA data on project and environmental characteristics to forecast social impacts. The method makes use of seven measures:

1) Land ownership
2) Landowner density
3) Inconvenience by land use type
4) New corridor development
5) New access roads
6) Alienation
7) Special considerations

The landownership, landowner density, and inconvenience by land use type measures reflect sensitive characteristics of the socioeconomic environment and serve as composite measures for a wide range of potential social effects. The new corridor development and new access roads measures relate to those project characteristics to which the social environment would be most sensitive. The alienation and special considerations measures account for sensitive environmental areas, which are of local or regional importance but which have not been accounted for by any other measure. All seven measures are explained in more detail and then applied in Section 4.3.

TABLE 2-1

Summary of Results: Transmission Line Construction Worker Profile

Number of Sites		6
Number of Respondents		175
Response Rate		91.6 percent
Average Age of Respondents		35.4 years
Occupational Distribution of Respondents	**Number**	**Percent**
Journeyman lineman	69	39.4
Foreman superintendent	13	7.4
Apprentice	39	22.3
Groundman	15	8.6
Equipment operator	25	14.3
Setter, laborer	5	2.9
Mechanic	3	1.7
Other	11	6.3
Composition of Respondents		
Local (percent)	7.4	
Nonlocal (percent)	92.6	
Marital Status and Number of Children 18 years Old or Under	**Local**	**Nonlocal**
Single, no children	15.4%	18.6%
Single, with children	15.4%	6.7%
Married, no children	0.0%	19.7%
Married, one child	30.7%	15.4%
Married, two children	7.7%	17.3%
Married, three children	0.0%	5.6%
Married, more than three children	15.4%	1.9%
No response	15.4%	8.0%
Average Family Size of Married Workers	3.57	3.27
Type of Housing Unit at Worker's Local Residence (percent)	**Local**	**Nonlocal**
Single family dwelling	46.1	6.2
Apartment	7.7	8.0
Mobile home	15.4	9.9
Travel trailer, van, RV	15.4	46.3
Motel	15.4	27.8
Other	-	1.8
Percentage of Married Nonlocal Workers with Family Present		42.7
Average Population Influx per 100 Nonlocal Workers		167.7
Percentage of Pay Spent Locally		42.9

Source: Mountain West Research, Inc., Transmission Line Construction Worker Profile and Community/Corridor Resident Impact Survey: Final Report, prepared for the Bonneville Power Administration, Billings, 1981.

TABLE 2-2

Comparison of Construction Worker Profiles

Economic/Demographic Characteristic	Transmission Line[a]	Pipeline[b]	Energy Projects[c]	Water Projects[d]
Median Age of Worker	35.4	36.1	22.5	-
Percent Single	25.3	33.7	24.6	26.8
Percent Married	74.7	66.3	75.4	73.2
Percent of Married with Families Present	42.7	24.6	65.0	64.9
Average Family Size	3.27	3.20	3.78	3.51
Average Population Influx per 100 Nonlocal Construction Workers	167.7	129.8	227.8	213.9
Housing (percent)				
Single family dwelling	6.2	5.7	19.9	30.3
Apartment	8.0	13.1	10.0	20.1
Mobile home	9.9	6.8	53.0	26.0
Travel trailer/van/RV	46.3	24.4	-	-
Motel	27.8	41.5	-	-
Sleeping room	0.0	1.1	-	5.9
Other	1.8	6.8	18.0	-
Nonlocal Percentage of Labor Force	92.6	69.4	60.1	52.8

Sources:

[a]Mountain West Research, Inc., Transmission Line Construction Worker Profile and Community Corridor Resident Impact Survey: Final Report, prepared for the Bonneville Power Administration, Billings, Montana, 1981.

[b]Mountain West Research, Inc., Pipeline Construction Worker and Community Impact Surveys, Final Report, for Environmental Research and Technology, Inc. on behalf of Northern Tier Pipeline Company, Billings, Montana, 1979.

[c]Mountain West Research, Inc., Construction Worker Profile, Final Report, for the Old West Regional Commission, Washington, D.C. 1975.

[d]Mountain West Research, Inc., Construction Worker Survey, Final Report, for the Bureau of Reclamation, Engineering and Research Center, Denver, Colorado 1977.

TABLE 2-3

Nonlocal Transmission Line Construction Workers
Community Allocations

Schedule Number	Reporting Station	Nonlocal Worker Allocation: Community	Nonlocal Worker Allocation: Percentage of Nonlocal Workers
1	Drummond	Drummond	68
		Phillipsburg	9
		Deer Lodge	16
		Garrison	7
2	Missoula	Missoula	100
3 (Plains or Taft)	Missoula	Missoula	100
3	St. Ignatius	St. Ignatius	36
		Ravalli	18
		Ronan	17
		Polson	16
		Arlee	13
4 (Hot Springs or Plains)	Thompson Falls	Thompson Falls	71
		Plains	11
		Noxon	7
		Paradise	6
		Trout Creek	5
4 (Taft)	St. Regis	St. Regis	75
		Superior	14
		Haugan	11
5	Kellogg	Kellogg	43
		Wallace	10
		Osborn	10
		Mullan	3
		Smelterville	10
		Pinehurst	12
		Coeur d'Alene	12
6	Coeur d'Alene	Coeur d'Alene	100

Source: Mountain West Research, Inc., 1981.

TABLE 2-4

Nonlocal Substation Construction Workers
Community Allocations

Substation	Nonlocal Worker Allocation	
	Community	Percent of Nonlocal Workers
Garrison (expansion)	Garrison	50
	Deer Lodge	35
	Drummond	15
Hot Springs (expansion)	Plains	100
Plains (new)	Plains	90
	Thompson Falls	10
Taft (new)	St. Regis	25
	Haugan	20
	Mullan	10
	Wallace	25
	Kellogg	20
Bell (expansion)	Spokane	100

Source: Mountain West Research, Inc., 1981.

TABLE 2-5

Additional Income Generated
if $1 is Injected Into a County's Economy

Counties Receiving Additional Income	Counties Receiving $1 Injection										
	Granite	Powell	Mineral	Sanders	Lake	Silver Bow	Flathead	Missoula	Shoshone	Kootenai	Spokane
Granite	.48	-	-	-	-	-	-	-	-	-	-
Powell	-	.48	-	-	-	-	-	-	-	-	-
Mineral	-	-	.48	-	-	-	-	-	-	-	-
Sanders	-	-	-	.48	-	-	-	-	-	-	-
Lake	-	-	-	-	.48	-	-	-	-	-	-
Silver Bow	.30	.30	-	-	-	.78	-	-	-	-	-
Flathead	-	-	-	-	.30	-	.78	-	-	-	-
Missoula	.04	.04	.34	.34	.04	.04	.04	.82	-	-	-
Shoshone	-	-	-	-	-	-	-	-	.66	-	-
Kootenai	-	-	-	-	-	-	-	-	.12	.78	-
Spokane	.27	.27	.27	.27	.27	.27	.27	.27	.40	.40	-
TOTAL	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.18	1.18	1.30

Source: Mountain West Research, Inc., 1981.

TABLE 2-6

Average Rural Mill Levies

County	1980-1981 Average Rural Mill Levy
Powell	177.69
Granite	198.33
Missoula	270.33
Lake	202.84
Sanders	214.75
Mineral	300.03
Shoshone	8.53
Kootenai	9.91
Spokane	1.28

Sources: Montana Tax Foundation, Inc., Montana Taxation, 1981; Associated Taxpayers of Idaho, State of Idaho 1980 Property Tax Levies, 1981; Washington State Department of Revenue, 1980 Tax Statistics, 1981.

TABLE 2-7

Distribution of Respondents by Region

Region	Respondents N	Respondents Percent
East	7	13
Central	36	69
West	9	17
N=52		

Source: Mountain West Research, Inc., 1981.

TABLE 2-8

Distribution of Type of Land Owned by Respondents

Type of Land	Respondents N	Respondents Percent
Nonfarm Residential	20	38
Irrigated Farmland	13	25
Nonirrigated Farmland	14	27
Other Uses	5	10
N=52		

Source: Mountain West Research, Inc., 1981.

TABLE 2-9

Estimated Distance of Respondent's Residence from the Proposed Rights-of-Way

Distance of Residence from Proposed Rights-of-way	Respondents	
	N	Percent
Within 500 ft.	18	37
500-1000 ft.	11	23
1000-2000 ft.	10	21
2000+ ft.	9	19
N=48		

Source: Mountain West Research, Inc., 1981.

TABLE 2-10

Sex Distribution of Respondents

Sex	Respondents	
	N	Percent
Male	34	68
Female	14	28
Equal Participation	2	4
N=50		

Source: Mountain West Research, Inc., 1981.

3. DESCRIPTION OF EXISTING ENVIRONMENT

3. DESCRIPTION OF EXISTING ENVIRONMENT

3.1 Introduction

Chapter 3 describes the existing socioeconomic environment of the BPA Garrison-Spokane 500-kV Transmission Project study area. The inventory of the existing socioeconomic environment serves important purposes. Primarily, it acquaints the reader with the kind of socioeconomic environment that currently exists and with how it has evolved. Such information provides a basis for constructing a realistic scenario about the transmission line project's impact and for designing realistic mitigation and enhancement strategies to deal with impact.

The chapter consists of two parts. Section 3.2, Economic and Demographic Environment, describes regional economic and demographic trends and land use patterns. Section 3.3, Social Characteristics, briefly summarizes the area's social conditions and then presents transmission line-related issues and concerns that were identified during field interviews with residents and landowners along the route alternatives.

A more detailed description of the existing socioeconomic environment is presented in Garrison Spokane 500-kV Transmission Project: Description of the Socioeconomic Environment, which is available under separate cover. This document presents a county-by-county description of the economic and demographic environment and summarizes transmission line-related issues and concerns by geographic area.

3.2 Economic and Demographic Environment

This section focuses on those economic, demographic, and land use characteristics that are relevant to the socioeconomic assessment of potential impacts from the Garrison-Spokane Transmission Project. For the purpose of description, the socioeconomic study area has been defined as consisting of Powell, Granite, Missoula, Lake, Sanders, and Mineral counties in Montana; Shoshone, Kootenai, and Bonner counties in Idaho; and Spokane County in Washington.

3.2.1 Economic Environment

3.2.1.1 Labor Force, Employment, and Income

As shown in Table 3-1, the study area's 1980 labor force of 246,355 persons implies a labor force participation rate of 43.8 percent. Of the total work force, 227,403 were employed, and the average unemployment rate was 7.7 percent. In 1980, unemployment rates varied substantially among the counties -- from 5.2 percent in Shoshone County, where the economy is heavily dependent on mining, to over 9 percent in Sanders, Mineral, and Bonner counties, where the economies are dependent on the timber industry. In 1979, per capita incomes in the study area ranged from $5,782 in Lake County to $8,485 in Spokane County (U.S. Department of Commerce 1979).

3.2.1.2 Employment by Sector[1]

The study area's economy is heavily dependent on resource-based industries such as agriculture, the timber industry, and mining. In recent years, the population-serving construction, trade, and service sectors have also realized significant employment gains.

The study area's agricultural sector has been paralleling the national trend toward fewer, larger, and more productive farms. The number of farm proprietors has been declining slowly over the 1970s, decreasing by 6 percent between 1975 and 1979. The categories of farm laborers and agricultural service workers realized slight increases over the period. Total agricultural employment declined by 2 percent from 1975 to 1979, when the 7,324 agricultural workers represented 3 percent of total employment. The study area's primary agricultural products are wheat, hay, alfalfa, barley, and beef cattle.

Manufacturing is diversified in Spokane and Kootenai counties but consists almost entirely of the timber industry in the remaining counties. Although the timber industry typically accounts for 10 to 15 percent of total county employment, its relatively high-paying jobs frequently account for 20 to 30 percent of the counties' total earned income. Timber industry employment is generated by logging camps and contractors and by lumber mills and wood-processing plants that produce raw lumber, pulp and paper, plywood, laminated beams, paneling, wood chips, and a variety of other wood products.

Mining employment exists in several of the study area counties but is dominant only in Shoshone County, Idaho, where it accounts for 28 percent of total employment and 50 percent of total earned income. Shoshone County's mining sector produces lead, silver, and zinc and is important to the study area because many of its employees live in adjacent counties.

In the late 1970s, the study area's population-serving sectors have also realized significant employment increases. The construction sector, spurred by residential demand, grew by 53 percent between 1975 and 1979. In 1979, it accounted for 5 percent of total employment and about 10 percent of total earned income. The region's employment in the trade and service sectors experienced 31 to 24 percent growth, respectively, over the 1975-to-1979 period. By 1979, these two sectors accounted for a combined share of 40 percent of total study area employment. This large share is due primarily to local demands for goods and services, but it also results from the region's popularity as a tourist area.

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[1]Statistics used in this section derived from U.S. Department of Commerce, Bureau of Economic Analysis, Employment and Income by Major Sources, 1975-1979.

3.2.2 Demographic Environment

3.2.2.1 Population Trends

As shown in Table 3-1, the study area's population grew significantly during the 1960s and 1970s. During the 1960s, the population grew from 422,052 to 450,253 people, an increase of 7 percent. Ninety-five percent of this growth occurred in and around the major population and regional trade centers in Missoula, Kootenai, and Spokane counties. During the 1970s, population growth was greater and more widely distributed than in the 1960s. The 1980 population of 562,074 people represented a 25 percent increase over the 1970 level. Population increased by about 20 percent in Sanders, Mineral, and Spokane counties, by more than 30 percent in Missoula and Lake counties, and by more than 55 percent in Kootenai and Bonner counties.

Approximately half of the region's 1970 to 1980 population growth occurred between 1977 and 1980 (U.S. Department of Commerce, Bureau of the Census, P-26 Population Estimates for Intercensal Years). This accelerated growth in the latter half of the decade can be partially attributed to new job opportunities and also to the area's scenic beauty and consequent desirability as a destination for retirees.

3.2.2.2 Distribution of Population

Forty percent of the study area's 1980 population lived in the larger cities of Missoula, Coeur D'Alene, or Spokane. Thirteen percent lived in cities with populations between 1,000 and 10,000 people, while the remaining 47 percent lived in small communities or in rural areas (U.S. Department of Commerce 1980). Most of the study area's cities with populations over 1,000 are located along U.S. Interstate 90, which runs southeast to northwest from Deer Lodge through Missoula and Coeur D'Alene to Spokane. Other communities are located primarily in the study area's numerous intermountain basins and valley bottoms.

Land use

In 1980, ten National Forest units accounted for 45 percent of the study area's land use. National Forest percentages of individual counties' land area ranged from 0 percent in Spokane County to 83 percent in Mineral County (U.S. Forest Service 1981). The National Forests units typically encompass mountainous areas and are managed for timber production, watershed, rangeland, wildlife, and recreational land uses.

The study area's agricultural land consists of dry and irrigated range and cropland. The agricultural land is privately owned and is managed for agricultural production purposes. Agricultural land managers are sensitive to any development that removes land from production or interferes with agricultural practices and improvements. Irrigated cropland is concentrated in vally bottoms and is particularly sensitive to development that interferes with irrigation practices.

Urban and residential land uses have historically been confined to areas near cities but have recently expanded into several intermountain valleys in the study area. While rural residential development occasionally takes the form of concentrated subdivisions, most of it occurs in five- to twenty-acre parcels that have been sold from large agricultural holdings.

3.3 Social Characteristics

3.3.1 General Findings

3.3.1.1 Introduction

The social conditions that characterize the study area and are important to the impact assessment of the proposed action are related to: (1) the small town and rural environment in which nearly half of the population resides, (2) the scenic qualities of much of the area, (3) the importance of agricultural and forest resources, (4) the importance of recreational activities, and (5) the presence of a distinct ethnic group vested with important land use controls -- the Confederated Kalish and Kootenai tribes.

Based upon interviews with landowners, public officials, interest group representatives, and members of the business community, as well as upon attitudes and opinions expressed at public meetings and workshops BPA held in the study are, several general conclusions regarding the social characteristics of the study area can be drawn.

First, those interviewed showed a keen environmental awareness and widespread desire to see local communities and rural areas maintain their small town atmospheres and scenic qualities. The desire to preserve rural lifestyles and scenic values was particularly strong among members of agricultural interest groups, who have lived in the region for generations and perceive development as a threat to agricultural lifestyles, among long-term local residents who have remained in the area despite occasional economic downturns in the resource-based economy, and among new residents who have moved to the area because of its scenic beauty, attractive climate, and variety of recreational opportunities.

Most representatives of the resident groups interviewed cherished their somewhat remote environment and were very concerned about the visual effects, land value impacts, and long-term implications of development. These concerns were most evident in western Montana, where residents have organized into special interest groups that resist or attempt to influence development. Such groups may have an ethnic affiliation, such as the Confederate Kalish and Kootenai Tribe, or are organized around concern over development impacts on residential or agricultural land uses in a particular area. Other groups, like the Clark Fork Valley Protective Association, represent several types of interest groups.

The following section presents findings from the fifty-two field interviews that were conducted with residents and landowners along the proposed route alternatives.[1] As noted in Section 2.3.3.4, the respondents lived and worked adjacent or near to the proposed route alternatives and were involved in a variety of activities, which included farming, ranching, and residential use of the land. Where applicable, information obtained from informal interviews and other sources of information are included in the discussion. The data shown in the tables document the results of the fifty-two formal interviews.

3.3.1.2 Respondents' Knowledge about the Proposed Construction

The vast majority of respondents were aware of the proposal to construct a large transmission line from western Montana to eastern Washington. Although the extent of respondents' knowledge about the line varied considerably, about 73 percent of them indicated that they were at least vaguely aware of the proposed project.

The public had access to multiple sources of information about the project. About 33 percent of the respondents reported that their major source of information about the project was the mass media. About 21 percent said that they had received information from the Bonneville Power Administration.[2] (See Table 3-2.)

About 56 percent of the respondents did not feel that they had received adequate information about the construction of the transmission line and thus desired more information. As shown in Table 3-3, 33 percent of the respondents felt their current level of information was adequate.

Although BPA conducted public information meetings along the proposed routes, several respondents did not attend because they did not think that their area was being seriously considered for an alternative route. Several of these respondents stated that they would become more involved after the final route(s) were selected.

As Table 3-4 shows, 33 percent of the respondents reported having attended public meetings about the construction of the proposed transmission line. A slightly smaller number of respondents (26 percent) reported discussing the proposed siting of the transmission lines with BPA personnel (see Table 3-5).

Of the respondents who had met with BPA personnel, 45 percent reported that their interaction was positive, about 20 percent reported

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[1]The total number of responses for individual questions may vary because some respondents refused to answer some questions or gave answers that were uncodable. In some cases, particular questions were not applicable to all respondents.

[2]A single respondent could report several sources of information. Thus, the total number of responses exceeds the number of respondents.

that the interaction was neither positive nor negative, and about 35 percent reported that their interaction with BPA was negative. Several respondents observed that since construction of the transmission line was undesirable in itself, BPA representatives should not expect to be favorably received. Other respondents were more stoic and observed that "they have a job to do, and they are just trying to do it the best they can."

3.3.1.3 Respondents' Perception of the Need for Additional Transmission Lines

Respondents were asked whether they favored the construction of a new transmission line in general, without regard to its location. The reaction to this question was mixed, but most of those interviewed opposed construction of a new line (see Table 3-6).

Respondents were also asked if they thought the new transmission line was necessary. As shown in Table 3-7, 45 percent of the respondents felt that the new transmission line was necessary, 32 percent thought it unnecessary, and 23 percent were uncertain.

3.3.1.4 Respondents' Expectations of Effects from the Construction of the Line

The process of constructing a new transmission line and its consequences are of significant concern to landowners along the right-of-way. Since the proposed 500-kV line is much larger than most existing transmission lines in western Montana, few respondents knew exactly what to expect. Quite often farmers along the proposed routes have had some experience with the construction of smaller transmission lines. They are particularly concerned about damage to the land along the right-of-way, the debris and rocks left from construction, damage to existing access roads, damage from the construction of new access roads, construction's impact upon livestock, and the general stress of coping with the inconvenience and problems created by the construction process.

Homeowners' concerns are focused on the disagreeable aesthetic aspects of the construction process, such as noise, dust, road damage, loss of privacy, and the difficulty of accepting the line's existence.

For the most part, respondents do not expect construction to have many impacts on the local communities. Fifty-three percent of the respondents didn't know of any type of impact that would be incurred by their local community. Twenty-one percent expected some positive effect from the construction process, while about 26 percent expected some negative effect. (See Table 3-8.)

Respondents were asked to list their three biggest concerns about the proposed construction of the Garrison-Spokane 500-kV transmission line. This was an open-ended question intended to help respondents define and prioritize their concerns. Their responses are shown in Table 3-9. This list does not represent the entire range of the population's concerns. For example, a widely-held concern might not be listed as one of the three "biggest" concerns. The responses to this question generally confirm the validity of information obtained from other sources regarding issues, concerns, and problems with transmission lines. Respondents most frequently identified biological and health effects, land value and land quality effects, and visual/aesthetic effects as their biggest concerns with respect to the proposed transmission lines. The major issues or concerns identified through the interviews are discussed below.

Concerns about the right-of-way

In these interviews and other research (Mountain West Research, Inc. 1981), two reasons emerged as the factors motivating ranchers' and other landowners' concern about the acquisition of a right-of-way. They are concerned because (1) they are participating in the negotiation process and (2) they must live with the right-of-way permanently. Where a right-of-way was not already established, landowners tended to view its acquisition and establishment as an intrusion upon their private property rights. Their feelings were complicated by the possibility of condemnation, which made it difficult for them to refuse to negotiate.

Approximately 63 percent of the respondents already had a utility or easement crossing their property. Most easements were negotiated several decades ago, and people had adjusted to their existence. The respondents often felt confused and bewildered about (1) the process of right-of-way acquisition and (2) the rights and privileges belonging to landowners and those belonging to the utilities who have the easements.

As shown in Table 3-10, 70 percent of the respondents had never negotiated a right-of-way agreement. Respondents quite frequently expressed anxiety about their ability to effectively negotiate an agreement, and many felt that they would have to hire a lawyer to handle the negotiations. Several respondents indicated they felt the negotiation process was a "no-win" situation. Some felt that they could not "take on" the government in these types of matters. Some were concerned (and others were convinced) that they would not be adequately compensated for the all of the costs of living and working around the transmission line.

At the time of the survey, 76 percent of the respondents felt they were under no pressure to accept the eventual siting decision. Many respondents whose land was under easement wished to renegotiate the easement agreement because they felt the agreements did not adequately reflect the economic inconveniences caused by transmission lines.

Some respondents presumed that since the original right-of-way was never used, it had in effect been abandoned. Proceeding under this assumption, some farmers constructed underground irrigation systems, buildings, and fences and organized their farming operations using right-of-way space. Near Spokane, some respondents reported that a developer had sold residential lots implying that the right-of-way was a "free" part of the parcel.

Some respondents noted the presence of BPA and other utilities' surveying crews in the area and concluded that new rights-of-way for the Garrison-Spokane transmission project were being considered. Several of the respondents hoped their land would not be affected. They often believed that if their property was being seriously considered, BPA would have aready contacted them.

Concern about land values

Almost every respondent was concerned about the Garrison-Spokane 500-kV transmission line's effect on land values. Although few felt they could attach a monetary value to the impact, almost all felt that the impact would be negative (see Table 3-11).

The most frequently stated concerns about land value were:

1) Additional farmland or acreage would be lost. In many cases, the lines would cross small acreages or fields, where loss of land would be very detrimental.

2) The location of the transmission lines would limit the property's resale value by prohibiting use of the land for such things as buildings, irrigation systems, or residential development.

3) Additional transmission lines would increase the mechanical inconvenience of farming around the lines, thus reducing the land's value for farming and/or requiring the farm operation to be changed at considerable expense.

4) Concern about possible biological and health effects of the high-voltage line would limit the land's potential for homesites.

5) The line would reduce the aesthetic and scenic value of the property, thus decreasing its appeal for potential buyers.

A number of landowners along the proposed routes indicated they were planning to subdivide their land for residential use. In many cases, they were unaware that a new transmission line was being considered for their area.

Concerns about biological and health effects

As noted in Table 3-9, the proposed transmission line's possible effects on health was the concern respondents expressed most frequently. In general, people were unsure about health effects and wanted to obtain more information. A few of the respondents had read reports on biological and health effect research. Almost all of the respondents had been exposed to one or more newspaper articles on the subject. Many of the respondents were skeptical of the information provided in government-sponsored reports and expressed their desire to see more extensive and independent research on these types of effects.

Although most respondents were willing to accept the conclusions of research that found no adverse short-term effects, they were anxious about the potential for long-term effects. Most of the concerns that were expressed focused on the possibility of electrical shocks, headaches, high blood pressure, and any possible link to cancer.

Cattle ranchers were also uncertain about the line's effects on the health of their livestock. Of the fourteen respondents who practiced some form of ranching, none were certain about the possible effects of high voltage lines on the fertility and health of their livestock. However, all fourteen respondents voluntarily expressed concern about these potential problems. One rancher observed that the presence of the transmission line might deter potential buyers of his breeding stock, whether there were any actual effect or not.

Concerns about safety

Although health and safety concerns were frequently grouped together, many respondents had special concerns about safety issues. Several respondents mentioned hearing of cases where a worker was electrocuted or injured when moving irrigation pipes near existing distribution lines. Others were concerned because machinery that has been near the line can pick up an electrical charge and transmit it to people. Several ranchers feared that the transmission lines might attract lightning and cause range and forest fires. Other concerns included danger resulting from the line's crossing geologic fault zones, the possibility of the lines being sabotaged, and the possibility of towers collapsing onto private land and residences.

Concerns about visual and aesthetic effects

The visual impacts of transmission lines are best considered as a composite variable because people include a variety of factors within the category of effects termed visual and/or aesthetic. To some people, a transmission line crossing undeveloped landscapes represents the pervasive, undesirable effects of technology. Others may associate the line with health hazards or identify the line with the loss of private property rights and government's encroachment upon the lives of private citizens.

The extreme visibility of a large transmission line constantly reminds viewers of their own particular concerns or objections. As shown in Table 3-9, approximately 44 percent of the respondents identified the visual/aesthetic impacts of the proposed transmission line as one of their major concerns. The most frequent justifications for these concerns were:

1) Viewing the line would regularly or continually remind respondents of their concerns about the transmission line.

2) The construction of new routes across unspoiled land is aesthetically undesirable, especially to environmentalists or naturalists.

3) The presence of the line symbolizes the pervasiveness of emerging technological society, which many people in the study area oppose.

Other concerns

Several respondents expressed concern or uncertainty about the amount of noise a 500-kV line would produce, the line's impacts on radio and television reception, and a variety of other topics (such as the line's effect on the bee population and the migration of birds and wildlife). Most of these issues were raised in the form of inquiries about the magnitude and significance of the line's effects. They reflect the range and genuineness of the respondents' concern about how they and their environment will be affected by the proposed line.

3.3.1.5 Respondents' Attitudes about the Location of Transmission Lines

Private/public land

Many respondents were generally opposed to the Garrison-Spokane 500-kV line. However, when asked where the line should be located if it were to be installed, 73 percent of the respondents stated the proposed transmission line should be located on public land wherever possible (see Table 3-12). Many of them felt that when a transmission line is being installed in the public interest, it should be located on public land and that private land should be protected from such use. These attitudes were the most strongly stated by Montana respondents and were less decisively stated by Idaho and Washington respondents.

Despite their overwhelming preference to see transmission lines sited on public land, many respondents expressed concern about the effect that a new corridor and access roads would have on the users of local National Forest land. These concerns generally related to the undesirable visual presence of the line and access roads in a natural environment and their impact on recreational use of the areas. All of the respondents who expressed views on this subject felt that a new transmission line and new access roads would increase recreational use of public lands. However, most of these respondents expressed their desire to see local public lands maintain their remote qualities and therefore viewed increased recreational use as an adverse social impact.

As shown in Table 3-13, respondents did not indicate any clear-cut preference between routing a new line within or adjacent to an existing corridor (thereby creating concentrated utility corridors) or establishing a new corridor. In general, respondents had difficulty addressing this question, in part because they felt that both alternatives were undesirable and in part because they felt so personally involved in the current siting decision that generalization was difficult.

In addition, respondents indicated that their own set of preferences and values led them to contradictory conclusions regarding route selection because of the precedents set by previous routing. For example, because most existing utility corridors are on private land, preferring to use public land would require establishment of a new corridor while preferring to use existing corridors to avoid spoiling new land would require utilization of private land. This dilemma occurred to many respondents; it was succinctly stated by one respondent, who said

> In one sense, I would prefer that new transmission lines don't ruin more land, but on the other hand, I think that private landowners have enough problems and shouldn't have to endure the inconvenience of any more lines. Somewhere the rights of the private landowner have to be respected.

Construction costs

In the interviews, it appeared that although respondents were not able to clearly indicate what routing decision would minimize impacts on people, they did have a strong conviction that siting the line to minimize its impact upon people was a higher priority than minimizing the cost of construction (see Table 3-14).

Sponsorship

As shown in Table 3-15, 56 percent of the respondents indicated that if transmission lines have to be installed, they would prefer to see private utilities construct and maintain the lines. They often expressed the opinion that private utilities would construct the lines more efficiently and that private utilities would also contribute to the region's tax base. Although some respondents were dissatisfied with private utilities' maintenance practices, they nevertheless felt that the public might have more influence over a private utility than a governmental agency.

Other factors

Some Montanans prefer to keep the state's energy resources within the region and have questioned the wisdom of exporting natural resources. Many respondents did not believe that local residents would benefit from the transmission line and questioned why they should endure the inconvenience of additional transmission lines.

3.3.1.6 Respondents' Anticipated Response to the Transmission Line's Routing

The respondents in this study were generally opposed to construction of the line on their property or in their area. Their sentiments ranged from violent opposition to apathy.

As shown in Table 3-16, 69 percent of the respondents indicated that they would fight the decision if the route through their area were selected for construction. Eighteen percent of the respondents indicated they would do nothing about the construction. Another 12 percent had adopted a "wait-and-see" attitude and either had not formulated or chose not to reveal their intentions. Almost all of the respondents indicated that their neighbors opposed the line's construction. If area sentiment is as strong as indicated in the interviews, it is possible that respondents may have felt pressured to conform with their perception of dominant local attitudes. Such a sense of pressure for conformity could also influence the action taken when a siting decision is made.

3.3.2 Summary of Findings by Land Use Type and Ownership

Although the attitudes and concerns of landowners along the proposed routes can be delineated in several ways, the extent of opposition to the contruction of the 500-kV Garrison-Spokane transmission line was found to vary most significantly according to (1) the nature of the respondents' land use, and (2) the distance at which respondents would be living from the new line. A matrix portraying the extent of opposition to the construction of the transmission line by land use type is presented in Table 3-17.

3.3.2.1 Farmers and Ranchers

The thirteen respondents with extensive irrigation systems and five respondents with purebred livestock breeding operations exhibited the most opposition to the construction of a new transmission line across their property. Their opposition stemmed from expectations that considerable hidden costs and inconvenience would result if the line were installed. Although farmers expected that short-term damage or production losses would be repaired and/or compensated for, most expressed the opinion that such payments would never adequately cover the inconvenience and hidden costs they would incur during the line's construction and operations periods.

According to those interviewed, hidden costs could result from (1) having to reorganize underground irrigation systems, (2) the inconvenience of having to drive around the line with hay and grain machinery, (3) the problem of managing employees who would have to work around the lines, (4) the problems created by granting access to maintenance crews, and (5) the problems of debris and weed control. In response to these anticipated adverse effects, farmers have been forming protective associations to represent their interests.

Although the total number of ranchers affected by the selection of a final route alternative might not be large, these individuals expected a transmission line would have noteworthy impacts on their ranching operations. In addition, ranchers are still opinion leaders in many of the areas through which the proposed alignments pass. Consequently, ranchers are often able to influence other area residents' attitudes toward the proposed project. It was anticipated that each type of ranching activity, whether irrigated pastureland or rangeland, would experience its own particular problems in adjusting to the construction of a new or additional line. These problems were expected to extend far beyond the right-of-way and create conditions with which the individual rancher would have to deal for several decades after construction of the line.

Several of the ranchers interviewed said they felt besieged by a variety of utility and resource development groups who want to survey their lands, explore for oil and minerals, develop water and forest resources, install transportation systems, or subdivide the land. The problem has been exacerbated by an influx of people who want to hunt, fish, and camp on the ranchers' land. These ranchers had been angered when gates were left open and their cattle strayed, when access roads or underground irrigation pipes were mangled by bulldozers and heavy trucks, when they have had to remove cans and bottles left by maintenance crews, or when they looked across their land and discovered a plume of dust from trucks they didn't even know were on their land. Some ranchers were particularly annoyed and said that they would act strongly to limit access to their land in the future.

Of the fourteen respondents who were engaged in ranching, eight could be classified as older or "original" ranchers whose families had owned the land for generations. Five of these original ranchers were in some ways more receptive to development than other agriculturalists who had acquired their property more recently. They recalled the benefits that progress brought them years ago and expressed the feeling that transmission lines are a necessary part of progress, regardless of their effects. The other three original ranchers were totally opposed to new transmission lines.

Landowners' acceptance of new development is closely tied to the extent of impact the transmission lines will have upon farming and ranching operations, particularly large-scale irrigation systems. Ranchers who have invested considerable labor and money in intensive irrigation systems were reluctant to change their systems, particularly since such changes often involve considerable hidden costs for which they did not expect to be adequately compensated.

Where lines do not have any particular impact on ranching operations, ranchers are relatively tolerant. Both farmers and ranchers want to be consulted about the precise location of the line (often a few feet can make a considerable difference) to their operation and want to see maintenance agreements honored.

In addition to these general concerns, breeders of purebred livestock were concerned about the psychological impact the lines might have upon potential buyers of their stock, the inconvenience of rotating herds around the construction crews, and the line's possible long-term biological effects upon their livestock.

3.3.2.2 Other Landowners

Residents who would be living close to the new line were also strongly opposed to its construction, expressing concern about its visual and health effects and its impact upon the value of their property. They also expressed concern about the line's effect on radio and television reception and the irritation of noise from the corona.

Opposition from land or residential developers varied according to the extent of impact the line would have upon their plans for development. They, too, expected to incur considerable hidden costs from the line, since its construction would affect potential alternative values of the land rather than its current market value. Several developers predicted potential losses of hundreds of thousands of dollars and did not feel that there was any way that they would be compensated for the loss of potential profit.

TABLE 3-1

Population and Labor Force Characteristics

County	Population			Area (Sq. Miles)	1980 Population Density (Persons/Sq. Mile)	1980 Labor Force Characteristics			
	1960	1970	1980			Labor Force	Participation Rate[a] (percent)	Employment	Unemployment Rate (percent)
Montana									
Powell	7,002	6,660	6,958	2,336	3.0	3,328	47.8	3,131	5.9
Granite	3,014	2,737	2,700	1,733	1.6	1,138	42.1	1,052	7.6
Missoula	44,663	58,263	76,016	2,612	29.1	36,177	47.6	33,666	6.9
Lake	13,104	14,445	19,056	1,494	12.8	7,965	41.8	7,398	7.1
Sanders	6,880	7,093	8,675	2,778	3.1	4,029	46.4	3,655	9.3
Mineral	3,037	2,958	3,675	1,222	3.0	1,787	48.6	1,600	10.5
Idaho									
Shoshone	20,876	19,718	19,226	2,609	7.4	8,061	41.9	7,639	5.2
Kootenai	29,556	35,332	59,770	1,249	47.9	27,178	45.5	24,860	8.5
Bonner	15,587	15,560	24,163	1,733	13.9	10,092	41.8	9,002	10.8
Washington									
Spokane	278,333	287,487	341,835	1,758	194.4	146,600	42.9	135,400	7.6
REGIONAL TOTAL	422,052	450,253	562,074	19,524	28.8	246,355	43.8	227,403	7.7

Sources: U.S. Department of Commerce, Bureau of the Census, Census of Population, 1960, 1970, 1980; Idaho Employment Security Division, Bonner, Kootenai, and Shoshone Counties Labor Force Information, 1980; Montana Employment Security Division, Montana Employment and Labor Force, 1981; Washington Employment Security Division, Annual Average Washington State Resident Labor Force and Employment by Labor Area, 1980.

[a]Proportion of the population in the labor force.

TABLE 3-2

Sources of Information About the Construction of the Transmission Line

Respondent's Land Use Type	Mass Media	Information Sources Neighbors	Organizations	BPA	None
Nonfarm Residential	11	5	4	7	5
Irrigated Farmland	10	0	4	5	1
Nonirrigated Farmland	7	3	3	5	4
Other	1	0	0	2	1
Column Total	29	8	11	19	11
Percent of Total	33	9	12	21	12
N=50					

Source: Mountain West Research, Inc. 1981.

Note: Multiple sources of information could be reported by respondents. Thus, the total number of resources exceeds the number of respondents.

TABLE 3-3

Respondents' Perceptions of Adequacy of Information About the Transmission Line

Judgment of Adequacy	Number	Percent
Adequate	16	33
Not Adequate	27	56
Don't Know	5	10
N=48		

Source: Mountain West Research, Inc., 1981.

TABLE 3-4

Respondents' Attendance at Public Meetings

Respondent's Land Use Type	Had Attended	Had Not Attended
Nonfarm Residential	3	16
Irrigated Farmland	5	7
Nonirrigated Farmland	5	9
Other	3	1
Column Total	16	33
Percent of Total	33	67
N=49		

Source: Mountain West Research, Inc., 1981.

TABLE 3-5

Respondents' Interaction with BPA Personnel

Respondent's Land Use Type	Had Interacted	Had Not Interacted
Nonfarm Residential	3	16
Irrigated Farmland	7	5
Nonirrigated Farmland	1	13
Other	2	2
Column Total	13	36
Percent of Total	27	73
N=49		

Source: Mountain West Research, Inc., 1981.

TABLE 3-6

Proportions of Respondents who Favor or Oppose the Transmission Line

Respondent's Land Use Type	Favor Line	Oppose Line	Don't Know
Nonfarm Residential	4	7	7
Irrigated Farmland	5	4	3
Nonirrigated Farmland	2	7	2
Other	2	0	3
Column Total	13	18	15
Percent of Total	28	39	33
N=46			

Source: Mountain West Research, Inc., 1981.

TABLE 3-7

Respondents' Evaluation of the Necessity of a Transmission Line

Respondent's Land Use Type	Line is Necessary	Line is Not Necessary	Uncertain
Nonfarm Residential	6	5	5
Irrigated Farmland	8	3	2
Nonirrigated Farmland	4	6	4
Other	3	1	0
Column Total	21	15	11
Percent of Total	45	32	23
N=47			

Source: Mountain West Research, Inc., 1981.

TABLE 3-8

Respondents' Expectations of Construction Workers' Impact Upon Local Community

Respondents' Expectations	Number	Percent
Positive	10	21
Negative	12	26
None - Don't Know	25	53
N=47		

Source: Mountain West Research, Inc., 1981.

TABLE 3-9

Respondents' Major Concerns

Concern	Respondents Expressing Concern	
	Number	Percent of All Respondents
Biological-Health	28	56
Land Value	26	52
Degradation of Land	25	50
Visual-Aesthetic	22	44
Inconvenience	8	16
Right-of-way Maintenance	8	16
Safety	7	14
Exact Location	7	14
Access	3	6
Radio-Television Reception	2	4
Need	2	4
Corridor Impact	1	2
Wildlife	1	2
N=50		

Source: Mountain West Research, Inc., 1981.

TABLE 3-10

Proportion of Respondents Who Have Negotiated a Right-of-way Agreement

Respondents	Number	Percent
Have Negotiated a Right-of-Way Agreement	12	24
Have Never Negotiated a Right-of-Way Agreement	35	70
Inherited the Land	3	6
N=50		

Source: Mountain West Research, Inc. 1981.

TABLE 3-11

Respondents' Expectations of Land Value Impacts

Respondent's Land Use Type	Expectation			
	No Impact	Decrease Value	Severely Decrease Value	Uncertain
Nonfarm Residential	0	11	4	2
Irrigated Farmland	0	7	5	1
Nonirrigated Farmland	0	7	6	1
Other	0	2	2	1
Column Total	0	27	17	5
Percent of Total	0	55	35	10
N=49				

Source: Mountain West Research, Inc. 1981.

TABLE 3-12

Respondents' Preference for Line Placement on Public versus Private Land

Respondent's Land Use Type	Prefer Public Land	Prefer Private Land	Uncertain
Nonfarm Residential	11	2	4
Irrigated Farmland	10	0	3
Nonirrigated Farmland	11	0	2
Other	3	1	1
Column Total	35	3	10
Percent of Total	73	6	21
N=48			

Source: Mountain West Research, Inc. 1981.

TABLE 3-13

Route Selection: Using Existing Corridors versus Establishing New Corridors

Respondents' Preferences	Number	Percent
Use Existing Corridor	7	15
Establish New Corridor	16	35
Depends Upon Location	10	22
Uncertain	13	28
N=46		

Source: Mountain West Research, Inc., 1981.

TABLE 3-14

Route Selection: Minimizing Impacts on People versus Minimizing Construction Cost

Respondents' Preferences	Number	Percent
Minimize Impact Upon People	35	76
Minimize Construction Costs	0	0
Uncertain	11	24
N=46		

Sources: Mountain West Research, Inc., 1981.

TABLE 3-15

Respondents' Preferences for Public versus Private Ownership of Transmission Lines

Respondents' Preferences	Number	Percent
Public Ownership	5	11
Private Ownership	25	56
Uncertain	15	33
N=45		

Source: Mountain West Research, Inc., 1981.

TABLE 3-16

Anticipated Response to Selection of Respondents' Area as Least-impact Route

Respondents' Anticipated Response	Number	Percent
Support the Construction	1	2
Fight the Construction	35	69
Do Nothing	9	18
Uncertain	6	12
N=51		

Source: Mountain West Research, Inc., 1981.

TABLE 3-17

Extent of Opposition by Land Use Type

Land Use Type	Degree of Opposition		
	High	Medium	Low
Intensive Irrigation	X		
Purebred Livestock Breeding	X		
Residents within 500 feet	X		
Subdivision Developers	X	X	
Moderate Irrigation		X	
Residents Between 500 and 1,000 feet		X	X
Cattle Ranching and Farming		X	X
Residents Beyond 1,000 feet			X
Tree Farming			X
Confederated Tribes	X	X	

Source: Mountain West Research, Inc., 1981.

4. SHORT- AND LONG-TERM IMPACTS

4. SHORT- AND LONG-TERM IMPACTS

4.1 Introduction

Given the nature of large-scale transmission lines such as BPA's proposed Garrison-Spokane 500-kV Project, it is appropriate to separate socioeconomic effects into short-term (preconstruction and construction periods) and long-term (operations period) components. Chapter 2 identified and discussed the short- and long-term effects that might result from construction of the proposed project and presented the methods that would be applied in assessing those effects. This section presents the results of the assessments of the proposed project and its route alternatives in Montana, Idaho, and Washington.

Analysis of the proposed project's socioeconomic effects has revealed two types of impacts. The first type includes impacts whose magnitude is relatively constant for all route alternatives but whose geographic incidence would be dependent on the route alternative selected for construction. Included in this type of socioeconomic impact are the effects of the construction work force on local communities and construction and operations period economic and fiscal effects. These impacts are evaluated in the following sections:

4.2.1 Employment
4.2.2 Transient Lodging
4.2.3 Demographic
4.2.4 Income
4.2.5 Agriculture and Forestry
4.2.6 Fiscal

The second type of socioeconomic impacts includes those whose occurrence or magnitude is route-specific. Because of their particular nature, they have been incorporated into the socioeconomic ranking process and are described in Section 4.3, Social Impacts. Examples of this type of impact are the number of affected landowners, long-term economic and land use implications resulting from the operation of the project, and the project's perceived or actual effects on the local quality of life.

As described in greater detail in Section 4.3, this discussion is organized into seven sections:

4.3.2 Land Ownership (Public, Private, Reservation)
4.3.3 Landowner Density
4.3.4 Land Use Type
4.3.5 New Corridors
4.3.6 New Access Roads
4.3.7 Alienation
4.3.8 Special Considerations

The chapter concludes with a brief discussion of other proposed actions in the study area that might result in significant cumulative impacts.

4.2 Economic and Demographic Impacts

4.2.1 Employment

As noted in the project description, the proposed action's total labor requirements would be approximately the same for each alternative and would be limited to the 1984-1986 construction period. Because all maintenance tasks would be handled by currently employed BPA personnel, virtually no additional employment would be associated with the project's operations period.[1]

Although total labor requirements would not be affected by the alternative selected for construction, the specific location of employment opportunities would vary by alternative. This section summarizes the labor requirements presented in the project description and describes their effect on local employment opportunities.

4.2.1.1 Employment of Local Workers

The transmission line project construction work force would have a right-of-way clearing component and a transmission line and substation construction component. The transmission line and substation construction component would require about 3,785 person-months of labor and employ workers with specialized construction skills. Based on transmission line construction worker profile data (Mountain West Research, Inc. 1981) and interviews with transmission line contractors, it is estimated that nearly 100 percent of the construction work force will come from outside the project study area. In the Spokane-Coeur d'Alene area, where workers with some of the specialized skills are available, local residents are expected to fill about 10 percent of the transmission line and substation construction jobs. When this ratio is applied to the labor requirements that would be associated with Schedule 6 (which would have a reporting station in Coeur d'Alene) and the Bell substation in Spokane, the result is an estimate of twelve local jobs, as shown in Table 4-1.

The clearing component of the construction work force would require a total of 2,120 person-months and employ workers with timber industry skills. Because these skills are readily available in the study area, it is estimated that about 75 percent of the clearing work force would be composed of local workers. As shown in Table 4-2, clearing jobs would employ about 202 local workers for seven to eight months in mid-1984. The exact locations of these clearing jobs would depend on the plan selected for construction.

4.2.1.2 Employment of Nonlocal Workers

The proposed project's job opportunities for nonlocal transmission line clearing and construction workers and substation construction

[1]Operations period employment would consist of a maximum of two persons who would operate the Taft substation if this alternative were selected for construction (Sprague 21 September 1981:personal communication).

workers have been calculated in a similar fashion and are presented in tables 4-3 and 4-4. As shown in Table 4-3, the project would employ about 68 nonlocal clearing workers and 487 nonlocal transmission line construction workers. As shown in Table 4-4, substation construction would employ a total of about 95 nonlocal workers.

The above numbers represent the maximum number of nonlocal workers the project would employ. In actuality, some workers would probably perform more than one task on a schedule or perform the same task on more than one schedule. This practice would increase these workers' duration of employment but decrease the total number of nonlocal workers employed by the project.

4.2.1.3 Secondary Employment

In addition to this direct employment, worker and construction contractor purchases might induce secondary employment in the local retail and service sectors. It is expected that only a small portion of this potential secondary employment would be realized, due to the short duration and transitory nature of the project. Experience from other transmission line projects suggests that secondary employment typically takes the form of longer hours and harder work for existing employees rather than the employment of additional personnel (Mountain West Research, Inc. 1981).

4.2.2 Lodging/Housing Effects

The lodging impacts which would result from the project would mostly be beneficial in that transmission line construction workers would fill rooms and spaces that would otherwise remain vacant. The impact of construction workers' lodging expenditures is incorporated into the results of the income analysis described in Section 4.2.4. However, two types of adverse impacts could be expected to occur in certain areas: (1) an actual shortfall of lodging for nonlocal workers, and (2) conflicting demands for lodging between nonlocal workers and other transient populations, such as business travelers and summer tourists. These transient populations are an important market for retail trade and services in all study area communities. It is conceivable that a shortage of lodging for business travelers and tourists could influence the volume of their purchases from local retailers. The extent to which such an effect would be counterbalanced by the transmission line workers' own purchases is difficult to estimate.

When calculating lodging shortfalls, it was assumed that workers would live in hotels/motels and commercial campgrounds up to thirty miles away from their reporting stations. The actual work sites could be as far as thirty to forty miles from a reporting station, but the distances on this project would likely be much less, given the relatively short schedules per crew.

Tables 4-5 to 4-7 present individual places within commuting distance to reporting stations and substations by construction schedule and month. The tables compare the total supply of transient lodging units available to the total demand for lodging units by construction workers and derive the surplus or shortfall of units for each route alternative. As shown in the tables, lodging shortfalls are limited but do occur under all three plans. Construction Schedule 1, which is the same for all three plans, results in a shortfall in the Deer Lodge-Drummond area. In addition, Schedule 4 of both the Hot Springs and Plains plans causes a shortfall in the Plains-Thompson Falls area. Schedule 4 of the Taft plan causes a shortfall in the St. Regis-Superior area. Lodging shortfalls in the Deer Lodge-Drummond are forecast to occur from June to November 1984 and again from June to September 1985. The shortfalls result because of simultaneous construction worker and tourist demand and average sixteen persons per night over the two periods.

The shortfalls caused by Schedule 4 of the Hot Springs and Plains plans occur in the Plains-Thompson Falls area from June through November 1984. Although the shortfall patterns under the two plans are slightly different, they both average nine persons per night and never exceed fourteen persons per night.

Schedule 4 of the Taft plan results in lodging shortfalls in the St. Regis-Superior area from June through November 1985. The shortfalls average thirty-five persons per night over the six-month period.

To summarize, the lodging impacts associated with all three alternatives are generally positive because the supply of lodging units exceeds construction worker demand. However, some lodging shortfalls are forecast to occur under each alternative. Although the Hot Springs and Plains plans would minimize the shortfalls, the difference between them and the Taft plan would not be significant enough to justify designating a least-impact route from a socioeconomic perspective.

4.2.3 Demographic Impacts

The demographic or population impacts that would result from the construction of the Garrison-Spokane 500-kV Transmission Project were calculated following the methodology outlined in Section 2.2.2; the timing of these impacts is contingent upon the schedule proposed by BPA. The temporary nonlocal population influx generated directly by the project will vary by month and location. Surveys of other transmission line projects have produced evidence that few secondary employment opportunities are induced by transmission line construction. To the extent that such jobs are generated, they are likely to be filled by local people. Thus, the demographic impact estimates focus entirely on nonlocal construction workers and their accompanying families.

Nonlocal workers are likely to live in places where motel units, campground facilities, and other amenities are available. They are also likely to minimize the commuting distance between their local place of residence and reporting stations. The above factors were taken into account when deriving the peak population influxes presented in Table 4-8. The population influxes include the total population associated with nonlocal clearing workers and transmission line and substation construction workers. More detailed population influx estimates for all three plans are presented by community and month in tables 4-9 to 4-11.

The following sections summarize population influxes for all study area counties except Bonner County, which will not experience demographic impacts.

4.2.3.1 Powell County

As shown in Table 4-8, the population influxes in Deer Lodge and Garrison are not expected to vary by plan. The population influxes in Deer Lodge and Garrison would last from March 1984 to September 1985, when they would average fifteen and ten persons per month, respectively. The population influxes would peak in the late summer or early fall months in 1984, when both transmission line clearing and construction are under way. The peak population influxes in Deer Lodge and Garrison are forecast to be twenty-five and twenty persons, respectively.

4.2.3.2 Granite County

The population influxes in Drummond and Phillipsburg would not vary by plan. They would last from March 1984 to September 1985 and average forty-eight and six persons per month, respectively. The population influxes would peak in the late summer and early fall months of 1984. The population influxes in Drummond, the Schedule 1 reporting station for all plans, would be sixty-eight persons. The peak population influx in Phillipsburg would be eight persons.

4.2.3.3 Missoula County

The city of Missoula would serve as a reporting station for Schedule 2 work forces under all plans and for Schedule 3 work forces under the Plains and Taft plans. Because Missoula has an abundant supply of transient lodging facilities and offers many other amenities, it would probably serve as the local residence for all workers who would assemble at the Missoula reporting station(s). Under all three plans, the population influx in Missoula would last from March 1984 to September 1985. Under the Plains and Taft plans, which would use Missoula as a reporting station for schedules 2 and 3, the population influx would average 127 persons. The maximum population influx would be 190 persons. Under the Hot Springs plan, which would use Missoula as a reporting station only for Schedule 2, the average population influx would be 53 persons and the peak influx would be 95 persons.

4.2.3.4 Lake County

The Lake County communities of St. Ignatius, Ravalli, Arlee, Ronan, and Polson would be affected only if the Hot Springs plan were constructed. Population influxes for all five of the communities would last from March 1984 to September 1985 and peak during the late fall and early winter months of 1984. The average population influxes in St. Ignatius, Ravalli, and Arlee would be 25, 13, and 9 persons, respectively. Both Ronan and Polson would experience average population influxes of 12 persons. Peak population influxes in St. Ignatius, Ravalli, and Arlee would be 40, 20, and 15 persons, respectively. In Ronan and Polson, peak population influxes would be about 18 persons.

4.2.3.5 Sanders County

The Sanders County communities of Plains, Thompson Falls, Paradise, Trout Creek, and Noxon would be affected only if the Hot Springs or Plains plan were constructed. The population influxes in all five communities would begin with clearing of the Schedule 4 right-of-way in March 1984 and last through the completion Schedule 4 construction in August 1986. In Plains, Thompson Falls, and Paradise, the population influxes over this period would average 11, 32, and 3 persons, respectively. In Trout Creek and Noxon, they would average 2 and 3 persons, respectively. In Plains, the peak population influx of 32 to 35 persons would be present only in June 1985. In Thompson Falls, the Schedule 4 reporting station, the peak population influx of 63 to 75 persons would be present from June to November 1985. The Paradise, Trout Creek, and Noxon peak population influxes of 6, 5, and 6 persons, respectively, would also be present from June to November 1985.

4.2.3.6 Mineral County

The Mineral County communities of St. Regis, Superior, and Haugan would only be affected if the Taft plan were constructed. The population influxes would be present from March to October 1984, when Schedule 4 would be cleared, and again from March 1984 to September 1986, when the Schedule 4 transmission line would be constructed. Over this period, the average population influxes in St. Regis, Superior, and Haugan would be 35, 6, and 6 persons, respectively. The peak population influxes in St. Regis (the Schedule 4 reporting station), Superior, and Haugan would be 78, 15, and 13 persons, respectively. All of the peak population influxes would be present during the May to November 1985 period.

4.2.3.7 Shoshone County

The Shoshone County communities of Mullan, Wallace, Osborn, Kellogg, Smelterville, and Pinehurst would be affected under Schedule 5 of all plans. In addition, Mullan, Wallace, and Kellogg would experience some population increases from Schedule 4 if the Taft plan were constructed. The population influxes under all plans would be present from March to October 1984 and again from March 1985 to June 1986. The peak population influxes would occur in June 1985. In Mullan, Wallace, and Osborn, the peak population influxes would be 5, 13, and 10 persons, respectively. In Kellogg (the Schedule 5 reporting station), Smelterville, and Pinehurst, they would be 44, 10, and 12 persons, respectively. In Kellogg, the average population influx would be 19 persons. Average population in the other communities would be lower than their peak population influxes of 5 to 13 persons. For more information on cumulative population influxes that could result in Shoshone County from the Washington Water Power Company alternatives, see Appendix A.

4.2.3.8 Kootenai County

In Kootenai County, Coeur d'Alene would serve as a reporting station for Schedule 6 work forces under all plans. Because Coeur d'Alene has an abundant supply of transient lodging facilities and offers other amenities as well, it would probably serve as the local residence for all workers who assembled at the Coeur d'Alene reporting station. Under all three plans, the population influx in Coeur d'Alene would be present from March to October 1984 when the Schedule 6 right-of-way would be cleared and again from April 1985 to June 1986 when the Schedule 6 transmission line would be cleared. The clearing period population influx would remain stable at 22 persons. The construction period population influx would average 63 persons and peak at 99 persons in July 1985.

4.2.3.9 Spokane County

In Spokane County, the city of Spokane would serve as the local residence of all nonlocal workers who participate in the Bell substation expansion. This expansion is scheduled to take place in June through October 1985 and March to July 1986. Spokane's average population influx would be 19 persons, and its peak population influx would be 23 persons.

4.2.4 Income Effects

The project's income effects would result from two major sources -- construction payroll and local purchases of goods and services required for construction. Payroll expenses will increase local income directly when it is paid to local workers who were previously unemployed. Local income will be increased indirectly when local and nonlocal construction workers make local expenditures for goods and services. It is assumed that workers will make expenditures in the counties where they stay.

4.2.4.1 Local and Nonlocal Payroll Effects

Following the methodology outlined in Section 2.2.4, the income effects analysis applied skill-specific wage rates to the construction labor requirements presented in Section 1.2.6. The results of the employment and demographic sections were then used to allocate income to local and nonlocal workers in each county for every plan. The results of these calculations are presented in Table 4-12.

4.2.4.2 Local Expenditures of Workers: Multiplier Effects

The induced or secondary income that would result from construction worker expenditures was calculated by multiplying all of the local payroll and 40 percent of the nonlocal payroll[1] by the induced income multipliers shown in Table 2-5. The total income of the payroll is the sum of (1) direct income, which includes the local payroll plus 40 percent of the nonlocal payroll, and (2) induced income, which includes the income effects of expenditures in local and nearby counties. The direct, induced, and total income under each plan are presented in Table 4-13.

The largest income impact -- over $8 million -- would affect Missoula County under the Plains and Taft plans. This income effect is

[1]Empirical evidence indicated that nonlocal transmission line construction workers in the Pacific Northwest spent 40 percent of their income locally (Mountain West Research, Inc. 1981).

attributable to Missoula's status as a residential location for schedules 2 and 3 workers and to the county's role as a regional trade center for all of western Montana. Spokane County, another regional trade center, would receive over $5 million of total income, despite the fact that it would only receive $.3 million in direct income. As shown in Table 4-13, the project's total income effect on the region under all three plans would be approximately $32 million.

4.2.4.3 Local Expenditures of Construction Contractors

Income will also be created by the local purchases of materials and services by construction contractors. When the 5 percent ratio derived in Section 2.2.4.3 is applied to the estimated cost of the three plans in each state, the result is the figures indicated opposite "purchases" in Table 4-14.

As shown in Table 4-14, the total income effect of contractor purchases is expected to vary by plan but will generally fall in the $12 to $14 million range. Although these figures are substantial, the increase in economic activity would be shortlived and is not expected to generate any other employment or demographic effects.

4.2.4.4 Total Income Effect

When the payroll and construction contractor local purchase effects are combined, they yield the total income effect of the project. The total income effects are shown by state in Table 4-14 and summarized below.

Plan	Total Income Effect
Hot Springs	$44,277,000
Plains	44,404,000
Taft	46,546,000

The sums implied by this analysis are very close, but the total income effect would be maximized by the Taft plan.

4.2.5 Agriculture and Forestry Productivity

The proposed project would have both short- and long-term economic effects on agricultural and forestry productivity. In the case of agriculture, short-term productivity losses would result during the construction period, when cropland and rangeland would be taken out of production. Long-term agricultural productivity losses would result from the installation of tower bases and from the transmission line facilities' interference with agricultural activities.

In the case of forestry, short-term effects would consist of timber removal for a 125-foot-wide right-of-way and access roads. Long-term economic productivity effects would include loss of these lands' productive capacity for timber growth and the transmission line facilities' potential interference with timber management practices. At the same time, the installation of a corridor and access roads could also facilitate timber management practices and fire control in some locations. As noted in Section 2.2.5, this analysis has encompassed corridor productivity efforts but has not considered access road productivity effects because they are both positive and negative and because the roads would eventually be installed by the Forest Service.

The economic consequences of the project's requirements of agricultural and forested land during its construction and operations phases would be negligible. This conclusion results from two facts:

1) The total amounts of agricultural and forested land that would be affected are not very large.

2) In principle, right-of-way acquisition payments and land purchases made by BPA would fully compensate landowners for temporary productivity losses and inconveniences.

Following the methodology outlined in Section 2.2.5, this section quantifies the loss in productive capacity of agricultural and forested land for each route alternative. Section 4.2.5.1 will present results of the cropland and rangeland analyses, and Section 4.2.5.2 will present results of the forestry analyses.

4.2.5.1 Agricultural Productivity Losses

Cropland: short-term effects

Assuming that only one season's crop will be affected by transmission line construction,[1] the total value of lost production would range from about $119,000 to $317,000 (see Table 4-15). The values of productive capacity losses for the least-impact routes are presented below.

Plan	Total Value of Productive Capacity Lost
Hot Springs	$229,000
Plains	$186,000
Taft	$121,000

The sums implied by this analysis are not large, but production losses would be minimized by the least-impact Taft alternative.

Cropland: long-term effects

When the assumptions stated in Section 2.2.5.1 are applied to the route alternative that crosses the most productive agricultural land (G-HS-5, HS-B-2), the annual loss in productive capacity for the entire length of the line would be about $4,863. Assuming a thirty-nine-year project life and an annual discount rate of 10 percent, the present value of this annual sum would be about $47,448 over the life of the line. Because this "worst-case" example is relatively insignificant

[1]This is a reasonable assumption because it is likely that, in some areas, construction will take place before sowing or after harvesting, and no crop losses will be experienced. However, in other areas, should construction activities extend into two seasons, two crops may be lost.

when compared to short-term effects, the present values of long-term productive capacity losses for the other route alternatives are not presented here.

Rangeland: short-term effects

The loss in productive capacity for rangeland affected by the construction of the project would not be significant, even under conservative assumptions.

When the assumptions outlined in Section 2.2.5.1 are applied to rangeland acreages in the rights-of-way for each of the alternative routes, the estimated construction period losses range from $6,000 to $31,000. The estimated productivity losses for the least-impact routes of each plan are presented below.

Plan	Total Value of Productive Capacity Lost
Hot Springs	$27,000
Plains	$15,000
Taft	$ 6,000

Again, the sums implied by this analysis are not large, but production losses that might occur would be minimized by the least-impact Taft alternative.

Rangeland: long-term effects

In terms of land taken out of production, the short-term effects would be greater than the long-term effects. Since the short-term effects presented above would be negligible, the loss of long-term productive capacities was not calculated.

4.2.5.2 Forestry Productivity Losses

Short-term effects

The short-term economic effects on forestry would consist of the difference between the potential maximum future value and the current value of timber in the rights-of-way. This analysis has estimated the current value of timber in the rights-of-way to provide order-of-magnitude estimates that can be used to compare route alternatives.

When the assumptions outlined in Section 2.2.5.2 are applied to the forest land acreages in the rights-of-way for each of the route alternatives, the estimates of total value of timber in the rights-of-way range from $2.7 to $3.7 million (see Table 4-16). The total values of timber in the rights-of-way for the least-impact routes of each plan are presented below.

Plan	Total Value of Timber in Right-of-way
Hot Springs	$3,225,000
Plains	3,435,000
Taft	3,682,000

These estimated values are very close, but the value of timber in the right-of-way would be minimized by the least-impact Hot Springs alternative.

Long-term effects

When the assumptions outlined in Section 2.2.5.2 are applied to acreages in the rights-of-way for each of the route alternatives, the result is the total net present value figures presented in Table 4-17. The figures are rough approximations, but they facilitate a comparison of timber resources that would be impacted by the alternative routes.

As shown in Table 4-17, the net present values of expected timber growth in the rights-of-way of the proposed alternatives vary from $153,000 to $256,000. The net present values for the least-impact routes under each plan are presented below.

Plan	Net Present Value of Expected Timber Growth
Hot Springs	$183,000
Plains	224,000
Taft	245,000

The sums implied by this analysis are not large, but they would be minimized by the least-impact Hot Springs alternative.

4.2.6 Fiscal Impacts

Because BPA is a tax-exempt federal entity and is not subject to property or corporate income taxes, the proposed project's fiscal impacts would be limited to personal income and sales taxes. The personal income taxes would be paid on construction worker income and on income induced by construction worker and construction contractor expenditures. Sales taxes would be paid on local expenditures made by construction workers, construction contractors, and others who spend project-related induced income. This section will estimate personal income and sales taxes by state for each of the three alternative plans.

Although BPA would not pay taxes on any of its transmission facilities, the property tax issue cannot be totally ignored. Local residents have expressed concern over BPA's tax-exempt status and the revenues that would be foregone if the line is constructed by a federal agency rather than a private utility. Consequently, this section will also present results of a revenues foregone analysis that determined property taxes that would be paid if the transmission project were to be constructed by a private utility.

4.2.6.1 Personal Income Taxes

Personal income taxes are assessed in Montana and Idaho but not in Washington. Following the methodology outlined in Section 2.2.8, the respective Montana and Idaho average personal income tax rates of .032 and .0209 were applied to the construction wage and induced incomes from Table 4-14. These calculations of the personal income tax effects are presented in Table 4-18. As shown in the table, the incidence of personal income tax effects is slightly different for the Taft plan, but the total personal income effects equal $750,000 under all three plans.

4.2.6.2 Sales Taxes

Sales taxes are assessed in Idaho and Washington but not in Montana. In this analysis, sales tax revenues have been divided into a contractor purchases component and a construction worker expenditure and induced income effect component. When the 3 percent Idaho state sales tax is applied to the contractor purchases shown in Table 4-14, the result is the sales tax effects presented in Table 4-19. As shown, the sales tax effects are very similar for all three alternatives. Table 4-20 presents the sales tax revenues that would be paid on contractor purchases in Washington if BPA were not a federal entity. Hence, these sales tax estimates can be considered revenues foregone.

The estimated sales tax revenues from the construction worker and induced income expenditure effects in Table 4-14 were calculated in a similar fashion. As shown in Table 4-21, these effects would average about $300,000 in Idaho and about $376,000 in Washington. The total effect in both states would be about $669,000.

4.2.6.3 Property Tax Revenues Foregone[1]

This section summarizes the results of the short- and long-term revenues foregone analysis. The short-term analysis derives first-year revenues foregone and compares them to actual 1979 revenues for each county. The long-term analysis uses two depreciation schedules to present a high and low estimate of the total revenues that would be foregone during the project's thirty-nine-year life.

Short-term effects: first-year revenues foregone

Because the proposed project would be constructed and energized over a period of several taxable years, first-year revenues foregone would not occur in all of the affected counties in any one year. However, in order to simplify this analysis, it was assumed that the completion of transmission line and substation facilities would coincide with the start of a taxable year. In addition, the analysis used BPA's September 1981 cost estimates, which differed slightly from the more recent cost estimates presented in Section 1.2.4.

Table 4-22 presents the first-year revenues foregone that would result from BPA's tax-exempt status and demonstrates the importance of the public/private sponsorship distinction. If the Garrison-Spokane 500-kV Transmission Project were sponsored by a private utility, the total first-year property tax liabilities for least-impact routes would range from $3,888,000 for the Hot Springs plan to $5,450,000 for the Taft plan. If the project were not tax-exempt, it would result in substantial revenue increases in several counties. The least-impact Hot Springs plan's first-year revenues would represent 12.7 and 17.5 percent

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[1]The analysis presented in this section relies on August 1981 cost estimates that are different from the January 1982 cost estimates presented in Section 1.2.4. Because the Taft cost estimates have been substantially reduced, this section overstates revenues foregone under the Taft plan.

increases over the 1979 revenues of Granite and Sanders counties, respectively. The least-impact Plains route would result in 13.6 and 13.9 percent increases in these same two counties. The least-impact Taft plan's first year revenues would represent 25.5 and 77.1 percent increases over the 1979 revenues of Granite and Mineral counties, respectively. In terms of absolute value, the largest possible revenue foregone in any single county would be $2,637,000. This revenue would be foregone under the least-impact Taft plan in Mineral County, where a $19-million substation and about sixty-four miles of transmission line would be constructed.

Long-term revenues foregone

Following the straight-line and constant value scenario methodologies outlined in Section 2.2.8, Table 4-23 presents the cumulative long-term revenues foregone for the least-impact route of each plan. The figures in the table include cumulative property taxes that would be paid on both transmission line and substation facilities, which were assumed to have taxable lives of thirty-nine and twenty-eight years, respectively. Under the straight-line depreciation scenario, the cumulative revenues foregone by all counties range from $68.4 million for the Hot Springs plan to $103.6 million for the Taft plan. Under the constant value scenario, the cumulative revenues foregone range from a total of $145.6 million for the Hot Springs plan to $201.7 million for the Taft plan.

In actuality, tax assessors would not strictly adhere to either of these scenarios. Rather, a more complex valuation process resulting in tax revenues between the values indicated under the two scenarios in Table 4-23 is more likely to occur.

4.3 Social Impacts

4.3.1 Introduction

The results of the community and corridor resident survey (see Section 2.1.1.2) and the field interviews in the project area (see Section 3.3.1) indicate that previously affected corridor residents' perceptions of impacts correspond very closely with the expectations of impacts expressed by residents along the potential Garrison-Spokane corridors. Both groups expressed frustration or concern about their ability to negotiate right-of-way agreements and influence final center line and tower siting decisions. They exhibited high levels of concern about the line's potential health and safety, land values, and visual effects. Farmers and ranchers in both surveys expressed further concerns about transmission line interference with irrigation equipment, farm machinery, and land use flexibility. Neither group felt that construction workers had or would have negative effects on the communities in which they resided during the construction period.

Because neither of the above surveys used statistical sampling techniques, their results cannot be specifically compared, and confidence cannot be placed in the fact that they represent the actual concerns of all residents in the respective corridors. However, because the general points and conclusions of both surveys are so similar, their results do serve as an excellent means of identifying potential impacts from the Garrison-Spokane line and have been incorporated into the socioeconomic impact analysis.

The following section presents the analysis of the social consequences of the siting, construction, and operation of each of the three plans. As discussed in Chapter 2, analysis of available information concerning the relationship between project characteristics and social effects resulted in the development of seven measures for use in comparing the direction (beneficial or adverse), extent (local or regional), and magnitude (slight, moderate, considerable) of the social effects of locating the line along each alternative route. As noted in that discussion, much of the information necessary to quantify the actual consequences of line construction are not available. In spite of the large volume of research, there is continuing controversy over the existence and/or magnitude of transmission line effects on property values and health, and over the inconvenience costs associated with living near the line. As a result, these topics are included in this section since they must be treated in a qualitative manner and because their discussion involves anticipation, perceptions, and attitudes.

The organization of the following sections has been influenced by the characteristics of the particular route alternatives being compared. The difference between the Taft and the Hot Springs and Plains alternatives that dominates the social analysis is the extent to which the route passes through public vs. private land. As will be shown in Section 4.3.2, this land ownership distinction captures a major proportion of the social concerns associated with the proposed action. Because of this clear discrimination between the routes, the land ownership measure is presented first.

The land ownership section is followed by sections on landowner density, land use types, new corridors, and new access roads. The latter two provide more ambiguous measures because they are associated with somewhat different social consequences on private rather than public land. The final sections discuss social effects that have been termed "alienation" and "special considerations." These are more location-specific than the previous measures, which addressed the more generic relationships between transmission line characteristics and social consequences.

In each of the following sections, a particular social effects measure is described, then the criteria used to forecast the significance of the impact are presented. These criteria rely on a standardized format that was used by all members of the interdisciplinary team in the route selection process. As shown below, the criteria enable each impact to be described in terms of its extent, direction, and magnitude. For example, in the following sections, an impact that considered local, adverse, and moderate is represented by the symbol "LA2."

Component	Measure of Significance	Symbol
Direction	Beneficial	B
	Adverse	A
Extent	Local	L
	Regional	R
Magnitude	Slight	1
	Moderate	2
	Considerable	3

4.3.2 Land Ownership

Given the particular characteristics of land use and residential patterns along the Garrison-Spokane 500-kV project alternatives, the miles of private and reservation land crossed by the line provides an effective aggregate measure for comparing the alternatives' potential to have social effects on local residents. Because of the differences in the use of public and private land in the study area, locating the proposed line on public land would have different and generally lesser effects than would locating it on private land. This results both from a difference in the nature of the effects caused by siting a transmission line on public vs. private land and from a difference in the number of persons affected and the duration of the exposure. On public land, the principal social effects would be felt by local recreationists who are sensitive to the presence of transmission line corridors and access roads in a natural setting. On private land, the effects are more complex and include (but are not limited to) long-term economic, visual, and inconvenience effects on farmers, ranchers, private timber resource managers, and local landowners.

Siting the line on private land substantially increases the number of people who are directly affected by the line through (1) the negotiations required to obtain right-of-way agreements, (2) dealings with construction and maintenance crews, (3) day-to-day exposure to the physical presence of the line, and (4) its disruption of agricultural practices, constraint of land use options, and provocation of concern over long-term effects on health, safety, and land values. These factors constitute the principal social effects of transmission line siting although, as discussed previously, other aspects are also important for more refined understanding of potential social consequences of line siting.

In addition, utilization of this measure also captures the widespread opinion of area residents that public agencies should use public land for their projects. Many local residents have stated that, because BPA is a tax-exempt federal agency and will not contribute to the local tax base, it should utilize public land for siting the Garrison-Spokane line to the extent possible in order to minimize the adverse effects on private landowners and local governments.

Consequently, although the amount of privately-owned and reservation land affected does not indicate the potential for each specific type of impact on people, it does serve as an effective measure for comparing the various alternatives' aggregate effects on local residents' lives and lifestyles.

Table 4-24 presents the miles of public, reservation, and private land that would be crossed by each route alternative. When comparing route alternatives, the impacts described above would probably be minimized by the route that crosses the fewest miles of private land. The miles of private and reservation land crossed by the least-impact route(s) of each plan are summarized below.

Plan	Alternative	Private and Reservation Land
Hot Springs	G-HS-1, HS-B-1	176.3
	G-HS-2, HS-B-1	180.8
Plains	G-P-1, P-B-1	129.2
	G-P-2, P-B-1	133.7
Taft	G-T-9, T-B-4	84.7

The amount of private and reservation land crossed by the least-impact Taft alternative is well below the amounts crossed by the least-impact Hot Springs and Plains alternatives.

4.3.2.1 Significance

In all cases, the significance of the miles of private and reservation land crossed is considered local and adverse. In order to determine the magnitude of the impact, the following rules were used:

Magnitude	Private and Reservation Land's Proportion of Segment Length
Slight	Less than 34 percent
Moderate	At least 34 percent but less than 67 percent
Considerable	67 percent and higher

These criteria have been applied to each route alternative, and the significance of the potential impact is shown in the right-hand column of Table 4-24. The significance of the least-impact route(s) of each plan is summarized below.

Plan	Alternative	Percent Private or Reservation Land	Significance
Hot Springs	G-HS-1, HS-B-1	73	LA3
	G-HS-2, HS-B-1	75	LA3
Plains	G-P-1, P-B-1	56	LA2
	G-P-2, P-B-1	58	LA2

Plan	Alternative	Percent Private or Reservation Land	Significance
Taft	G-T-9, T-B-4	37	LA2

The percent of private or reservation land crossed varies from 37 percent for the least-impact Taft route to 75 percent for one of the least-impact Hot Springs routes. All of the routes would have local, adverse effects. The Hot Springs routes' effects would be of considerable intensity, and the Plains and Taft routes' effects would be of moderate intensity.

4.3.3 Landowner Density

Although the density of landowners along an alignment does not measure the potential for any specific type of socioeconomic impact, it serves as an indicator of the potential effects of a transmission line project on a local population. Landowner densities reflect the number of properties and number of persons exposed to the project on a daily basis. Thus, they offer a means of assessing the social sensitivity of areas along the transmission line route alternatives.

During the local route alternative ranking process, information collected from field interviews and observations and aerial photographs was used to estimate landowner densities. In this process, every segment was assumed to have a local adverse effect on landowners in the region it would traverse. In most cases, these impacts were considered slight because landowner densities were low (e.g., on forest-, range-, and agricultural land). Impacts were considered moderate if the line would cross rural subdivisions or pass within sight of local communities. Impacts were judged considerable when the line would pass through or immediately adjacent to urban subdivisions, such as the Rattlesnake Valley north of Missoula.

Whereas the information used above was adequate to distinguish between landowner densities in local areas, it was not deemed adequate to differentiate landowner densities along routes that were 50 to 250 miles in length, as were the area route alternatives and plan alternatives. In the absence of more specific data on landowner densities along each route alternative, which would have allowed reliable quantification of this measure, it was decided to incorporate the social effects associated with landowner densities into the inconvenience by land use type analysis presented in the next section.

4.3.4 Inconvenience by Land Use Type

Inconveniences to individual residents and landowners would vary by type of land use. Residents of urban/residential areas and areas of dispersed development would be affected by the visual impacts as well as any perceived health and safety effects of the line. They would also be subject to the possible effects of the energized line on television and radio reception and the nuisance of corona-associated noise. Although transmission line effects on property values have not been proven, it was mentioned by local landowners as an issue of concern. Ownership density in urban/residential areas is substantially greater than for other land use types. As discussed previously, this aspect is not addressed elsewhere and is therefore included here by adding additional weight to the adverse impacts on urban/residential land. In addition to the factors mentioned above, farmers of irrigated cropland would suffer inconvenience from tower interference with the operation of irrigation systems and farm equipment, from problems resulting from line maintenance activities, from line interference with aerial spraying, and possibly from employee resistance to working around the lines. Ranchers have expressed concern about the inconvenience of keeping stock away from construction activities and about transmission lines' long-term biological effects on animals. Owners of timberland and tree farmers were worried that additional corridors and access roads would lead to increased public access and new management problems for their land. To account for these effects and concerns, a weighting system to evaluate inconvenience by land use type for each route segment was developed.

Land Use Type	Inconvenience Weight
Urban/residential	4
Irrigated cropland	4
Dispersed development	3
Nonirrigated cropland	2
Rangeland	1
Forest land	1

To determine the score for this factor, the number of miles of a particular type of land use for each alternative was multiplied by the respective inconvenience weights. These products were summed to give an overall rating of the amount of inconvenience that would be associated with the particular route alternative.

When comparing two route alternatives, the alternative with the lowest inconvenience score would have the least overall potential for adverse impacts due to inconvenience. The inconvenience scores for each of the route alternatives are shown in Table 4-25 and summarized below.

Plan	Alternative	Inconvenience Score
Hot Springs	G-HS-1, HS-B-1	358.8
	G-HS-2, HS-B-1	359.4
Plains	G-P-1, P-B-1	337.1
	G-P-2, P-B-1	337.4
Taft	G-T-9, T-B-4	315.1

The range of inconvenience scores is from 315 to 359. This impact would be minimized by the least-impact Taft alternative, which has a score of 315.1.

4.3.4.1 Significance

For all cases, land use inconveniences would be local and adverse. The magnitude of the impact was determined using the following criteria:

Magnitude	Impact Rating Divided by Route Length
Slight	Less than 1.5
Moderate	1.5 or more, but less than 2.5
Considerable	2.5 or more

When these criteria were applied to the least-impact route(s) under each plan, they resulted in the significance levels shown below.

Plan	Alternative	Impact Rating Divided by Route Length	Significance
Hot Springs	G-HS-1, HS-B-1	1.50	LA2
	G-HS-2, HS-B-1	1.50	LA2
Plains	G-P-1, P-B-1	1.46	LA1
	G-P-2, P-B-1	1.45	LA1
Taft	G-T-9, T-B-4	1.37	LA1

The significance levels fall in the 1.37-to-1.5 range. Although these numbers imply that all of the routes are very close in terms of significance of impact, the criteria outlined above imply "slight" magnitude levels for the Plains and Taft routes and "moderate" magnitude levels for the Hot Springs routes, with the Taft route having the lowest intensity score.

4.3.5 New Access Roads

New access roads can have negative impacts on both private landowners and users of public land. Impacts on private landowners include land taken out of production, interference with agricultural practices, erosion, and increased potential for trespass, littering, and property damage. These problems can be exacerbated when trespassers or transmission line maintenance personnel interfere with agricultural gate management practices. In the study area, access road impacts on users of public land largely concern recreationists who may be particularly sensitive to the environmental and psychological presence of access roads in a forest setting. Other specific concerns regarding increased access roads on public roads include opening up natural environments to increased vehicular use and hunting, and environmental damage due to erosion. Although the siting of new access roads would have adverse impacts on both public and private land, the extent of those impacts are potentially greater on private land.

BPA has provided data on the miles of new access roads that would be required for each mile of all route alternatives. These estimates vary from one to about four miles of new access roads for each mile of route. The new miles of access road that would be required for the least-impact route(s) of each plan are presented below. Unfortunately, data were not available to allow determination of the new access road requirements on public and private land separately. Consequently, it was not possible to provide quantified comparisions between segments or routes in terms of public and private land affected. Only aggregate data were available.

Plan	Alternative	New Miles of Access Road
Hot Springs	G-HS-1, HS-B-1	461.5
	G-HS-2, HS-B-1	452.6
Plains	G-P-1, P-B-1	576.0
	G-P-2, P-B-1	567.1
Taft	G-T-9, T-B-4	459.8

As shown, new access road requirements for the least-impact routes would range from 452.6 miles for the Hot Springs route G-HS-2, HS-B-1 to 576.0 miles for the Plains route G-P-1, P-B-1.

4.3.5.1 Significance

In all cases, the impacts associated with new access roads were considered to be local and adverse. In order to determine the magnitude of the impact, the following rules were used:

Magnitude	New Access Road Miles Divided by Route Length
Slight	Less than 1.5
Moderate	1.5 or more, but less than 3.0
Considerable	3.0 or more

When these criteria were applied to the least-impact route(s) under each plan, they resulted in the significance levels shown below.

Plan	Alternative	New Access Road Miles Divided by Route Length	Significance
Hot Springs	G-HS-1, HS-B-1	1.92	LA2
	G-HS-2, HS-B-1	1.88	LA2
Plains	G-P-1, P-B-1	2.49	LA2
	G-P-2, P-B-1	2.44	LA2
Taft	G-T-9, T-B-4	2.00	LA2

As shown, the significance levels fall in the 1.88-to-2.49 range. The scores imply increasing levels of significance for the Hot Springs, Taft, and Plains routes. Given the high proportion of public land crossed by the Taft route, it is evident that a substantially higher proportion of the new access roads required for this route than for the other two least-impact plans would be on public land. Consideration of this factor would lessen the distinction between the Taft plan and the two others that are shown in these calculations. Even without this adjustment, all of the scores fall into the same intensity category, implying that for all routes, new access roads would have impacts that are local, adverse, and moderate in significance.

4.3.6 New Corridor Development

This factor weighs the negative effects of establishing a new corridor against the negative effects of increasing the density of facilities within existing corridors. In some places, the line would run through areas that have no other transmission line, road, railroad, or pipeline corridors. In other places, it would parallel corridors composed of different combinations of facilities. In general, establishing a corridor or increasing the density of facilities in existing corridors would have negative aesthetic and inconvenience effects on adjacent property owners and viewers.

If a new corridor is established, the total number of people affected by corridor-type developments of any type will increase. If a new transmission line is located parallel to an existing corridor, landowners currently affected by the corridor may suffer further inconvenience and loss of aesthetic quality. Hence, locating a line along existing corridors will concentrate the negative effects on fewer people.

Based on information collected during interviews with local residents and from the Transmission Line Construction Worker Profile and Community/Corridor Impact Resident Survey (Mountain West Research, Inc. 1981), it was determined that incremental social effects on local residents would be minimized if new transmission lines were located in or adjacent to corridors that contain other linear facilities. The incremental social effects increase as the number of other facilities in the corridor decrease and are maximized when the new line establishes a new corridor.

To account for these social effects, a weighting system was developed to evaluate new corridor development effects for each route alternative. The following impact weights were assigned to each type of corridor development.

Corridor Development	Impact Weight
New line would be added to:	
No existing linear land use	3
1-2 existing linear land uses	2
3 or more existing linear land uses	1

For each alternative, the number of miles of a particular type of corridor development was multiplied by the respective impact weights. When summed, the products result in an overall impact rating of the corridor development effects that would be associated with the particular route alternative.

The results of the calculations for each route alternative are summarized in Table 4-26. When comparing route alternatives, the alternative with the lowest "impact score" would have the least overall potential for new corridor types of impact. The impact scores of the least-impact route(s) of each plan are summarized below.

Plan	Alternative	New Miles Impact Score
Hot Springs	G-HS-1, HS-B-1	572.1
	G-HS-2, HS-B-1	561.9
Plains	G-P-1, P-B-1	599.3
	G-P-2, P-B-1	589.1
Taft	G-T-9, T-B-4	645.8

As shown, new corridor development would be minimized by the Hot Springs route G-HS-2, HS-B-1, and maximized by the Taft route.

4.3.6.1 Significance

The new corridor effects were considered local and adverse in all cases. The magnitude of the effect was determined by the following criteria.

Magnitude	Impact Score Divided by Length of Alternative
Slight	Less than 2
Moderate	More than 2 but less than 2.5
Considerable	2.5 or more

When these criteria are applied to the least-impact routes, they result in the significance levels shown below.

Plan	Alternative	Significance
Hot Springs	G-HS-1, HS-B-1	LA2
	G-HS-2, HS-B-1	LA2
Plains	G-P-1, P-B-1	LA3
	G-P-2, P-B-1	LA3
Taft	G-T-9, T-B-4	LA3

According to the criteria specified above, the Hot Springs routes would be considered to have impacts of local, adverse, and moderate significance. The Plains and Taft routes would have impacts of local, adverse, and considerable significance.

A related consideration regards the ability to minimize cumulative as well as incremental effects of future transmission lines. This factor was not included as part of the previous discussion because it is not a result of a particular proposed action. Nevertheless, consideration of this aspect has implications for the assessment of the new corridor factor described above, since the route selected would have clear consequences for the impacts of future lines. Field interviews indicated that property owners generally felt adversely affected by the need to participate in the siting process, to negotiate right-of-way agreements, or to have an additional line cross their land. In addition, several of the valleys along the proposed Hot Springs and Plains plans would not physically accommodate an additional line.

Consequently, consideration of this objective from a social perspective would indicate a preference for the Taft alternative. Since this contradicts the analysis presented above, it may moderate the weight given to the new corridor factor in overall route selection.

4.3.7 Alienation

The construction of a project to which there is genuine opposition can cause its opponents to become frustrated and alienated. As documented in area newspapers and BPA public involvement meeting transcripts, several aspects of the proposed project are controversial. Some of these aspects involve the entire project, and some are specific to particular places along the various route alternatives. The land ownership, land use inconvenience, access roads, and new corridor development analyses have attempted to account for social effects that would result from construction of the entire project. This section accounts for a more site-specific consideration of the alienation that could result from the transmission line siting.

The rating of alienation effects was based on interviews with residents living along the proposed segments and representatives of formally established interest groups and was supplented with information obtained from newspapers and transcripts of the public involvement meetings and from the Transmission Line Construction Worker Profile and Community/Corridor Resident Impact Survey: Final Report (Mountain West Research, Inc. 1981). Because alienation can be caused not only by the anticipated effects of the line but also by the manner in which the siting and construction process proceeds, this rating may be unstable over the preproject period. Any changes are likely to be in the direction of increased alienation, since the rating is based on concerns that were voiced during the field work, when many property owners may not have been aware of or paying attention to the location of potential rights-of-way.

Before describing the proposed project's alienation effects, it is necessary to present the significance criteria used in this evaluation. The potential alienation effects will then be described, and their significance will be indicated.

4.3.7.1 Significance

Alienation is considered an adverse effect that can be either local or regional in nature. The magnitude of the impact was determined as follows:

1) If opposition to or concerns about the project's location in a particular segment were low-level or not widespread, the impact was rated as slight.

2) If the opposition and concerns were moderate and/or widespread, the impact was rated as moderate.

3) If the opposition and concerns were intense (and particularly if they were of a nature that precludes effective mitigation aside from avoidance), the impact was rated as considerable.

4.3.7.2 Effects

Alienation effects are first identified and described below. They are then summarized and compared by route alternative in tables 4-27 and 4-28.

Segment Number(s)	Alienation Effect	Significance Level
119	Rancher Opposition. Ranchers along this segment were particularly concerned about the possibility of transmission lines having biological effects on cattle breeding operations. Ranchers interviewed seemed united in their opinions and seemed likely to organize in opposition to construction of a transmission line through this area.	LA3
113	Blackfoot River Valley Crossing. The Blackfoot River Valley is a popular regional recreation area. Users would be particularly sensitive to a transmission line's visual effects in this area.	RA2
138, 139	Miller Creek Area, Bitterroot River Valley Crossing. Landowners in this area have expressed their desire to develop land for residential purposes. The Bitterroot River Valley is a popular regional recreation area. Both landowners and recreationists would be sensitive to the visual presence of a transmission line in the area. Local residents have publicly stated their concern and opposition to the siting of a transmission line in this area.	RA3
116	Rattlesnake Valley Crossing. Rattlesnake Valley residents' opposition to another transmission line in this area stems primarily from visual and property value concerns. In addition, Missoula area residents who use the upper Rattlesnake Valley for recreational purposes object to a new line on visual grounds. The two groups have joined in organized oppositionto a route through this area.	RA3

Segment Number(s)	Alienation Effect	Significance Level
114	Rattlesnake Valley Crossing. This crossing would be further up the valley than the one described above and would cross an established National Recreation Area. Although further removed from residential areas in the Rattlesnake Valley, this crossing faces more significant opposition from environmentalists and recreationists.	RA3
117	Grant, Butler, LaValle, Johnson Creek Valley Crossings. All of these drainages appear to have excellent residential subdivision potential. The presence of a transmission line could hamper the spread of residential development in these valleys and is of great concern to local landowners.	RA2
1, 4, 6, 148	Ninemile Valley Area. Although these segments would parallel the Ninemile Valley on U.S. Forest Service land, local and regional residents have joined in organized opposition to these route alternatives. Concern has resulted from the alternatives' potential visual effects on current and future Ninemile residents and recreationists who use the Ninemile area.	RA2
34, 37	Coeur d'Alene River Valley Crossing. This river valley is a popular recreation area for local and regional residents who oppose this route alternative primarily on visual grounds.	RA2

The alienation effects identified in Table 4-27 are summarized in Table 4-28 for the least-impact route(s) of each plan. Although the subjective nature of alienation effects does not lend itself to a numerical comparison, it is possible to differentiate between the least-impact alternatives. The Hot Springs and Plains least-impact routes are different only in that the Plains route parallels the Ninemile Valley area. Hence, the Hot Springs routes are preferable to the Plains routes from the perspective of alienation effects. The least-impact Taft route avoids most of the alienation areas crossed by the Hot Springs and Plains routes. However, it does cross the Miller Creek-Bitterroot Valley area. Nevertheless, the overall alienation effect associated with this alternative is expected to be substantially less than it would be for the Hot Springs and Plains routes, primarily because it involves one rather than several crossings of sensitive areas. Consequently, the Taft route is expected to have the least alienation effect because it would minimize the crossing of areas that are important to the region for residential and recreational purposes.

4.3.8 Special Considerations

In addition to the factors discussed above, several other elements were identified that warranted special consideration in the route selection process. In general, these were site-specific characteristics that were not adequately reflected in the other factors but were sufficiently important that they could influence route selections and the nature of social impacts.

Special considerations were identified during interviews with local residents and from newspaper articles and BPA public involvement meeting transcripts. On the local level, special considerations included particular economic or land use activities or conditions that would be affected by a route segment, such as prime farmland, plant nurseries, or subdivided but currently undeveloped land. In all cases, the presence of these activities increased the potential negative impacts of the route alternative and were incorporated into the socioeconomic ranking decisions.

On the regional level, a new set of special considerations emerged that were related to area-specific land use implications and political issues. These special considerations were deemed to be of regional importance and were usually considered to be adverse. The magnitude of each of the potential impacts was determined individually after review of all pertinent special considerations. Regional special considerations are first identified and described below. They are then summarized and compared by route alternative in tables 4-29 and 4-30.

Segment Number(s)	Special Considerations	Significance Level
Regionwide	Undeveloped/Subdivided Land. The amount crossed by each route alternative has been quantified. This resource is important from a social perspective because it represents land that has been parceled into small developable units for future residential or speculative purposes. The presence of a transmission line in such an area could have a negative impact on residential growth, resulting in more residential pressure on other types of land use in the area, and have higher than estimated adverse social impacts during project operation due to an increase in the number of persons who would be exposed to the line.	LA2
114	National Recreation Area. The upper Rattlesnake Valley has been designated as a National Recreation Area. The presence of a transmission line within this area would be in conflict with the	RA3

Segment Number(s)	Special Considerations	Significance Level
	area's goals and would diminish its value as a nationally significant recreation area.	
5	Flathead Indian Reservation Crossing. The uncertainties of negotiations to cross the reservation are complicated by Native American rights issues and potential cultural/lifestyle effects that might create conflict among reservation groups (see Section 3.3.2.3).	RA3
125	Missoula-Clinton Corridor. This valley already has an interstate highway, a secondary road, two railroads, a transmission line, and a river within its boundaries. Although it is usually preferable to minimize the total number of people affected by routing new transmission lines along existing corridors, another line in this valley would significantly reduce future land use flexibility. As a special consideration, siting the line in this valley would have a negative social effect on local residents and landowners.	LA3
18	Thompson Falls - Plains Corridor. This valley already has a highway, a railroad, two transmission lines, a pipeline, and a river within its boundaries. Consequently, for the reasons noted above, siting the line in this valley would have negative social effects on local residents and landowners. The effects would be mitigated if the Garrison-Spokane line replaced one or more of the existing lines in this corridor.	LA3

The special consideration effects identified above and in Table 4-29 are summarized in Table 4-30 for the least-impact route(s) of each plan. As shown, the miles of subdivided but undeveloped land that would be crossed are very similar for the Hot Springs and Plains alternatives. However, the amount of undeveloped/subdivided land crossed would be minimized by the least-impact Taft alternative, which crosses about half the amount of undeveloped/subdivided land crossed by the other least-impact alternatives.

Other special consideration areas crossed are most numerous under the Hot Springs plan. They are less numerous under the Plains plan and nonexistent under the Taft plan. Consequently, the Taft plan is preferred from a special consideration perspective because it minimizes crossings of undeveloped/subdivided land and does not cross any other areas where special considerations exist.

4.4 Cumulative Impacts

In the BPA Garrison-Spokane study area, two other energy-related land use projects are being considered for construction during the 1984-1986 period. The Washington Water Power Company (TWWP) plans to construct a new 230-kV transmission line from its Pine Creek substation to a new substation near Wallace, Idaho in 1983 and 1984. TWWP is also considering four alternatives that would link the proposed Wallace substation with the larger TWWP or BPA power grid. Because two of these four alternatives would require connection with BPA's Garrison-Spokane line in 1986, impacts associated with the TWWP alternatives are presented in Chapter 7 of this report.

A second project, the Northern Tier Pipeline,[1] has been proposed to transport crude oil from Port Angeles, Washington across Washington, Idaho, Montana, and North Dakota to Clearbrook, Minnesota. Although the status, construction dates, and actual route of this project are highly uncertain, the impact of its construction work force could result in noteworthy cumulative impacts on public and private facilities in local communities. The magnitude of these impacts would depend on whether both projects were constructed in the study area in simultaneous or continuous years.

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[1]For a description of socioeconomic impacts associated with this project, see Mountain West Research, Inc., Socioeconomic Impact Assessment of the Proposed Northern Tier Pipeline in Montana: Technical Report, Billings, Montana, 1979.

TABLE 4-1

Estimated Local Employment
Schedule 6

Type of Construction	Reporting Station	Local Employment	Duration of Employment	Period of Occurrence
Transmission Line	Coeur d'Alene	8	5-8 months	5/85-6/86
Substation	Bell substation	4	2-3 months	6/85-7/86

Source: Mountain West Research, Inc., 1981.

TABLE 4-2

Local Employment: Right-of-way Clearing

Construction Schedule	Reporting Station Plans[a]	Local Employment	Duration of Employment	Period of Occurrence
1	Drummond (HS,P,T)	30	8	3/84-10/84
2	Missoula (HS,P,T)	30	8	3/84-10/84
3	St. Ignatius (HS)	30	7	3/84- 9/84
	Missoula (P,T)	30	7	3/84- 9/84
4	Thompson Falls (HS,P)			
	St. Regis (T)	45	8	3/84-10/84
5	Kellogg (HS,P,T)	37	8	3/84-10/84
6	Coeur D/Alene (HS,P,T)	30	8	3/84-10/84
TOTAL		202	7-8	3/84-10/84

Source: Mountain West Research, Inc., 1981.

[a]Key to abbreviations: HS = Hot Springs
P = Plains
T = Taft

TABLE 4-3

Nonlocal Transmission Line Clearing and Construction Employment

Construction Schedule	Reporting Station Plan[a]	Nonlocal Employment		Duration of Employment[b]		Period of Occurence	
		Clearing	Construction	Clearing	Construction	Clearing	Construction
1	Drummond (HS,P,T)	10	65	8	5-12	3/84-10/84	3/84-9/85
2	Missoula (HS,P,T)	10	60	8	4-8	3/84-10/84	3/84-9/85
3	St. Ignatius (HS) Missoula (P,T)	10	79	7	5-11	3/84- 9/84	3/84-9/85
4	Thompson Falls (HS,P) St. Regis (T)	15	97	8	4-10	3/84-10/84	4/85-9/86
5	Kellogg (HS,P,T)	13	94	8	4-8	3/84-10/84	4/85-6/86
6	Coeur d'Alene	10	92	8	4-8	3/84-10/84	5/85-6/86
TOTAL		68	487	7-8	4-12	3/84-10/84	3/84-9/86

Source: Mountain West Research, Inc., 1981.

[a]Key to abbreviations: HS = Hot Springs
P = Plains
T = Taft

[b]In months.

TABLE 4-4

Nonlocal Substation Construction Employment

Substation	Nonlocal Employment	Duration of Employment[a]	Period of Occurrence
Garrison	33	2-3	5/84-7/85
Hot Springs Plains (1 only) Taft	3	2-3	5/84-7/85
Bell	29	2-3	6/85-7/86
TOTAL	95	2-3	5/84-7/86

Source: Mountain West Research, Inc., 1981.

[a]In months.

TABLE 4-5

Transmission Line and Substation Construction Lodging Supply/Demand Hot Springs Plan

Schedule and Commuting Zone	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 1																																				
Drummond[a]			21	21	21	7	7	7	7	7	7	42	42	42	21	21	21	7	7	7	7															
Phillipsburg			7	7	7	2	2	2	2	2	2	14	14	14	7	7	7	2	2	2	2															
Garrison			11	11	11	7	7	7	7	7	7	11	11	11	11	11	11	11	11	11	11															
Deer Lodge			45	45	45	17	17	17	17	17	17	82	82	82	45	45	45	17	17	17	17															
TOTAL SUPPLY			84	84	84	33	33	33	33	33	33	149	149	149	84	84	84	33	33	33	33															
TOTAL DEMAND			23	35	35	45	45	42	54	73	48	12	30	47	64	72	71	50	50	43	43															
Transmission Line			23	35	35	35	35	26	38	57	48	12	30	47	48	56	55	43	43	43	43															
Garrison Substation						10	10	16	16	16					16	16	16	7	7																	
BALANCE			61	49	49	-12	-12	-9	-21	-40	-15	137	119	102	20	12	13	-17	-17	-10	-10															
Schedule 2																																				
Missoula[a]			882	882	882	161	161	161	161	161	161	1179	1179	1179	882	882	882	161	161	161	161															
TOTAL SUPPLY			882	882	882	161	161	161	161	161	161	1179	1179	1179	882	882	882	161	161	161	161															
TOTAL DEMAND			22	35	35	35	25	25	37	57	47	12	24	35	55	43	23	23	23	43	3															
BALANCE			860	847	847	126	136	136	124	104	114	1167	1155	1144	827	839	859	138	138	118	158															
Schedule 3																																				
St. Ignatius[a]			4	4	4	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	4															
Ravalli			10	10	10	7	7	7	7	7	7	12	12	12	10	10	10	7	7	7	7															
Ronan			65	65	65	31	31	31	31	31	31	80	80	80	65	65	65	31	31	31	31															
Arlee			35	35	35	17	17	17	17	17	17	44	44	44	35	35	35	17	17	17	17															
Polson			130	130	130	58	58	58	58	58	58	156	156	156	130	130	130	58	58	58	58															
TOTAL SUPPLY			244	244	244	114	114	114	114	114	114	296	296	296	244	244	244	114	114	114	114															
TOTAL DEMAND			12	12	23	33	47	47	67	57	67	67	53	43	42	42	42	42	42	42	23															
BALANCE			232	232	221	211	67	67	47	57	47	229	243	253	202	202	202	72	72	72	91															

TABLE 4-5 (cont.)

Transmission Line and Substation Construction Lodging Supply/Demand
Hot Springs Plan

Schedule and Commuting Zone	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Hot Springs Substation																																				
Plains						22	22	22	22	22					33	33	33	22	22																	
TOTAL SUPPLY						22	22	22	22	22					33	33	33	22	22																	
TOTAL DEMAND						10	10	16	16	16					16	16	16	7	7																	
BALANCE						12	12	6	6	6					17	17	17	15	15																	
Schedule 4																																				
Thompson Falls[a]			22	22	22	11	11	11	11	11						22	22	11	11	11	11	11	11	44	44	44	22	22	22	11	11	11	11			
Trout Creek			4	4	4	3	3	3	3	3						4	4	3	3	3	3	3	3	8	8	8	4	4	4	3	3	3	3			
Noxon			23	23	23	7	7	7	7	7						23	23	7	7	7	7	7	7	34	34	34	23	23	23	7	7	7	7			
Plains (BALANCE from Hot Springs)			33	33	33	12	12	12	6	6						17	17	17	15	15	22	22	22	85	85	85	33	33	33	22	22	22	22			
Paradise (Quinn's)			23	23	23	7	7	7	7	7						23	23	7	7	7	7	7	7	34	34	34	23	23	23	7	7	7	7			
TOTAL SUPPLY			105	105	105	40	40	40	36	36						89	89	45	45	45	50	50	50	205	205	205	105	105	105	50	50	50	50			
TOTAL DEMAND			16	16	16	16	16	16	16	16						12	45	57	57	48	57	64	56	29	2	44	44	44	44	44	23	22	1			
BALANCE			89	89	89	26	26	26	20	20						77	54	-12	-12	-3	-7	-14	-6	176	203	161	61	61	61	6	27	28	49			
Schedule 5																																				
Kellogg[a]			55	55	55	9	9	9	9	9						55	55	9	9	9	9	9	9	55	55	55	55	55	55	9	9					
Wallace			54	54	54	9	9	9	9	9						54	54	9	9	9	9	9	9	54	54	54	54	54	54	9	9					
Mullan			6	6	6	1	1	1	1	1						6	6	1	1	1	1	1	1	6	6	6	6	6	6	1	1					
Osburn			34	34	34	12	12	12	12	12						34	34	12	12	12	12	12	12	34	34	34	34	34	34	12	12					
Smelterville			7	7	7	1	1	1	1	1						7	7	1	1	1	1	1	1	7	7	7	7	7	7	1	1					
Pinehurst			48	48	48	19	19	19	19	19						48	48	19	19	19	19	19	19	48	48	48	48	48	48	19	19					
Coeur d'Alene (BALANCE from Schedule Transmission line)			642	642	642	200	200	200	200	200						653	631	167	158	178	171	171	167	885	910	874	614	614	614	172	211					
TOTAL SUPPLY			813	813	813	251	251	251	251	251						857	835	218	209	229	222	222	218	204	1114	1078	818	818	818	223	262					
TOTAL DEMAND			13	13	13	13	13	13	13	13						13	24	59	49	49	41	42	49	31	6	41	41	41	41	41	41					
BALANCE			800	800	800	238	238	238	238	238						844	811	159	160	180	181	180	169	173	1108	1037	777	777	777	182	221					

TABLE 4-5 (cont.)

Transmission Line and Substation Construction Lodging Supply/Demand
Hot Springs Plan

1984

Schedule and Commuting Zone	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6												
Coeur d'Alene[a]			653	653	653	211	211	211	211	211		
TOTAL SUPPLY			653	653	653	211	211	211	211	211		
TOTAL DEMAND			11	11	11	11	11	11	11	11		
BALANCE			642	642	642	200	200	200	200	200		
(Bell Substation)												
Spokane[a]												
TOTAL SUPPLY												
TOTAL DEMAND												
BALANCE												

1985

Schedule and Commuting Zone	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6												
Coeur d'Alene[a]					653	211	211	211	211	211	211	913
TOTAL SUPPLY					653	211	211	211	211	211	211	913
TOTAL DEMAND					22	44	53	33	40	40	44	28
BALANCE					631	167	158	178	171	171	167	885
(Bell Substation)												
Spokane[a]						990	990	990	990	990		
TOTAL SUPPLY						990	990	990	990	990		
TOTAL DEMAND						9	9	9	14	14		
BALANCE						981	981	976	976	976		

1986

Schedule and Commuting Zone	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6												
Coeur d'Alene[a]	913	913	653	653	653	211						
TOTAL SUPPLY	913	913	653	653	653	211						
TOTAL DEMAND	3	39	39	39	39	39						
BALANCE	910	874	614	614	614	172						
(Bell Substation)												
Spokane[a]			1386	1386	990	990	990					
TOTAL SUPPLY			1386	1386	990	990	990					
TOTAL DEMAND			14	14	14	6	6					
BALANCE			1372	1372	976	984	984					

[a] Reporting Station

Source: Mountain West Research, Inc., 1981.

TABLE 4-6

Transmission Line and Substation Construction Lodging Supply/Demand
Plains Plan

Schedule and Commuting Zone	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 1																																				
Drummond[a]			21	21	21	7	7	7	7	7	7	42	42	42	21	21	21	7	7	7	7															
Phillipsburg			7	7	7	2	2	2	2	2	2	14	14	14	7	7	7	2	2	2	2															
Garrison			11	11	11	7	7	7	7	7	7	11	11	11	11	11	11	11	11	11	11															
Deer Lodge			45	45	45	17	17	17	17	17	17	82	82	82	45	45	45	17	17	17	17															
TOTAL SUPPLY			84	84	84	33	33	33	33	33	33	149	149	149	84	84	84	33	33	33	33															
TOTAL DEMAND			23	35	35	45	45	42	54	73	48	12	30	47	64	72	71	50	50	43	43															
Transmission Line			23	25	35	35	35	26	38	57	48	12	30	47	48	56	55	43	43	43	43															
Garrison Substation						10	10	16	16	16					16	16	16	7	7																	
BALANCE			61	49	49	-12	-12	-9	-21	-40	-15	137	119	102	20	12	13	-17	-17	-10	-10															
Schedules 2 and 3																																				
Missoula[a]			882	882	882	161	161	161	161	161	161	1179	1179	1179	882	882	882	161	161	161	161															
TOTAL SUPPLY			882	882	882	161	161	161	161	161	161	1179	1179	1179	882	882	882	161	161	161	161															
TOTAL DEMAND			34	47	57	69	72	72	104	114	114	79	77	78	97	85	65	65	65	85	25															
Demand (Schedule 2)			22	35	35	35	25	25	37	57	47	12	24	35	55	43	23	23	23	43	3															
Demand (Schedule 3)			12	12	22	34	47	47	67	57	67	67	53	43	42	42	42	42	42	42	22															
BALANCE			848	835	825	92	89	89	57	47	47	1100	1102	1101	785	797	817	96	96	76	136															
Plains Substation																																				
Plains[a]						22	22	22	22	22					33	33	33	22	22																	
Thompson Falls						11	11	11	11	11					22	22	22	11	11																	
TOTAL SUPPLY						33	33	33	33	33					55	55	55	33	33																	
TOTAL DEMAND						10	10	16	16	16					16	16	16	7	7																	
BALANCE						23	23	17	17	17					39	39	39	26	26																	

TABLE 4-6 (cont.)

Transmission Line and Substation Construction Lodging Supply/Demand
Plains Plan

Schedule and Commuting Zone	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 4																																				
Thompson Falls[a] (Balance from Plains Substation)			22	22	22	6	6	3	3	3						3	3	8	8	11	11	11	11	44	44	44	22	22	22	11	11	11	11			
Trout Creek			4	4	4	3	3	3	3	3						4	4	3	3	3	3	3	3	8	8	8	4	4	4	3	3	3	3			
Noxon			23	23	23	7	7	7	7	7						23	23	7	7	7	7	7	7	34	34	34	23	23	23	7	7	7	7			
Plains (Balance from Plains Substation)			33	33	33	5	5	14	14	14						24	24	18	18	22	22	22	22	85	85	85	33	33	33	22	22	22	22			
Paradise (Quinn's)			23	23	23	7	7	7	7	7						23	23	7	7	7	7	7	7	34	34	34	23	23	23	7	7	7	7			
TOTAL SUPPLY			105	105	105	28	28	34	34	34						77	77	43	43	50	50	50	50	205	205	205	105	105	105	50	50	50	50			
TOTAL DEMAND			16	16	16	16	16	16	16	16						12	45	57	57	48	57	64	56	29	2	44	44	44	44	44	23	22	1			
BALANCE			89	89	89	12	12	18	18	18						65	32	-14	-14	2	-7	-14	-6	176	203	161	61	61	61	6	27	28	49			
Schedule 5																																				
Kellogg[a]			55	55	55	9	9	9	9	9						55	55	9	9	9	9	9	9	55	55	55	55	55	55	9	9					
Wallace			54	54	54	9	9	9	9	9						54	54	9	9	9	9	9	9	54	54	54	54	54	54	9	9					
Mullan			6	6	6	1	1	1	1	1						6	6	1	1	1	1	1	1	6	6	6	6	6	6	1	1					
Osburn			34	34	34	12	12	12	12	12						34	34	12	12	12	12	12	12	34	34	34	34	34	34	12	12					
Smelterville			7	7	7	1	1	1	1	1						7	7	1	1	1	1	1	1	7	7	7	7	7	7	1	1					
Pinehurst			48	48	48	19	19	19	19	19						48	48	19	19	19	19	19	19	48	48	48	48	48	48	19	19					
Coeur d'Alene (Balance from Schedule 6, Transmission Line)			642	642	642	200	200	200	200	200						653	631	167	158	178	171	171	167	885	910	874	614	614	614	172	211					
TOTAL SUPPLY			813	813	813	251	251	251	251	251						857	835	218	209	229	222	222	218	204	1114	1078	818	818	818	223	262					
TOTAL DEMAND			13	13	13	13	13	13	13	13						13	24	59	49	49	41	42	49	31	6	41	41	41	41	41	41					
BALANCE			800	800	800	238	238	238	238	238						844	811	159	160	180	181	180	169	173	1108	1037	777	777	777	182	221					

TABLE 4-6 (cont.)

Transmission Line and Substation Construction Lodging Supply/Demand
Plains Plan

Schedule and Commuting Zone	1984 J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6												
Coeur d'Alene[a]			653	653	653	211	211	211	211	211		
TOTAL SUPPLY			653	653	653	211	211	211	211	211		
TOTAL DEMAND			11	11	11	11	11	11	11	11		
BALANCE			642	642	642	200	200	200	200	200		
(Bell Substation)												
Spokane[a]												
TOTAL SUPPLY												
TOTAL DEMAND												
BALANCE												

Schedule and Commuting Zone	1985 J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6												
Coeur d'Alene[a]					653	211	211	211	211	211	211	913
TOTAL SUPPLY					653	211	211	211	211	211	211	913
TOTAL DEMAND					22	44	53	33	40	40	44	28
BALANCE					631	167	158	178	171	171	167	885
(Bell Substation)												
Spokane[a]						990	990	990	990	990		
TOTAL SUPPLY						990	990	990	990	990		
TOTAL DEMAND						9	9	14	14	14		
BALANCE						981	981	976	976	976		

Schedule and Commuting Zone	1986 J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6												
Coeur d'Alene[a]	913	913	653	653	653	211						
TOTAL SUPPLY	913	913	653	653	653	211						
TOTAL DEMAND	3	39	39	39	39	39						
BALANCE	910	874	614	614	614	172						
(Bell Substation)												
Spokane[a]			1386	1386	990	990	990					
TOTAL SUPPLY			1386	1386	990	990	990					
TOTAL DEMAND			14	14	14	6	6					
BALANCE			1372	1372	976	984	984					

[a] Reporting Station

Source: Mountain West Research, Inc., 1981.

TABLE 4-7

Transmission Line and Substation Construction Lodging Supply/Demand
Taft Plan

Schedule and Commuting Zone	1984 J	F	M	A	M	J	J	A	S	O	N	D
Schedule 1												
Drummond[a]			21	21	21	7	7	7	7	7	7	42
Phillipsburg			7	7	7	2	2	2	2	2	2	14
Garrison			11	11	11	7	7	7	7	7	7	11
Deer Lodge			45	45	45	17	17	17	17	17	17	82
TOTAL SUPPLY			84	84	84	33	33	33	33	33	33	149
TOTAL DEMAND			23	35	35	45	45	42	54	73	48	12
Transmission Line			23	35	35	35	35	26	33	57	48	12
Garrison Substation						10	10	16	16	16		
BALANCE			61	49	49	-12	-12	-9	-21	-40	-15	137
Schedules 2 and 3												
Missoula[a]			882	882	882	161	161	161	161	161	161	1179
TOTAL SUPPLY			882	882	882	161	161	161	161	161	161	1179
TOTAL DEMAND			34	47	57	69	72	72	104	114	114	79
Demand (Schedule 2)			22	35	35	35	25	25	37	57	47	12
Demand (Schedule 3)			12	12	22	34	47	47	67	57	67	67
BALANCE			848	835	825	92	89	89	57	47	47	1100
Schedule 4												
St. Regis[a] (Balance from Taft Substation)			54	54	54	10	10	9	9	9		
Haugan (Balance from Taft Substation)			15	15	15	2	2	2	2	2		
Superior			27	27	27	5	5	5	5	5		
TOTAL SUPPLY			96	96	96	17	17	16	16	16		
TOTAL DEMAND			16	16	16	16	16	16	16	16		
BALANCE			80	80	80	1	1	0	0	0		

Schedule and Commuting Zone	1985 J	F	M	A	M	J	J	A	S	O	N	D
Schedule 1												
Drummond[a]	42	42	21	21	21	7	7	7	7			
Phillipsburg	14	14	7	7	7	2	2	2	2			
Garrison	11	11	11	11	11	11	11	11	11			
Deer Lodge	82	82	45	45	45	17	17	17	17			
TOTAL SUPPLY	149	149	84	84	84	33	33	33	33			
TOTAL DEMAND	30	47	64	72	71	50	50	43	43			
Transmission Line	30	47	48	56	55	43	43	43	43			
Garrison Substation			16	16	16	7	7					
BALANCE	119	102	20	12	13	-17	-17	-10	-10			
Schedules 2 and 3												
Missoula[a]	1179	1179	882	882	882	161	161	161	161			
TOTAL SUPPLY	1179	1179	882	882	882	161	161	161	161			
TOTAL DEMAND	77	78	97	85	65	65	65	85	25			
Demand (Schedule 2)	24	35	55	43	23	23	23	43	3			
Demand (Schedule 3)	53	43	42	42	42	42	42	42	22			
BALANCE	1102	1101	785	797	817	96	96	76	136			
Schedule 4												
St. Regis[a] (Balance from Taft Substation)				45	45	11	11	13	13	13	13	75
Haugan (Balance from Taft Substation)				12	12	3	3	4	4	4	4	10
Superior				27	27	5	5	5	5	5	5	37
TOTAL SUPPLY				84	84	19	19	22	22	22	22	122
TOTAL DEMAND				12	45	57	57	48	57	64	56	29
BALANCE				72	39	-38	-38	-26	-35	-42	-34	93

Schedule and Commuting Zone	1986 J	F	M	A	M	J	J	A	S	O	N	D
Schedule 4												
St. Regis[a] (Balance from Taft Substation)	75	75	54	54	54	13	13	13	13			
Haugan (Balance from Taft Substation)	10	10	15	15	15	4	4	4	4			
Superior	37	37	27	27	27	5	5	5	5			
TOTAL SUPPLY	122	122	96	96	96	22	22	22	22			
TOTAL DEMAND	2	44	44	44	44	44	23	22	1			
BALANCE	120	78	52	52	52	-22	-1	0	21			

TABLE 4-7 (cont.)

Transmission Line and Substation Construction Lodging Supply/Demand
Taft Plan

Schedule and Commuting Zone	1984 J	F	M	A	M	J	J	A	S	O	N	D
Taft Substation												
Haugan						2	2	2	2	2		
St. Regis						13	13	13	13	13		
Mullan						1	1	1	1	1		
Wallace						9	9	9	9	9		
Kellogg						9	9	9	9	9		
TOTAL SUPPLY						34	34	34	34	34		
TOTAL DEMAND						10	10	16	16	16		
BALANCE						24	24	18	18	18		
Schedule 5												
Kellogg[a]			55	55	55	7	7	6	6	6		
Wallace			54	54	54	6	6	5	5	5		
Mullan			6	6	6	0	0	0	0	0		
Osburn			34	34	34	12	12	12	12	12		
Smelterville			7	7	7	1	1	1	1	1		
Pinehurst			48	48	48	19	19	19	19	19		
Coeur d'Alene (Balance from Schedule 6, Transmission Line)			642	642	642	200	200	200	200	200		
TOTAL SUPPLY			813	813	813	245	245	243	243	243		
TOTAL DEMAND			13	13	13	13	13	13	13	13		
BALANCE			800	800	800	232	232	230	230	230		

Schedule and Commuting Zone	1985 J	F	M	A	M	J	J	A	S	O	N	D
Taft Substation												
Haugan			7	7	7	2	2					
St. Regis			54	54	54	13	13					
Mullan			6	6	6	1	1					
Wallace			54	54	54	9	9					
Kellogg			55	55	55	9	9					
TOTAL SUPPLY			176	176	176	34	34					
TOTAL DEMAND			16	16	16	7	7					
BALANCE			160	160	160	27	27					
Schedule 5												
Kellogg[a]				49	49	8	8	9	9	9	9	55
Wallace				50	50	7	7	9	9	9	9	54
Mullan				4	4	0	0	1	1	1	1	6
Osburn				34	34	12	12	12	12	12	12	34
Smelterville				7	7	1	1	1	1	1	1	7
Pinehurst				48	48	19	19	19	19	19	19	48
Coeur d'Alene (Balance from Schedule 6, Transmission Line)				653	631	167	158	178	171	171	167	885
TOTAL SUPPLY				845	823	214	205	229	222	222	218	204
TOTAL DEMAND				13	24	59	49	49	41	42	49	31
BALANCE				832	799	155	156	180	181	180	169	173

Schedule and Commuting Zone	1986 J	F	M	A	M	J	J	A	S	O	N	D
Taft Substation												
Haugan												
St. Regis												
Mullan												
Wallace												
Kellogg												
TOTAL SUPPLY												
TOTAL DEMAND												
BALANCE												
Schedule 5												
Kellogg[a]	55	55	55	55	55	9	9					
Wallace	54	54	54	54	54	9	9					
Mullan	6	6	6	6	6	1	1					
Osburn	34	34	34	34	34	12	12					
Smelterville	7	7	7	7	7	1	1					
Pinehurst	48	48	48	48	48	19	19					
Coeur d'Alene (Balance from Schedule 6, Transmission Line)	910	874	614	614	614	172	211					
TOTAL SUPPLY	1114	1076	818	818	818	223	262					
TOTAL DEMAND	6	41	41	41	41	41	41					
BALANCE	1108	1037	777	777	777	182	221					

TABLE 4-7 (cont.)

Transmission Line and Substation Construction Lodging Supply/Demand
Taft Plan

Schedule and Commuting Zone	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Schedule 6																																				
Coeur d'Alene[a]			653	653	653	211	211	211	211	211							653	211	211	211	211	211	211	913	913	913	653	653	653	211						
TOTAL SUPPLY			653	653	653	211	211	211	211	211							653	211	211	211	211	211	211	913	913	913	653	653	653	211						
TOTAL DEMAND			11	11	11	11	11	11	11	11							22	44	53	33	40	40	44	28	3	39	39	39	39	39						
BALANCE			642	642	642	200	200	200	200	200							631	167	158	178	171	171	167	885	910	374	614	614	614	172						
(Bell Substation)																																				
Spokane[a]																		990	990	990	990	990					1386	1386	990	990	990					
TOTAL SUPPLY																		990	990	990	990	990					1386	1386	990	990	990					
TOTAL DEMAND																		9	9	14	14	14					14	14	14	6	6					
BALANCE																		981	981	976	976	976					1372	1372	976	984	984					

[a]Reporting Station

Source: Mountain West Research, Inc., 1981.

TABLE 4-8

Peak Population Influxes by Plan

County and Community	Plan		
	Hot Springs	Plains	Taft
Powell County			
Deer Lodge	25	25	25
Garrison	20	20	20
Granite County			
Drummond[a]	68	68	68
Phillipsburg	8	8	8
Missoula County			
Missoula[a]	95	190	190
Lake County			
St. Ignatius	40		
Ravalli	20		
Arlee	15		
Ronan	18		
Polson	18		
Sanders County			
Plains	35	32	
Thompson Falls[a]	75	75	
Paradise	6	6	
Trout Creek	5	5	
Noxon	6	6	
Mineral County			
St. Regis[a]			78
Superior			15
Haugan			13
Shoshone County			
Mullan	4	4	5
Wallace	10	10	13
Osborn	10	10	10
Kellogg[a]	41	41	44
Smelterville	10	10	10
Pinehurst	12	12	12
Kootenai County			
Coeur d'Alene	99	99	99
Spokane County			
Spokane	23	23	23

Source: Mountain West Research, Inc., 1981.

[a]Reporting station site.

TABLE 4-9

Total Population Influx

Hot Springs Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Drummond																																				
Workers			15	24	24	25	25	20	28	41	33	8	20	32	35	40	39	30	30	29	29															
Spouses			4	7	7	7	7	6	8	12	10	2	6	10	10	12	12	9	9	9	9															
Children			6	9	9	9	9	7	10	15	12	3	7	12	13	15	14	11	11	11	11															
Total			25	40	40	41	41	33	46	68	55	13	33	54	58	67	65	50	50	49	49															
Phillipsburg																																				
Workers			2	3	3	3	3	3	2	3	5	4	3	4	4	5	5	4	4	4	4															
Spouses			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1															
Children			1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	1	1	1	1															
Total			4	5	5	5	5	5	4	5	8	6	5	6	6	8	8	6	6	6	6															
Deer Lodge																																				
Workers			4	6	6	9	9	10	12	15	8	2	5	8	14	15	15	9	9	7	7															
Spouses			1	2	2	3	3	3	4	4	2	1	1	2	4	4	4	3	3	2	2															
Children			1	2	2	3	3	4	4	6	3	1	2	3	5	6	6	3	3	3	3															
Total			6	10	10	15	15	17	20	25	13	4	8	13	23	25	25	15	15	12	12															

TABLE 4-9 (cont.)

Total Population Influx

Hot Springs Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Garrison																																				
Workers			2	2	2	7	7	10	11	12	3	1	2	3	11	12	12	7	7	3	3															
Spouses			1	1	1	2	2	3	3	4	1	0	1	1	3	4	4	2	2	1	1															
Children			1	1	1	3	3	4	4	4	1	0	1	1	4	4	4	3	3	1	1															
Total			4	4	4	12	12	17	18	20	5	1	4	5	18	20	20	12	12	5	5															
Missoula																																				
Workers			22	35	35	35	25	25	37	57	47	12	24	35	55	43	23	23	23	43	3															
Spouses			7	10	10	10	7	7	11	17	14	4	7	10	16	13	7	7	7	13	1															
Children			8	13	13	13	9	9	14	21	17	4	9	13	20	16	9	9	9	16	1															
Total			37	58	58	58	41	41	62	95	78	20	40	58	91	72	39	39	39	72	5															
St. Ignatius																																				
Workers			4	4	8	12	17	17	24	21	24	24	19	15	15	15	15	15	15	15	8															
Spouses			1	1	2	4	5	5	7	6	7	7	6	4	4	4	4	4	4	4	2															
Children			1	1	3	4	6	6	9	8	9	9	7	6	6	6	6	6	6	6	3															
Total			6	6	13	20	28	28	40	35	40	40	32	25	25	25	25	25	25	25	13															

TABLE 4-9 (cont.)

Total Population Influx
Hot Springs Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Ravalli																																				
Workers			2	2	4	6	8	8	12	10	12	12	10	8	8	8	8	8	8	8	4															
Spouses			1	1	1	2	2	2	4	3	4	4	3	2	2	2	2	2	2	2	1															
Children			1	1	1	2	3	3	4	4	4	4	4	3	3	3	3	3	3	3	1															
Total			4	4	6	10	13	13	20	17	20	20	17	13	13	13	13	13	13	13	6															
Ronan																																				
Workers			2	2	4	6	8	8	11	10	11	11	9	7	7	7	7	7	7	7	4															
Spouses			1	1	1	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2	1															
Children			1	1	1	2	3	3	4	4	4	4	3	3	3	3	3	3	3	3	1															
Total			4	4	6	10	13	13	18	17	18	18	15	12	12	12	12	12	12	12	6															
Polson																																				
Workers			2	2	4	5	8	8	11	9	11	11	8	7	7	7	7	7	7	7	4															
Spouses			1	1	1	1	2	2	3	3	3	3	2	2	2	2	2	2	2	2	1															
Children			1	1	1	2	3	3	4	3	4	4	3	3	3	3	3	3	3	3	1															
Total			4	4	6	13	13	18	15	18	18	13	12	12	12	12	12	12	12	12	6															

TABLE 4-9 (cont.)

Total Population Influx

Hot Springs Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Arlee												
Workers			2	2	3	4	6	6	9	7	9	9
Spouses			1	1	1	1	2	2	3	2	3	3
Children			1	1	1	1	2	2	3	3	3	3
Total			4	4	5	6	10	10	15	12	15	15
Thompson Falls												
Workers				11	11	11	11	11	11	11		
Spouses				3	3	3	3	3	3	3		
Children				4	4	4	4	4	4	4		
Total				18	18	18	18	18	18	18		
Trout Creek												
Workers				1	1	1	1	1	1	1		
Spouses				0	0	0	0	0	0	0		
Children				0	0	0	0	0	0	0		
Total				1	1	1	1	1	1	1		

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Arlee												
Workers	7	6	5	5	5	5	5	5	3			
Spouses	2	2	1	1	1	1	1	1	1			
Children	3	2	2	2	2	2	2	2	1			
Total	12	10	8	8	8	8	8	8	5			
Thompson Falls												
Workers				8	32	41	41	35	40	45	40	22
Spouses				2	10	12	12	10	12	13	12	7
Children				3	12	15	15	13	15	17	15	8
Total				13	54	68	68	58	67	75	67	37
Trout Creek												
Workers				1	2	3	3	2	3	3	3	2
Spouses				0	1	1	1	1	1	1	1	1
Children				0	1	1	1	1	1	1	1	1
Total				1	4	5	5	4	5	5	5	4

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Arlee												
Workers												
Spouses												
Children												
Total												
Thompson Falls												
Workers	2	31	31	31	31	31	16	16	2			
Spouses	1	9	9	9	9	9	5	5	1			
Children	1	11	11	11	11	11	6	6	1			
Total	4	51	51	51	51	51	27	27	4			
Trout Creek												
Workers		2	2	2	2	2	1	1				
Spouses		1	1	1	1	1	0	0				
Children		1	1	1	1	1	0	0				
Total		4	4	4	4	4	1	1				

TABLE 4-9 (cont.)

Total Population Influx

Hot Springs Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Paradise																																				
Workers			1	1	1	1	1	1	1	1						1	3	3	3	3	3	4	3	2		3	3	3	3	3	1	1				
Spouses			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	0	0				
Children			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	0	0				
Total			1	1	1	1	1	1	1	1						1	5	5	5	5	5	6	5	4		5	5	5	5	5	1	1				
Noxon																																				
Workers			1	1	1	1	1	1	1	1						1	3	4	4	3	4	4	4	2		3	3	3	3	3	2	2				
Spouses			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1				
Children			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1				
Total			1	1	1	1	1	1	1	1						1	5	6	6	5	6	6	6	4		5	5	5	5	5	4	4				
Plains																																				
Workers			2	2	2	12	12	18	18	18						16	17	21	13	5	6	7	6	3		5	5	5	5	5	3	2				
Spouses			1	1	1	4	4	5	5	5						5	5	6	4	1	2	2	2	1		1	1	1	1	1	1	1				
Children			1	1	1	4	4	7	7	7						6	6	8	5	2	2	3	2	1		2	2	2	2	2	1	1				
Total			4	4	4	20	20	30	30	30						27	28	35	22	8	10	12	10	5		8	8	8	8	8	5	4				

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TABLE 4-9 (cont.)

Total Population Influx

Hot Springs Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Kellogg												
Workers			6	6	6	6	6	6	6	6		
Spouses			2	2	2	2	2	2	2	2		
Children			2	2	2	2	2	2	2	2		
Total			10	10	10	10	10	10	10	10		
Wallace												
Workers			1	1	1	1	1	1	1	1		
Spouses			0	0	0	0	0	0	0	0		
Children			0	0	0	0	0	0	0	0		
Total			1	1	1	1	1	1	1	1		
Mullan												
Workers												
Spouses												
Children												
Total												

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Kellogg												
Workers				6	11	25	21	21	19	19	21	13
Spouses				2	3	7	6	6	6	6	6	4
Children				2	4	9	8	8	7	7	8	5
Total				10	18	41	35	35	32	32	35	22
Wallace												
Workers				1	2	6	5	5	4	4	5	3
Spouses				0	1	2	1	1	1	1	1	1
Children				0	1	2	2	2	1	1	2	1
Total				1	4	10	8	8	6	6	8	5
Mullan												
Workers					1	2	1	1	1	1	1	1
Spouses					0	1	0	0	0	0	0	0
Children					0	1	0	0	0	0	0	0
Total					1	4	1	1	1	1	1	1

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Kellogg												
Workers	1	18	18	18	18	18						
Spouses	0	5	5	5	5	5						
Children	0	7	7	7	7	7						
Total	1	30	30	30	30	30						
Wallace												
Workers		4	4	4	4	4						
Spouses		1	1	1	1	1						
Children		1	1	1	1	1						
Total		6	6	6	6	6						
Mullan												
Workers		1	1	1	1	1						
Spouses		0	0	0	0	0						
Children		0	0	0	0	0						
Total		1	1	1	1	1						

TABLE 4-9 (cont.)

Total Population Influx

Hot Springs Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Osburn																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4	4					
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1	1					
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1	1					
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6	6					
Smelterville																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4	4					
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1	1					
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1	1					
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6	6					
Pinehurst																																				
Workers			2	2	2	2	2	2	2	2						2	3	7	6	6	5	5	6	4		5	5	5	5	5	5					
Spouses			1	1	1	1	1	1	1	1						1	1	2	2	2	1	1	2	1		1	1	1	1	1	1					
Children			1	1	1	1	1	1	1	1						1	1	3	2	2	2	2	2	1		2	2	2	2	2	2					
Total			4	4	4	4	4	4	4	4						4	5	12	10	10	8	8	10	6		8	8	8	8	8	8					

TABLE 4-9 (cont.)

Total Population Influx

Hot Springs Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D	1985 J	F	M	A	M	J	J	A	S	O	N	D	1986 J	F	M	A	M	J	J	A	S	O	N	D
Coeur d'Alene																																				
Workers			13	13	13	13	13	13	13	13						2	25	51	59	39	45	45	50	32	3	44	44	44	44	44						
Spouses			4	4	4	4	4	4	4	4						1	7	15	18	12	13	13	15	10	1	13	13	13	13	13						
Children			5	5	5	5	5	5	5	5						1	9	19	22	14	17	17	18	12	1	16	16	16	16	16						
Total			22	22	22	22	22	22	22	22						4	41	85	99	65	75	75	83	54	5	73	73	73	73	73						
Spokane																																				
Workers																		9	9	14	14	14					14	14	14	6	6					
Spouses																		3	3	4	4	4					4	4	4	2	2					
Children																		3	3	5	5	5					5	5	5	2	2					
Total																		15	15	23	23	23					23	23	23	10	10					

Source: Mountain West Research, Inc., 1981.

Note: Workers, spouses, children may not sum to totals due to rounding error.

TABLE 4-10

Total Population Influx
Plains Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Drummond												
Workers			15	24	24	25	25	20	28	41	33	8
Spouses			4	7	7	7	7	6	8	12	10	2
Children			6	9	9	9	9	7	10	15	12	3
Total			25	40	40	41	41	33	46	68	55	13
Phillipsburg												
Workers			2	3	3	3	3	3	2	3	5	4
Spouses			1	1	1	1	1	1	1	1	1	1
Children			1	1	1	1	1	1	1	1	2	1
Total			4	5	5	5	5	5	4	5	8	6
Deer Lodge												
Workers			4	6	6	9	9	10	12	15	8	2
Spouses			1	2	2	3	3	3	4	4	2	1
Children			1	2	2	3	3	4	4	6	3	1
Total			6	10	10	15	15	17	20	25	13	4

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Drummond												
Workers	20	32	35	40	39	30	30	29	29			
Spouses	6	10	10	12	12	9	9	9	9			
Children	7	12	13	15	14	11	11	11	11			
Total	33	54	58	67	65	50	50	49	49			
Phillipsburg												
Workers	3	4	4	5	5	4	4	4	4			
Spouses	1	1	1	1	1	1	1	1	1			
Children	1	1	1	2	2	1	1	1	1			
Total	5	6	6	8	8	6	6	6	6			
Deer Lodge												
Workers	5	8	14	15	15	9	9	7	7			
Spouses	1	2	4	4	4	3	3	2	2			
Children	2	3	5	6	6	3	3	3	3			
Total	8	13	23	25	25	15	15	12	12			

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Drummond												
Workers												
Spouses												
Children												
Total												
Phillipsburg												
Workers												
Spouses												
Children												
Total												
Deer Lodge												
Workers												
Spouses												
Children												
Total												

TABLE 4-10 (cont.)

Total Population Influx
Plains Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Garrison												
Workers			-2	2	2	7	7	10	11	12	3	1
Spouses			1	1	1	2	2	3	3	4	1	0
Children			1	1	1	3	3	4	4	4	1	0
Total			4	4	4	12	12	17	18	20	5	1
Missoula												
Workers			34	47	57	69	72	72	104	114	114	79
Spouses			10	14	17	21	22	22	31	34	34	24
Children			13	17	21	26	27	27	38	42	42	29
Total			57	78	95	116	121	121	173	190	190	132
Thompson Falls												
Workers			11	11	11	12	13	13	13			
Spouses			3	3	3	4	4	4	4			
Children			4	4	4	4	5	5	5			
Total			18	18	18	20	22	22	22			

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Garrison												
Workers	2	3	11	12	12	7	7	3	3			
Spouses	1	1	3	4	4	2	2	1	1			
Children	1	1	4	4	4	3	3	1	1			
Total	4	5	18	20	20	12	12	5	5			
Missoula												
Workers	77	78	97	85	65	65	65	85	25			
Spouses	23	23	29	25	19	19	19	25	7			
Children	28	29	36	31	24	24	24	31	9			
Total	128	130	162	141	108	108	108	141	41			
Thompson Falls												
Workers			2	10	34	42	42	35	40	45	40	22
Spouses			1	3	10	13	13	10	12	13	12	7
Children			1	4	13	16	16	13	15	17	15	8
Total			4	17	57	71	71	58	67	75	67	37

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Garrison												
Workers												
Spouses												
Children												
Total												
Missoula												
Workers												
Spouses												
Children												
Total												
Thompson Falls												
Workers	2	31	31	31	31	31	16	16	2			
Spouses	1	9	9	9	9	9	5	5	1			
Children	1	11	11	11	11	11	6	6	1			
Total	4	51	51	51	51	51	27	27	4			

TABLE 4-10 (cont.)

Total Population Influx
Plains Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D	1985 J	F	M	A	M	J	J	A	S	O	N	D	1986 J	F	M	A	M	J	J	A	S	O	N	D
Trout Creek																																				
Workers			1	1	1	1	1	1	1	1						1	2	3	3	2	3	3	3	2		2	2	2	2	2	1	1				
Spouses			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	0	0				
Children			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	0	0				
Total			1	1	1	1	1	1	1	1						1	4	5	5	4	5	5	5	4		4	4	4	4	4	1	1				
Paradise																																				
Workers			1	1	1	1	1	1	1	1						1	3	3	3	3	3	4	3	2		3	3	3	3	3	1	1				
Spouses			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	0	0				
Children			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	0	0				
Total			1	1	1	1	1	1	1	1						1	5	5	5	5	5	6	5	4		5	5	5	5	5	1	1				
Noxon																																				
Workers			1	1	1	1	1	1	1	1						1	3	4	4	3	4	4	4	2		3	3	3	3	3	2	2				
Spouses			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1				
Children			0	0	0	0	0	0	0	0						0	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1				
Total			1	1	1	1	1	1	1	1						1	5	6	6	5	6	6	6	4		5	5	5	5	5	4	4				

TABLE 4-10 (cont.)

Total Population Influx
Plains Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Plains																																				
Workers			2	2	2	11	11	16	16	16					14	15	19	12	12	5	6	7	6	3		5	5	5	5	5	3	2				
Spouses			1	1	1	3	3	5	5	5					4	4	6	4	4	1	2	2	2	1		1	1	1	1	1	1	1				
Children			1	1	1	4	4	6	6	6					5	6	7	4	4	2	2	3	2	1		2	2	2	2	2	1	1				
Total			4	4	4	18	18	27	27	27					23	25	32	20	20	8	10	12	10	5		8	8	8	8	8	5	4				
Kellogg																																				
Workers			6	6	6	6	6	6	6	6						6	11	25	21	21	19	19	21	13	1	18	18	18	18	18						
Spouses			2	2	2	2	2	2	2	2						2	3	7	6	6	6	6	6	4	0	5	5	5	5	5						
Children			2	2	2	2	2	2	2	2						2	4	9	8	8	7	7	8	5	0	7	7	7	7	7						
Total			10	10	10	10	10	10	10	10						10	18	41	35	35	32	32	35	22	1	30	30	30	30	30						
Wallace																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4						
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1						
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1						
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6						

TABLE 4-10 (cont.)

Total Population Influx
Plains Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Mullan																																				
Workers																	1	2	1	1	1	1	1	1		1	1	1	1	1						
Spouses																	0	1	0	0	0	0	0	0		0	0	0	0	0						
Children																	0	1	0	0	0	0	0	0		0	0	0	0	0						
Total																	1	4	1	1	1	1	1	1		1	1	1	1	1						
Osburn																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4						
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1						
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1						
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6						
Smelterville																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4						
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1						
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1						
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6						

TABLE 4-10 (cont.)

Total Population Influx
Plains Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Pinehurst												
Workers			2	2	2	2	2	2	2	2		
Spouses			1	1	1	1	1	1	1	1		
Children			1	1	1	1	1	1	1	1		
Total			4	4	4	4	4	4	4	4		
Coeur d'Alene												
Workers			13	13	13	13	13	13	13	13	..	
Spouses			4	4	4	4	4	4	4	4		
Children			5	5	5	5	5	5	5	5		
Total			22	22	22	22	22	22	22	22		
Spokane												
Workers												
Spouses												
Children												
Total												

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Pinehurst												
Workers				2	3	7	6	6	5	5	6	4
Spouses				1	1	2	2	2	1	1	2	1
Children				1	1	3	2	2	2	2	2	1
Total				4	5	12	10	10	8	8	10	6
Coeur d'Alene												
Workers				2	25	51	59	39	45	45	50	32
Spouses				1	7	15	18	12	13	13	15	10
Children				1	9	19	22	14	17	17	18	12
Total				4	41	85	99	65	75	75	83	54
Spokane												
Workers						9	9	14	14	14		
Spouses						3	3	4	4	4		
Children						3	3	5	5	5		
Total						15	15	23	23	23		

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Pinehurst												
Workers		5	5	5	5	5						
Spouses		1	1	1	1	1						
Children		2	2	2	2	2						
Total		8	8	8	8	8						
Coeur d'Alene												
Workers	3	44	44	44	44	44						
Spouses	1	13	13	13	13	13						
Children	1	16	16	16	16	16						
Total	5	73	73	73	73	73						
Spokane												
Workers			14	14	14	6	6					
Spouses			4	4	4	2	2					
Children			5	5	5	2	2					
Total			23	23	23	10	10					

Source: Mountain West Research, Inc., 1981.

Note: Workers, spouses, children may not sum to totals due to rounding error.

TABLE 4-11

Total Population Influx
Taft Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Drummond												
Workers			15	24	24	25	25	20	28	41	33	8
Spouses			4	7	7	7	7	6	8	12	10	2
Children			6	9	9	9	9	7	10	15	12	3
Total			25	40	40	41	41	33	46	68	55	13
Phillipsburg												
Workers			2	3	3	3	3	3	2	3	5	4
Spouses			1	1	1	1	1	1	1	1	1	1
Children			1	1	1	1	1	1	1	1	2	1
Total			4	5	5	5	5	5	4	5	8	6
Deer Lodge												
Workers			4	6	6	9	9	10	12	15	8	2
Spouses			1	2	2	3	3	3	4	4	2	1
Children			1	2	2	3	3	4	4	6	3	1
Total			6	10	10	15	15	17	20	25	13	4

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Drummond												
Workers	20	32	35	40	39	30	30	29	29			
Spouses	6	10	10	12	12	9	9	9	9			
Children	7	12	13	15	14	11	11	11	11			
Total	33	54	58	67	65	50	50	49	49			
Phillipsburg												
Workers	3	4	4	5	5	4	4	4	4			
Spouses	1	1	1	1	1	1	1	1	1			
Children	1	1	1	2	2	1	1	1	1			
Total	5	6	6	8	8	6	6	6	6			
Deer Lodge												
Workers	5	8	14	15	15	9	9	7	7			
Spouses	1	2	4	4	4	3	3	2	2			
Children	2	3	5	6	6	3	3	3	3			
Total	8	13	23	25	25	15	15	12	12			

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Drummond												
Workers												
Spouses												
Children												
Total												
Phillipsburg												
Workers												
Spouses												
Children												
Total												
Deer Lodge												
Workers												
Spouses												
Children												
Total												

TABLE 4-11 (cont.)

Total Population Influx
Taft Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Garrison																																				
Workers			2	2	2	7	7	10	11	12	3	1	2	3	11	12	12	7	7	3	3															
Spouses			1	1	1	2	2	3	3	4	1	0	1	1	3	4	4	2	2	1	1															
Children			1	1	1	3	3	4	4	4	1	0	1	1	4	4	4	3	3	1	1															
Total			4	4	4	12	12	17	18	20	5	1	4	5	18	20	20	12	12	5	5															
Missoula																																				
Workers			34	47	57	69	72	72	104	114	114	79	77	78	97	85	65	65	65	85	25															
Spouses			10	14	17	21	22	22	31	34	34	24	23	23	29	25	19	19	19	25	7															
Children			13	17	21	26	27	27	38	42	42	29	28	29	36	31	24	24	24	31	9															
Total			57	78	95	116	121	121	173	190	190	132	128	130	162	141	108	108	108	141	41															
Haugan																																				
Workers			2	2	2	4	4	5	5	5					3	4	8	7	7	5	6	7	6	3		5	5	5	5	5	3	2				
Spouses			1	1	1	1	1	1	1	1					1	1	2	2	2	1	2	2	2	1		1	1	1	1	1	1	1				
Children			1	1	1	1	1	2	2	2					1	1	3	3	3	2	2	3	2	1		2	2	2	2	2	1	1				
Total			4	4	4	6	6	8	8	8					5	6	13	12	12	8	10	12	10	5		8	8	8	8	8	5	4				

TABLE 4-11 (cont.)

Total Population Influx
Taft Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
St. Regis												
Workers			12	12	12	15	15	16	16	16		
Spouses			4	4	4	4	4	5	5	5		
Children			4	4	4	6	6	6	6	6		
Total			20	20	20	25	25	27	27	27		
Superior												
Workers			2	2	2	2	2	2	2	2		
Spouses			1	1	1	1	1	1	1	1		
Children			1	1	1	1	1	1	1	1		
Total			4	4	4	4	4	4	4	4		
Kellogg												
Workers			6	6	6	8	8	9	9	9		
Spouses			2	2	2	2	2	3	3	3		
Children			2	2	2	3	3	3	3	3		
Total			10	10	10	13	13	15	15	15		

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
St. Regis												
Workers			4	12	38	46	46	37	43	47	43	23
Spouses			1	4	11	14	14	11	13	14	13	7
Children			1	4	14	17	17	14	16	17	16	9
Total			6	20	63	77	77	62	72	78	72	39
Superior												
Workers				2	6	8	8	7	8	9	8	4
Spouses				1	2	2	2	2	2	3	2	1
Children				1	2	3	3	3	3	3	3	1
Total				4	10	13	13	12	13	15	13	6
Kellogg												
Workers			3	9	14	26	22	21	19	19	21	13
Spouses			1	3	4	8	7	6	6	6	6	4
Children			1	3	5	10	8	8	7	7	8	5
Total			5	15	23	44	37	35	32	32	35	22

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
St. Regis												
Workers	2	32	32	32	32	32	17	17	2			
Spouses	1	10	10	10	10	10	5	5	1			
Children	1	12	12	12	12	12	6	6	1			
Total	4	54	54	54	54	54	28	28	4			
Superior												
Workers		6	6	6	6	6	3	3				
Spouses		2	2	2	2	2	1	1				
Children		2	2	2	2	2	1	1				
Total		10	10	10	10	10	5	5				
Kellogg												
Workers	1	18	18	18	18	18						
Spouses	0	5	5	5	5	5						
Children	0	7	7	7	7	7						
Total	1	30	30	30	30	30						

TABLE 4-11 (cont.)

Total Population Influx
Taft Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Wallace																																				
Workers			1	1	1	4	4	5	5	5					4	5	6	8	7	5	4	4	5	3		4	4	4	4	4						
Spouses			0	0	0	1	1	1	1	1					1	1	2	2	2	1	1	1	1	1		1	1	1	1	1						
Children			0	0	0	1	1	2	2	2					1	2	2	3	3	2	1	1	2	1		1	1	1	1	1						
Total			1	1	1	6	6	8	8	8					6	8	10	13	12	8	6	6	8	5		6	6	6	6	6						
Mullan																																				
Workers						1	1	2	2	2					2	2	3	3	2	1	1	1	1	1		1	1	1	1	1						
Spouses						0	0	1	1	1					1	1	1	1	1	0	0	0	0	0		0	0	0	0	0						
Children						0	0	1	1	1					1	1	1	1	1	0	0	0	0	0		0	0	0	0	0						
Total						1	1	4	4	4					4	4	5	5	4	1	1	1	1	1		1	1	1	1	1						
Osburn																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4						
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1						
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1						
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6						

TABLE 4-11 (cont.)

Total Population Influx
Taft Plan

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Smelterville																																				
Workers			1	1	1	1	1	1	1	1						1	2	6	5	5	4	4	5	3		4	4	4	4	4						
Spouses			0	0	0	0	0	0	0	0						0	1	2	1	1	1	1	1	1		1	1	1	1	1						
Children			0	0	0	0	0	0	0	0						0	1	2	2	2	1	1	2	1		1	1	1	1	1						
Total			1	1	1	1	1	1	1	1						1	4	10	8	8	6	6	8	5		6	6	6	6	6						
Pinehurst																																				
Workers			2	2	2	2	2	2	2	2						2	3	7	6	6	5	5	6	4		5	5	5	5	5						
Spouses			1	1	1	1	1	1	1	1						1	1	2	2	2	1	1	2	1		1	1	1	1	1						
Children			1	1	1	1	1	1	1	1						1	1	3	2	2	2	2	2	1		2	2	2	2	2						
Total			4	4	4	4	4	4	4	4						4	5	12	10	10	8	8	10	6		8	8	8	8	8						
Coeur d'Alene																																				
Workers			13	13	13	13	13	13	13	13						2	25	51	59	39	45	45	50	32	3	44	44	44	44	44						
Spouses			4	4	4	4	4	4	4	4						1	7	15	18	12	13	13	15	10	1	13	13	13	13	13						
Children			5	5	5	5	5	5	5	5						1	9	19	22	14	17	17	18	12	1	16	16	16	16	16						
Total			22	22	22	22	22	22	22	22						4	41	85	99	65	75	75	83	54	5	73	73	73	73	73						

TABLE 4-11 (cont.)

Total Population Influx
Taft Plan

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Spokane												
Workers												
Spouses												
Children												
Total												

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Spokane												
Workers						9	9	14	14	14		
Spouses						3	3	4	4	4		
Children						3	3	5	5	5		
Total						15	15	23	23	23		

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Spokane												
Workers			14	14	14	6	6					
Spouses			4	4	4	2	2					
Children			5	5	5	2	2					
Total			23	23	23	10	10					

Source: Mountain West Research, Inc., 1981.

Note: Workers, spouses, children may not sum to totals due to rounding error.

TABLE 4-12

Estimated Payroll by County of Worker Residence
(thousands of 1981 dollars)

County	Hot Springs Alternative		Plains Alternative		Taft Alternative	
	Local Payroll	Nonlocal Payroll	Local Payroll	Nonlocal Payroll	Local Payroll	Nonlocal Payroll
Granite	707	2,551	707	2,551	707	2,551
Powell	212	1,227	212	1,227	212	1,227
Missoula	918	2,543	1,721	5,986	1,721	5,986
Lake	803	3,443	-	-	-	-
Mineral	-	-	-	-	1,386	3,831
Sanders	1,386	4,082	1,386	4,082	-	-
Shoshone	1,070	3,220	1,070	3,220	1,070	3,620
Kootenai	1,404	3,561	1,404	3,561	1,404	3,561
Spokane	66	592	66	592	66	592
TOTAL	6,566	21,219	6,566	21,219	6,566	21,368

Source: Mountain West Research, Inc., 1981.

TABLE 4-13

Estimated Induced Income Effect of Construction Worker Expenditures
(thousands of 1981 dollars)

County	Hot Springs Alternative			Plains Alternative			Taft Alternative		
	Direct	Induced	Total	Direct	Induced	Total	Direct	Induced	Total
Granite	1,727	829	2,556	1,727	829	2,556	1,727	829	2,556
Powell	703	337	1,040	703	337	1,040	703	337	1,040
Mineral	-	-	-	-	-	-	2,918	1,401	4,319
Sanders	3,019	1,449	4,468	3,019	1,449	4,468	-	-	-
Lake	2,180	1,047	3,226	-	-	-	-	729	729
Silver Bow	-	729	729	-	729	729	-	-	-
Flathead	-	654	654	-	-	-	4,115	4,498	8,613
Missoula	1,935	2,797	4,732	4,115	4,498	8,613	2,358	1,556	3,914
Shoshone	2,358	1,556	3,914	2,358	1,556	3,914	2,828	2,489	5,317
Kootenai	2,828	2,489	5,317	2,828	2,489	5,317	2,828	2,508	5,336
Spokane	303	5,050	5,353	303	5,050	5,353	303	5,087	5,390
TOTAL	15,053	16,937	31,990	15,053	16,937	31,990	15,112	17,017	32,129

Source: Mountain West Research, Inc., 1981.

TABLE 4-14

Total Income Effect: Payroll and Contractor Purchases

(thousands of 1981 dollars)

Income	Hot Springs Plan			Plains Plan			Taft Plan		
	Montana	Idaho	Washington	Montana	Idaho	Washington	Montana	Idaho	Washington
Wages									
Direct	9,564	5,186	303	9,564	5,186	303	9,463	5,346	303
Induced	7,842	4,045	5,050	7,842	4,045	5,050	7,760	4,170	5,087
Subtotal	17,406	9,231	5,353	17,406	9,231	5,353	17,223	9,516	5,390
Local Contractor Purchases									
Purchases	6,628	1,367	596	6,783	1,367	596	8,049	1,526	596
Value Added (67% of purchases)	4,441	916	399	4,545	916	399	5,393	1,022	399
Induced	3,642	715	2,084	3,727	715	2,112	4,422	797	2,384
Subtotal (value added plus induced)	8,083	1,631	2,483	8,272	1,631	2,511	9,815	1,814	2,783
TOTAL INCOME EFFECT	25,489	10,952	7,836	25,678	10,862	7,864	27,038	11,335	8,173

Source: Mountain West Research, Inc., 1981.

TABLE 4-15

Estimated Value of One Year's Loss of Agricultural Production

Route From	Route To	Route Alternative (least impact*)	Irrigated: Acres in Production Crossed (nonfallow)	Irrigated: Approximate Value @ $415/acre	Non-irrigated: Acres in Production Crossed (nonfallow)	Non-irrigated: Approximate Value @ $235/acre	Approximate Total Value
Garrison	Hot Springs	G-HS-1*	28.8	$ 11,952	129.5	$ 30,432	$ 42,384
		G-HS-2*	28.8	11,952	128.1	30,103	42,055
		G-HS-3	40.3	16,724	128.1	30,103	46,827
		G-HS-4	61.9	25,688	129.5	30,432	56,120
		G-HS-5	162.6	67,479	159.7	37,529	105,008
Hot Springs	Bell	HS-B-1*	223.0	$ 92,545	401.5	$ 94,352	$186,897
		HS-B-2	227.4	94,371	500.8	117,688	212,059
		HS-B-3	223.0	92,545	401.5	94,352	186,897
		HS-B-4	223.0	92,545	401.5	94,352	186,897
Garrison	Plains	G-P-1*	10.1	$ 4,191	20.1	$ 4,723	$ 8,914
		G-P-2*	10.1	4,191	18.7	4,394	8,585
		G-P-3	21.6	8,964	18.7	4,394	13,358
		G-P-4	43.2	17,928	20.1	4,723	22,651
		G-P-5	143.9	59,718	50.4	11,844	71,562
Plains	Bell	P-B-1*	223.0	$ 92,545	361.2	$ 84,882	$177,427
		P-B-2	227.4	94,371	460.5	108,217	202,588
		P-B-3	223.0	92,545	361.2	84,882	177,427
		P-B-4	223.0	92,545	361.2	84,882	177,427
Garrison	Taft	G-T-1	10.1	$ 4,191	1.4	$ 329	$ 4,520
		G-T-2	10.1	4,191	0.0	0	4,191
		G-T-3	21.6	8,964	0.0	0	8,964
		G-T-4	43.2	17,928	1.4	329	18,257
		G-T-5	143.9	59,718	31.7	7,449	67,167
		G-T-6	10.1	4,191	20.1	4,723	8,914
		G-T-7	28.8	11,952	21.6	5,076	17,028
		G-T-8	129.5	53,742	51.8	12,173	65,915
		G-T-9*	4.3	1,784	20.1	4,723	6,507
		G-T-10	10.1	4,191	25.9	6,086	10,277
		G-T-11	28.8	11,952	27.3	6,415	18,367
		G-T-12	129.5	53,742	57.6	13,536	67,278
		G-T-13	4.3	1,784	25.9	6,086	7,870
		G-T-14	10.1	4,191	25.9	6,086	10,277
		G-T-15	28.8	11,952	27.3	6,415	18,367
		G-T-16	129.5	53,742	57.6	13,536	62,278
		G-T-17	4.3	1,784	25.9	6,086	7,870
Taft	Bell	T-B-1	189.9	$ 78,808	152.5	$ 35,837	$114,645
		T-B-2	189.9	78,808	152.5	35,837	114,645
		T-B-3	189.9	78,808	152.5	35,837	114,645
		T-B-4 *	189.9	78,808	152.5	35,837	114,645
		T-B-5	189.9	78,808	152.5	35,837	114,645
		T-B-6	189.9	78,808	152.5	35,837	114,645

Source: Mountain West Research, Inc., 1981; Bonneville Power Administration, unpublished land use data, 1981.

TABLE 4-16

Estimated Value of Timber in the Right-of-way

Routes From	To	Route Alternative (least impact*)	Montana Acres in ROW[a]	Montana Estimated Value[b,c]	Idaho Acres in ROW[a]	Idaho Estimated Value[b,c]	Estimated Total Value[c]
Garrison	Hot Springs	G-HS-1*	791.3	$ 348			$ 348
		G-HS-2*	765.6	338			338
		G-HS-3	720.2	318			318
		G-HS-4	617.3	272			272
		G-HS-5	556.8	245			245
Hot Springs	Bell	HS-B-1*	347.8	$ 153	1156.1	$2,724	$2,877
		HS-B-2	450.5	198	958.1	2,257	2,455
		HS-B-3	347.8	153	1184.9	2,790	2,943
		HS-B-4	347.8	153	1184.9	2,790	2,943
Garrison	Plains	G-P-1*	1394.9	$ 615			$ 615
		G-P-2*	1369.3	604			604
		G-P-3	1323.9	583			583
		G-P-4	1221.0	539			539
		G-P-5	1160.5	512			512
Plains	Bell	P-B-1*	217.5	$ 96	1156.3	$2,724	$2,820
		P-B-2	320.2	141	958.3	2,258	2,399
		P-B-3	217.5	96	1185.1	2,792	2,888
		P-B-4	217.5	96	1185.1	2,792	2,888
Garrison	Taft	G-T-1	1862.5	$ 821			$ 821
		G-T-2	1836.8	810			810
		G-T-3	1791.4	790			790
		G-T-4	1688.5	744			744
		G-T-5	1627.9	718			718
		G-T-6	1927.6	850			850
		G-T-7	1815.6	800			800
		G-T-8	1755.1	774			774
		G-T-9*	2128.8	939			939
		G-T-10	1921.5	847			847
		G-T-11	1809.6	798			798
		G-T-12	1749.0	771			771
		G-T-13	2122.7	936			936
		G-T-14	1936.6	854			854
		G-T-15	1824.7	804			804
		G-T-16	1764.2	778			778
		G-T-17	2137.9	943			943
Taft	Bell	T-B-1	85.3	$ 37	1123.6	$2,647	$2,684
		T-B-2	85.3	37	1123.6	2,647	2,684
		T-B-3	85.3	37	1119.1	2,637	2,684
		T-B-4*	32.4	14	1158.3	2,729	2,743
		T-B-5	32.4	14	1158.3	2,729	2,743
		T-B-6	32.4	14	1153.8	2,718	2,732

Sources: [a]Bonneville Power Administration, unpublished land use data, 1981.
[b]Mountain West Research, Inc., 1981.
[c]In thousands of 1981 dollars.

TABLE 4-17

Net Present Value of Expected Timber Growth in the Right-of-way

Routes From	Routes To	Route Alternative (least impact*)	Forest Productivity: High Acres[a]	High Net Present Value[b]	Moderate Acres[a]	Moderate Net Present Value[b]	Low Acres[a]	Low Net Present Value[b]	Total Net Present Value[b]
Garrison	Hot Springs	G-HS-1*	72.6	$ 7,144	425.2	$ 32,260	302.6	$ 0	$ 39,404
		G-HS-2*	40.9	4,025	463.0	35,128	270.8	0	39,153
		G-HS-3	40.9	4,025	408.5	30,993	279.9	0	35,018
		G-HS-4	21.2	2,086	239.0	18,133	366.2	0	20,219
		G-HS-5	21.2	2,086	249.7	18,945	295.0	0	21,031
Hot Springs	Bell	HS-B-1*	1145.1	$112,718	407.0	$ 30,879	211.8	$ 0	$143,597
		HS-B-2	974.4	95,890	482.7	36,622	211.8	0	132,512
		HS-B-3	1198.3	117,924	382.8	29,043	211.8	0	146,967
		HS-B-4	1192.3	117,304	388.9	29,506	211.8	0	146,810
Garrison	Plains	G-P-1*	158.9	$ 15,637	936.6	$ 71,060	308.7	$ 0	$ 86,697
		G-P-2*	127.1	12,508	974.4	73,928	276.9	0	86,436
		G-P-3	127.1	12,508	919.9	69,793	286.0	0	82,301
		G-P-4	107.4	10,569	750.5	56,940	372.2	0	67,509
		G-P-5	107.4	10,569	761.0	57,737	301.1	0	68,306
Plains	Bell	P-B-1*	1145.4	$112,719	322.3	$ 24,453	166.4	$ 0	$137,172
		P-B-2	974.4	95,891	397.9	30,189	166.4	0	126,080
		P-B-3	1198.3	117,925	298.1	22,617	166.4	0	140,542
		P-B-4	1192.3	117,925	304.1	23,072	166.4	0	140,997
Garrison	Taft	G-T-1	429.7	$ 42,287	1128.7	$ 85,581	313.2	$ 0	$127,868
		G-T-2	397.9	39,157	1166.5	88,502	281.4	0	127,659
		G-T-3	397.9	39,157	112.1	84,375	290.5	0	123,532
		G-T-4	378.3	37,229	942.6	71,515	376.7	0	108,744
		G-T-5	378.3	37,229	953.2	72,319	305.6	0	109,548
		G-T-6	375.2	36,923	1201.3	91,143	351.0	0	128,066
		G-T-7	331.4	32,613	1021.3	77,486	463.0	0	110,099
		G-T-8	331.4	32,613	1031.9	78,290	391.9	0	110,903
		G-T-9*	378.3	37,229	1366.2	103,654	384.3	0	140,883
		G-T-10	375.2	36,923	1190.7	90,338	355.6	0	127,261
		G-T-11	331.4	32,613	1010.7	76,682	467.5	0	109,295
		G-T-12	331.4	32,613	1021.3	77,486	396.4	0	110,099
		G-T-13	378.3	37,229	1491.8	113,122	388.9	0	150,351
		G-T-14	497.8	48,988	1122.7	85,179	316.2	0	134,167
		G-T-15	453.9	44,668	942.6	71,515	428.2	0	116,183
		G-T-16	453.9	44,668	953.2	72,319	357.0	0	116,987
		G-T-17	500.8	49,284	1287.6	97,690	349.5	0	146,974
Taft	Bell	T-B-1	912.3	$ 89,779	208.8	$ 15,842	87.8	$ 0	$105,621
		T-B-2	906.3	89,189	214.9	16,304	87.8	0	105,493
		T-B-3	910.8	89,632	205.8	15,614	87.8	0	105,246
		T-B-4*	916.9	90,232	186.1	14,119	87.8	0	104,351
		T-B-5	910.3	89,583	192.2	14,582	87.8	0	104,165
		T-B-6	915.4	90,085	183.1	13,892	87.8	0	103,977

Sources: [a]Bonneville Power Administration, unpublished land use data, 1981.
[b]Mountain West Research, Inc., 1981.

TABLE 4-18

Increase in Personal Income Tax Revenues
by Plan and State
(1981 dollars)

Plan	Montana	Idaho	Total
Hot Springs	$557,000	$193,000	$750,000
Plains	557,000	193,000	750,000
Taft	551,000	199,000	750,000

Source: Mountain West Research, Inc., 1981.

TABLE 4-19

Increase in Sales Tax Revenues in Idaho
from Contractor Purchases
(1981 dollars)

Plan	Idaho
Hot Springs	41,000
Plains	41,000
Taft	46,000

Source: Mountain West Research, Inc., 1981.

TABLE 4-20

Sales Taxes Foregone from Contractor Purchases
in Washington
(1981 dollars)

Plan	Washington
Hot Springs	30,000
Plains	30,000
Taft	30,000

Source: Mountain West Research, Inc., 1981.

TABLE 4-21

Increase in Sales Tax Revenues from Construction Worker
and Induced Income Expenditures
(1981 dollars)

Plan	Idaho	Washington
Hot Springs	298,000	371,000
Plains	298,000	371,000
Taft	309,000	388,000

Source: Mountain West Research, Inc., 1981.

TABLE 4-22

First-year Property Tax Revenues Foregone
Least-impact Alternatives
(thousands of 1981 dollars)

County	1979 County Revenue	Hot Springs Plan		Plains Plan		Taft Plan	
		Revenues Foregone	% of 1979 Revenue	Revenues Foregone	% of 1979 Revenue	Revenues Foregone	% of 1979 Revenue
Powell	$ 5,499	$ 416[a]	7.6	$ 429[a]	7.8	$ 375[a]	6.8
Granite	2,867	365	12.7	390	13.6	730	25.5
Missoula	88,822	909	1.0	1,452	1.6	1,280	1.4
Lake	20,731	129	0.6	-	-	-	-
Sanders	9,465	1,660[b]	17.5	1,320[c]	13.9	-	-
Mineral	3,422	-	-	-	-	2,637[d]	77.1
Shoshone	13,832	110	0.8	109	0.8	137	1.0
Kootenai	26,055	144	0.6	144	0.6	144	0.6
Spokane	102,070	147[e]	0.1	147	0.1	147[e]	0.1
TOTAL	$272,763	$3,880		$3,991		$5,450	

Source: Montana Department of Community Affairs, Local Government Finances, Montana Counties, Raw Data by Year, 1980; Washington State Auditor's Department, Local Government Comparative Statistics, 1980; Idaho State Auditor's Department, Consolidated Financial Statement of Forty-Four Counties, 1979.

Note: Including county revenue and trust and agency revenue.

[a]Includes $228,000 for Garrison II substation.

[b]Includes $221,000 for Hot Springs substation.

[c]Includes $241,000 for Plains substation.

[d]Includes $689,000 for Taft substation.

[e]Includes $83,000 for Bell substation expansion.

TABLE 4-23

Cumulative Totals: Long-term Property Tax Revenues Foregone
Least-impact Alternatives
(thousands of 1981 dollars)

County	Hot Springs Plan		Plains Plan		Taft Plan	
	Straight-line Depreciation	Constant Value	Straight-line Depreciation	Constant Value	Straight-line Depreciation	Constant Value
Powell	$ 7,055	$ 13,695	$ 7,321	$ 14,212	$ 6,239	$ 12,102
Granite	7,292	14,219	7,809	15,227	14,609	28,487
Missoula	18,173	35,437	29,035	56,619	25,601	49,923
Lake	2,590	5,050	-	-	-	-
Sanders	31,984	62,307	25,081	48,842	-	-
Mineral	-	-	-	-	48,955	95,329
Shoshone	2,188	4,267	2,188	4,267	2,733	5,329
Kootenai	2,875	5,607	2,875	5,607	2,875	5,607
Spokane	2,599	5,044	2,599	5,044	2,599	5,044
TOTAL	$ 68,406	$145,620	$ 76,908	$149,818	$103,611	$201,765

Source: Mountain West Research, Inc., 1981.

TABLE 4-24

Land Ownership by Plan and Route Alternative (miles)

Route From	Route To	Route Alternative (least impact*)	Length of Alternative	Public (Federal or State)	Reservation	Private	Percent Private or Reservation	Significance
Garrison	Hot Springs	G-HS-1*	122.1	16.4	47.6	58.1	87	LA3
		G-HS-2*	122.5	12.1	47.6	62.6	90	LA3
		G-HS-3	123.3	14.7	47.6	61.0	88	LA3
		G-HS-4	123.9	12.8	47.6	63.5	90	LA3
		G-HS-5	120.3	11.6	47.6	61.1	90	LA3
Hot Springs	Bell	HS-B-1*	117.8	70.9	9.0	61.6	60	LA2
		HS-B-2	118.9	70.4	9.0	67.2	64	LA2
		HS-B-3	119.7	76.8	9.0	61.6	59	LA2
		HS-B-4	119.7	76.8	9.0	61.6	59	LA2
Garrison	Plains	G-P-1*	126.7	56.2	0.0	70.5	55	LA2
		G-P-2*	127.1	52.1	0.0	75.0	59	LA2
		G-P-3	127.9	54.5	0.0	73.4	57	LA2
		G-P-4	128.5	52.6	0.0	75.9	59	LA2
		G-P-5	124.9	51.4	0.0	73.5	59	LA2
Plains	Bell	P-B-1*	104.9	73.9	0.0	58.7	56	LA2
		P-B-2	106.0	69.4	0.0	64.3	60	LA2
		P-B-3	106.8	75.8	0.0	58.7	56	LA2
		P-B-4	106.8	75.8	0.0	58.7	56	LA2
Garrison	Taft	G-T-1	152.4	85.2	0.0	67.2	44	LA2
		G-T-2	152.8	81.1	0.0	71.7	47	LA2
		G-T-3	153.6	83.5	0.0	70.1	46	LA2
		G-T-4	154.2	81.6	0.0	72.6	47	LA2
		G-T-5	150.6	80.4	0.0	70.2	47	LA2
		G-T-6	156.6	88.5	0.0	68.1	44	LA2
		G-T-7	156.2	86.4	0.0	69.8	45	LA2
		G-T-8	152.6	85.2	0.0	67.4	44	LA2
		G-T-9*	156.3	115.1	0.0	41.2	26	LA1
		G-T-10	156.6	88.1	0.0	68.5	44	LA2
		G-T-11	156.2	86.0	0.0	70.2	45	LA2
		G-T-12	152.6	84.8	0.0	67.8	45	LA2
		G-T-13	156.3	114.7	0.0	41.6	26	LA1
		G-T-14	157.6	89.6	0.0	68.0	43	LA2
		G-T-15	157.2	87.5	0.0	69.7	44	LA2
		G-T-16	153.6	86.3	0.0	67.3	44	LA2
		G-T-17	157.3	116.2	0.0	41.1	26	LA1
Taft	Bell	T-B-1	75.1	59.8	0.0	43.0	57	LA2
		T-B-2	75.1	59.8	0.0	43.0	57	LA2
		T-B-3	74.9	60.7	0.0	42.9	57	LA2
		T-B-4*	73.7	57.9	0.0	43.5	59	LA2
		T-B-5	73.7	57.9	0.0	43.5	59	LA2
		T-B-6	73.5	58.8	0.0	43.4	59	LA2

Sources: Bonneville Power Administration, unpublished land use data, 1981.

TABLE 4-25

Inconvenience by Land Use Type

Route From	Route To	Route Alternative (least impact*)	Land Use Type (inconvenience weight): Urban/ Residential (4)	Irrigated Cropland (4)	Dispersed Dev't (3)	Unirrigated Cropland (2)	Range-land (1)	Forest-land (1)	Inconven-ience Score
Garrison	Hot Springs	G-HS-1*	0.0	2.0	0.0	9.0	57.7	52.3	136.0
		G-HS-2*	0.0	2.0	0.0	8.9	59.9	50.6	136.3
		G-HS-3	0.0	2.8	0.0	8.9	61.7	47.6	138.3
		G-HS-4	0.0	4.3	0.0	9.0	67.3	40.8	143.3
		G-HS-5	0.0	11.3	0.0	11.1	58.7	36.8	162.9
Hot Springs	Bell	HS-B-1*	.3	15.5	.5	27.9	2.9	99.4	222.8
		HS-B-2	.3	15.8	.5	34.8	2.9	93.1	231.5
		HS-B-3	.3	15.5	.5	27.9	2.9	101.3	224.7
		HS-B-4	.3	15.5	.5	27.9	2.9	101.3	224.7
Garrison	Plains	G-P-1*	0.0	.7	0.0	1.4	32.2	92.2	130.0
		G-P-2*	0.0	.7	0.0	1.3	34.4	90.5	130.3
		G-P-3	0.0	1.5	0.0	1.3	36.2	87.5	132.3
		G-P-4	0.0	3.0	0.0	1.4	41.8	80.7	137.3
		G-P-5	0.0	10.0	0.0	3.5	33.2	76.7	156.9
Plains	Bell	P-B-1*	.3	15.5	.5	25.1	1.4	90.8	207.1
		P-B-2	.3	15.8	.5	32.0	1.4	84.5	215.8
		P-B-3	.3	15.5	.5	25.1	1.4	92.7	209.0
		P-B-4	.3	15.5	.5	25.1	1.4	92.7	209.0
Garrison	Taft	G-T-1	0.0	.7	0.0	.1	28.5	123.1	154.6
		G-T-2	0.0	.7	0.0	0.0	30.7	121.4	154.9
		G-T-3	0.0	1.5	0.0	0.0	32.5	118.4	156.9
		G-T-4	0.0	3.0	0.0	.1	38.1	111.6	161.9
		G-T-5	0.0	10.0	0.0	2.2	29.5	107.6	181.5
		G-T-6	0.0	.7	0.0	1.4	27.0	127.4	160.0
		G-T-7	0.0	2.0	0.0	1.5	32.5	120.0	163.5
		G-T-8	0.0	9.0	0.0	3.6	23.9	116.0	183.1
		G-T-9*	0.0	.3	0.0	1.4	13.8	140.7	158.5
		G-T-10	0.0	.7	0.0	1.8	27.0	127.0	160.4
		G-T-11	0.0	2.0	0.0	1.9	32.5	119.6	163.9
		G-T-12	0.0	9.0	0.0	4.0	23.9	115.6	183.5
		G-T-13	0.0	.3	0.0	1.8	13.8	140.3	158.9
		G-T-14	0.0	.7	0.0	1.8	27.0	128.0	161.4
		G-T-15	0.0	2.0	0.0	1.9	32.5	120.6	164.9
		G-T-16	0.0	9.0	0.0	4.0	23.9	116.6	184.5
		G-T-17	0.0	.3	0.0	1.8	13.8	141.3	159.9
Taft	Bell	T-B-1	.3	13.2	.8	10.8	.3	79.9	158.2
		T-B-2	.3	13.2	.8	10.8	.3	79.9	158.2
		T-B-3	.3	13.2	.9	10.8	.3	79.6	158.2
		T-B-4*	.3	13.2	.8	10.6	.3	78.7	156.6
		T-B-5	.3	13.2	.8	10.6	.3	78.7	156.6
		T-B-6	.3	13.2	.9	10.6	.3	78.4	156.6

Sources: Bonneville Power Administration, unpublished land use data, 1981; Mountain West Research, Inc., 1981.

TABLE 4-26

New Corridor Development Impacts by Route Alternative

Route From	Route To	Route Alternative (least impact*)	Length of Alternative	3 or More Existing Uses in Corridor (1)	1-2 Existing Uses in Corridor (2)	New Corridor Established (3)	Impact Score	Significance
Garrison	Hot Springs	G-HS-1*	122.1	3.5	69.9	48.7	289.4	LA2
		G-HS-2*	122.5	3.5	81.3	37.7	279.2	LA2
		G-HS-3	123.3	16.9	73.2	33.2	262.9	LA2
		G-HS-4	123.9	37.2	59.0	27.7	238.3	LA1
		G-HS-5	120.3	26.7	89.6	4.0	217.9	LA1
Hot Springs	Bell	HS-B-1*	117.8	9.5	51.7	56.6	282.7	LA2
		HS-B-2	118.9	9.5	51.7	57.7	286.0	LA2
		HS-B-3	119.7	9.5	51.7	58.5	288.4	LA2
		HS-B-4	119.7	9.5	51.7	58.5	288.4	LA2
Garrison	Plains	G-P-1*	126.7	6.5	19.3	100.9	347.8	LA3
		G-P-2*	127.1	6.5	30.7	89.9	337.6	LA3
		G-P-3	127.9	19.9	22.6	85.4	321.3	LA3
		G-P-4	128.5	40.2	8.4	79.9	296.7	LA2
		G-P-5	124.9	29.7	39.0	56.2	276.3	LA2
Plains	Bell	P-B-1*	104.9	9.5	44.2	51.2	251.5	LA2
		P-B-2	106.0	9.5	44.2	52.3	254.8	LA2
		P-B-3	106.8	9.5	44.2	53.1	257.2	LA2
		P-B-4	106.8	9.5	44.2	53.1	257.2	LA2
Garrison	Taft	G-T-1	152.4	3.5	19.3	129.6	430.9	LA3
		G-T-2	152.8	3.5	30.7	118.6	420.7	LA3
		G-T-3	153.6	16.9	22.6	114.1	404.4	LA3
		G-T-4	154.2	37.2	8.4	108.6	379.8	LA3
		G-T-5	150.6	26.7	39.0	84.9	359.4	LA3
		G-T-6	156.6	0.0	15.2	141.4	454.6	LA3
		G-T-7	156.2	5.5	4.2	146.5	453.4	LA3
		G-T-8	152.6	3.0	30.6	119.0	421.2	LA3
		G-T-9*	156.3	0.0	0.0	156.3	468.9	LA3
		G-T-10	156.6	0.0	15.2	141.4	454.6	LA3
		G-T-11	156.2	5.5	4.2	146.5	453.4	LA3
		G-T-12	152.6	3.0	30.6	119.0	421.2	LA3
		G-T-13	156.3	0.0	0.0	156.3	468.9	LA3
		G-T-14	157.6	0.0	15.2	142.4	457.6	LA3
		G-T-15	157.2	5.5	4.2	147.5	456.4	LA3
		G-T-16	153.6	3.0	30.6	120.0	424.2	LA3
		G-T-17	157.3	0.0	0.0	157.3	471.9	LA3
Taft	Bell	T-B-1	75.1	0.0	44.2	30.9	181.1	LA2
		T-B-2	75.1	0.0	44.2	30.9	181.1	LA2
		T-B-3	74.9	0.0	44.2	30.7	180.5	LA2
		T-B-4*	73.7	0.0	44.2	29.5	176.9	LA2
		T-B-5	73.7	0.0	44.2	29.5	176.9	LA2
		T-B-6	73.5	0.0	44.2	29.3	176.3	LA2

Source: Bonneville Power Administration, unpublished land use data, 1981.

TABLE 4-27

Alienation Areas by Level of Significance

Routes From	To	Route Alternative (least impact*)	Rancher Opposition	Blackfoot River Valley Crossing	Miller Creek Area, Bitterroot River Valley Crossing	Rattlesnake Valley Crossing (south)	Rattlesnake Valley Crossing (north)	Grant, Butler, LaValle, Johnson Creek Valley Crossings	Nine Mile Valley Area	Coeur d'Alene River Valley Crossing
Garrison	Hot Springs	G-HS-1*		RA2			RA3	RA2		
		G-HS-3				RA3		RA2		
		G-HS-4				RA3		RA2		
		G-HS-5	LA3			RA3		RA2		
Hot Springs	Bell	HS-B-1*								RA2
		HS-B-2								RA2
		HS-B-3								RA2
		HS-B-4								RA2
Garrison	Plains	G-P-1*		RA2			RA3	RA2	RA2	
		G-P-2*		RA2		RA3		RA2	RA2	
		G-P-3				RA3		RA2	RA2	
		G-P-4				RA3		RA2	RA2	
		G-P-5	LA3			RA3		RA2	RA2	
Plains	Bell	P-B-1*								RA2
		P-B-2								RA2
		P-B-3								RA2
		P-B-4								RA2
Garrison	Taft	G-T-1		RA2			RA3	RA2	RA2	
		G-T-2		RA2		RA3		RA2	RA2	
		G-T-3				RA3		RA2	RA2	
		G-T-4				RA3		RA2	RA2	
		G-T-5	LA3			RA3		RA2	RA2	
		G-T-6			RA3					
		G-T-7			RA3					
		G-T-8	LA3		RA3					
		G-T-9*			RA3					
		G-T-10			RA3					
		G-T-11			RA3					
		G-T-12	LA3		RA3					
		G-T-13			RA3					
		G-T-14			RA3					
		G-T-15			RA3					
		G-T-16	LA3		RA3					
		G-T-17			RA3					
Taft	Bell	T-B-1								RA2
		T-B-2								RA2
		T-B-3								RA2
		T-B-4*								RA2
		T-B-5								RA2
		T-B-6								RA2

Source: Mountain West Research, Inc., 1981.

TABLE 4-28

Alienation Areas by Least-impact Route Alternative

Plan	Alternative	Alienation Area	Significance
Hot Springs	G-HS-1, HS-B-1	Blackfoot River Valley crossing	RA2
		Rattlesnake Valley crossing (south)	RA3
		Grant, Butler, LaValle, Johnson Creek Valley crossings	RA2
		Coeur D'Alene River Valley crossing	RA2
	G-HS-2, HS-B-1	Blackfoot River Valley crossing	RA2
		Rattlesnake Valley crossing (north)	RA3
		Grant, Butler, LaValle, Johnson Creek Valley crossings	RA2
		Coeur d'Alene River Valley crossing	RA2
Plains	G-P-1, P-B-1	Blackfoot River Valley crossing	RA2
		Rattlesnake Valley crossing (south)	RA3
		Grant, Butler, LaValle, Johnson Creek Valley crossings	RA2
		Ninemile Valley area	RA2
		Coeur d'Alene River Valley crossing	RA2
	G-P-2, P-B-1	Blackfoot River Valley crossing	RA2
		Rattlesnake Valley crossing (north)	RA3
		Grant, Butler, LaValle, Johnson Creek Valley crossings	RA2
		Ninemile Valley area	RA2
		Coeur d'Alene River Valley crossing	RA2
Taft	G-T-9, T-B-4	Miller Creek area, Bitteroot Valley crossing	RA3
		Coeur d'Alene River Valley crossing	RA2

Source: Mountain West Research, Inc., 1981.

TABLE 4-29

Special Considerations by Route Alternative

Route From	Route To	Route Alternative (least impact*)	Undeveloped Subdivided Land (miles)	Flathead Indian Reservation Crossing	Rattlesnake National Recreation Area	Missoula-Clinton Corridor	Thompson Falls-Plains Corridor
Garrison	Hot Springs	G-HS-1*	4.1	RA3	RA3		
		G-HS-2*	4.5	RA3			
		G-HS-3	6.0	RA3		LA3	
		G-HS-4	7.3	RA3		LA3	
		G-HS-5	8.4	RA3		LA3	
Hot Springs	Bell	HS-B-1*	2.5				LA3
		HS-B-2	2.8				LA3
		HS-B-3	2.5				LA3
		HS-B-4	2.5				LA3
Garrison	Plains	G-P-1*	4.5		RA3		
		G-P-2*	4.9				
		G-P-3	6.4			LA3	
		G-P-4	7.7			LA3	
		G-P-5	8.8			LA3	
Plains	Bell	P-B-1*	2.1				LA3
		P-B-2	2.4				LA3
		P-B-3	2.1				LA3
		P-B-4	2.1				LA3
Garrison	Taft	G-T-1	5.6		RA3		
		G-T-2	6.0				
		G-T-3	7.5			LA3	
		G-T-4	8.8			LA3	
		G-T-5	9.9			LA3	
		G-T-6	3.4				
		G-T-7	3.9				
		G-T-8	5.0				
		G-T-9*	2.3				
		G-T-10	3.5				
		G-T-11	3.3				
		G-T-12	5.1				
		G-T-13	2.4				
		G-T-14	2.5				
		G-T-15	3.0				
		G-T-16	4.1				
		G-T-17	1.4				
Taft	Bell	T-B-1	1.3				
		T-B-2	1.3				
		T-B-3	1.3				
		T-B-4	1.3				
		T-B-5	1.3				
		T-B-6	1.3				

Source: Mountain West Research, Inc., 1981.

TABLE 4-30

Special Consideration Effects by Least-impact Alternative

Plan	Alternative	Alienation Area	Significance
Hot Springs	G-HS-1, HS-B-1	Undeveloped/subdivided land crossed: 6.6 miles	
		Flathead Indian Reservation crossing	RA3
		Rattlesnake National Recreation Area	RA3
		Thompson Falls - Plains Corridor	LA3
	G-HS-2, HS-B-1	Undeveloped/subdivided land crossed: 7.0 miles	
		Flathead Indian Reservation crossing	RA3
		Thompson Falls - Plains Corridor	LA3
Plains	G-P-1, P-B-1	Undeveloped/subdivided land crossed: 6.6 miles	
		Rattlesnake National Recreation Area	RA3
		Thompson Falls - Plains Corridor	LA3
	G-P-2, P-B-1	Undeveloped/subdivided land crossed: 7.0 miles	
		Thompson Falls - Plains Corridor	LA3
Taft	G-T-9, T-B-4	Undeveloped/subdivided land crossed: 3.6 miles	

Source: Mountain West Research, Inc., 1981.

TABLE 4-31

County Plans and Goals and Objectives by Land Use Category

County	Name of Plan	Year Published	Land Use Goals and Objectives: Utility Corridors	Agri-culture	For-estry	Recreation and Scenery	Future Residential Development	Open Space
Powell	Powell County Land Use Plan	1978		X	X	X		X
Granite	Granite County Comprehensive Plan	1974		X	X	X	X	X
Missoula	Missoula County Comprehensive Plan	1975		X	X	X	X	X
Lake	Draft Comprehensive Plan for Lake County	1979		X	X	X	X	X
Sanders	Overall Economic Development Program	1979		X	X			
Mineral	None							
Shoshone	Shoshone County Comprehensive Plan	1976		X	X	X	X	X
Kootenai	Kootenai County Comprehensive Plan	1977		X		X	X	X
Spokane	Generalized Compre-hensive Plan, Spokane County	1980	X	X		X	X	X

Source: Mountain West Research, Inc., 1981.

5. COMPARISON OF ROUTE ALTERNATIVES BY IMPACT CATEGORY

5. COMPARISON OF ROUTE ALTERNATIVES BY IMPACT CATEGORY

The previous chapter identified the project's anticipated short- and long-term socioeconomic impacts. This chapter briefly summarizes those impacts whose magnitude does not differ by route alternative or is not great enough to justify clear socioeconomic distinctions between alternatives. The chapter then focuses on those impacts that best differentiate the routes, and when aggregated, serve to determine the route with least overall socioeconomic impact.

As shown in Chapter 4, the project's employment, income, demographic, and fiscal impacts would generally be beneficial. The total magnitude of each impact would be approximately the same for all three least-impact route alternatives, but the actual geographic incidence of the impacts would depend on the route selected. Consequently, employ ment, income, and demographic impacts have not been incorporated into the overall comparison of route alternatives.

1) Employment effects. The project's clearing phase would employ about 200 local workers for a seven- to eight-month period in 1984. Clearing and other construction period tasks would employ as many as 650 nonlocal workers for four- to twelve-month periods during 1984, 1985, and 1986. The project's operations period could generate as many as two new employment opportunities.

2) Demographic effects. Nonlocal construction workers and their families are expected to live in places where daily commuting distances to reporting stations are minimized and where motel and camping facilities are available. Missoula and Coeur d'Alene would experience the largest population influxes, approximately 190 and 100 persons, respectively. The demographic impacts on other communities along the route would be much smaller. None of the demographic impacts in any of the communities would result in noteworthy negative impacts on public facilities such as hospitals or schools.

3) Income effects. The project's local income effects would result from construction wages paid to local workers and from construction workers' and contractors' expenditures in local commercial establishments. Regardless of the alternative selected for construction, the total income effect in the study area would be about $45 million.

4) Fiscal effects. During the construction period, personal income tax revenues in Montana and Idaho would be increased by about $750,000. Sales tax revenues in Idaho and Washington would be increased by about $669,000. The first-year property tax revenues foregone because the project would be built by a tax-exempt federal agency (instead of a private utility) would range from $3.8 to $5.4 million over the entire study area.

The project's lodging/housing impacts and economic impacts on agriculture and forestry were shown to vary slightly by route alternative. However, because the person-night deficits and production values foregone were not large (or significantly different between alternatives), these impacts are summarized below but are not incorporated into the overall comparison.

1) Lodging/housing effects. The project's lodging/housing impacts would mostly be beneficial in that construction workers would fill rooms and spaces that would otherwise remain vacant. Small, temporary lodging shortfalls could occur in the Deer Lodge-Drummond, Plains-Thompson Falls, and St. Regis-Superior areas.

2) Agricultural productivity effects. During the construction period, when cropland would temporarily be removed from production, agricultural losses over the entire length of the line could range from $121,000 to $229,000. Rangeland losses could vary from $6,000 to $27,000. BPA would compensate landowners for both types of losses. Although transmission lines' long-term effects on agricultural land remain controversial, the actual losses from land taken out of production by tower bases would be negligible.

3) Forestry productivity effects. The project's short-term economic effects on forestry would consist of the difference between the maturity and current values of timber in the right-of-way. The long-term effects would consist of lost timber growth in the right-of-way. Long-term losses would range from $183,000 to $245,000 for the entire length of the line. Access roads would remove timber from production but would also facilitate timber management practices.

The project's potential social impacts, as presented in Section 4.3, are most noteworthy and do serve to differentiate the least-impact route alternatives under each of the three plans. Table 5-1 presents summary measures of the six social impact analyses.

Although the summary measures are not easily aggregated, they do highlight that the least-impact Taft route minimizes socioeconomic impacts. The least-impact Taft route would cross significantly fewer miles of private and reservation land and would cause less inconvenience by land use type. The route would also minimize crossings of areas that have high alienation potential or special consideration effects. It would also require fewer miles of new access roads than the Plains alternatives. Although the least-impact Taft route would maximize new corridor development, the socioeconomic significance of this impact would be reduced by virtue of its occurrence on public rather than private land (see Section 4.3.6). Consequently, because it minimizes social impacts, the least-impact Taft route is preferred from a socioeconomic standpoint.

The distinctions between the least-impact Hot Springs and Plains alternatives are less clear. The Plains routes would cross fewer miles of private and reservation land and would have less inconvenience effect on land use types. However, the Plains routes would result in more new miles of access roads and corridor development. Again, the significance of these last two effects would be reduced for the Plains routes because of their more common occurrence on public land. The Plains routes would cross one more area with high potential for alienation (the Ninemile Valley area), but one less special consideration area (the Flathead Indian Reservation), than would the Hot Springs routes. Consequently, because they would minimize the amount of private and reservation land crossed and have less of an inconvenience effect on land use types, the least-impact Plains routes are preferred over their Hot Springs counterparts.

From a socioeconomic perspective, the main difference between the two least-impact Hot Springs routes is in their potential crossing of the Rattlesnake Valley area. G-HS-1, HS-B-1 would pass through the Rattlesnake Valley National Recreation area while G-HS-2, HS-B-1 would pass through the valley further south, where they would have significant adverse effects on residential areas. While the southern Rattlesnake Valley route would affect local residents daily, the northern route would affect less frequently the greater number of recreationists who desire to use the National Recreation Area. Consequently, it is difficult to determine which route would minimize socioeconomic impacts. A similar argument can be made for the two least-impact Plains routes.

TABLE 5-1

Social Impacts by Least-impact Route Alternative

Plan	Alternative	Miles of Private and Reservation Land Crossed	Inconvenience by Land Use Type Score	New Miles of Access Road Required	New Corridor Impact Score	Alienation Areas	Special Consideration Areas
Hot Springs	G-HS-1, HS-B-1	176.3	358.8	461.5	572.1	4	3
	G-HS-2, HS-B-1	180.8	359.4	452.6	561.9	4	2
Plains	G-P-1, P-B-1	129.2	337.1	576.0	599.3	5	2
	G-P-2, P-B-1	133.7	337.4	567.1	589.1	5	1
Taft	G-T-9, T-B-4	84.7	315.1	459.8	645.8	2	0

Source: Mountain West Research, Inc., 1981.

6. MITIGATION

6. MITIGATION

6.1 Introduction

This chapter discusses the socioeconomic mitigation and monitoring actions recommended for the Garrison-Spokane 500-kV Transmission Project. Mitigation measures are presented for generic impact categories, except where means of reducing or eliminating site-specific impacts require discussion.

The project impacts that require or permit mitigation have both short- and long-term components. The short-term impacts are primarily associated with the social and land use effects of preconstruction and construction period activities. The long-term impacts are associated with the physical presence of the line and its social and land use effects on landowners, residents, and recreationists.

This chapter is organized in four sections. Sections 6.2 and 6.3 discuss short-term mitigation measures for preconstruction and construction period impacts, respectively. Section 6.4 discusses mitigation measures for long-term operations period impacts. Finally, Section 6.5 presents recommendations for long-term monitoring of the socioeconomic impacts of the project.

6.2 Preconstruction Period

During the preconstruction period, the transmission line could create social conflict and resentment among those local residents who oppose the line in general and among landowners who would be directly affected by the project if it were constructed across their land.

BPA could mitigate general public opposition to the project in three ways. First, it would be important to establish an open communication network that facilitates contact with local landowners and governments who must plan for the impacts that are likely to result from the project. BPA's Missoula field office, which opened in spring of 1981, is an important first step in this process.

Second, as will be accomplished by the Environmental Impact Statement, it will be important to clearly establish that the line is needed by residents of Montana and the Pacific Northwest. This need will become more credible if BPA can also demonstrate the conservation efforts it has made in the Pacific Northwest.

Third, BPA could identify the implications of creating a new energy corridor. Although it may not be feasible to project whether additional lines would be routed parallel to the Garrison-Spokane line, BPA could consider publicizing the factors that might influence future transmission line demand and siting decisions.

At BPA's scoping meetings, many local residents expressed concern that the current siting decision be accompanied by long-term planning to minimize net long-term or cumulative impacts. Many of the respondents interviewed by the socioeconomic assessment team expressed concern about the current siting decision because they felt it would establish a corridor that could be paralleled by additional lines. Most of these respondents stated they would prefer to see BPA institute a multi-year planning program to select a major east-west corridor that could accommodate several transmission lines. This large corridor could then be used by the Garrison-Spokane line. Very few respondents were aware that BPA was incorporating the potential for paralleling as a criterion in its selection of the least-impact alternative for the Garrison-Spokane line.

Explicit disclosure of this criterion and more direct discussion of the probability of additional lines being located in the area would probably increase short-term resistance to the proposed line. However, long-term social conflict and resentment would be reduced by open discussion of the role of the current line in influencing future siting decisions. Not only would this ameliorate the suspicion and distrust that was expressed about the integrity of the siting and planning process, but it would allow more realistic public input into the current decision as it is affected by long-term plans. Since respondents expressed a general preference for both utilization of public lands and utilization of existing corridors, the possibility of additional lines would tend to increase their relative preference for the Taft alternative if long-term plans are considered.

The Garrison-Spokane line's direct preconstruction effects on private landowners have been mitigated in the siting process, which has attempted to locate the line away from current and planned concentrations of people. By avoiding these highly sensitive areas as much as possible, the siting process has minimized the number of landowners who would be directly affected by the anticipation of impacts and the preconstruction negotiation process.

During final center line location and land acquisition by BPA, two other actions would contribute importantly to mitigating potential social conflict and resentment on the part of landowners affected by the project. In terms of center line location, adverse effects would be minimized if BPA were to fully inform all landowners of the facility's alignment across their property and consult with them regarding the final siting of the line in areas where sensitive land uses (residential, undeveloped subdivided, or agricultural) would be affected. In the latter case, the BPA policy of siting towers and lines in a way that minimizes adverse land use impacts must be maintained. Thus, when traversing agricultural land, towers should be located on field boundaries wherever possible, with the right-of-way aligned to follow field boundaries rather than cross fields diagonally.

During the right-of-way acquisition process, it would be important to use clear, objective acquisition and compensation procedures. If possible, the use of personnel who have good reputations in the area during the acquisition process would also minimize feelings of mistrust and antipathy. In cases where the line would use previously negotiated rights-of-way, BPA might consider reviewing previous right-of-way agreements to determine whether they are fair in light of current conditions.

6.3 Construction Period

The transmission line would have both regional and site-specific construction period impacts. Regional impacts would consist of employment opportunities (primarily on clearing crews) and income and demo graphic effects. Because construction workers and their accompanying family members would not have significant adverse impacts on education facilities, health services, or the members of communities in which they live, the employment, income and demographic effects would generally be considered positive. The only exception would be limited cases where construction worker demand for transient lodging would exceed supply. Site-specific impacts would result from transmission line and access road construction activity and would primarily affect residents who own land in or adjacent to the right-of-way.

BPA could enhance the construction period's positive employment and income effects by using its Missoula field office to publicize job opportunities and by encouraging construction contractors to hire local workers and purchase local materials whenever possible. These actions would provide for good public relations and help the construction contractor maintain a more stable work force. The minor transient lodging shortfalls (which might occur in Powell, Sanders, and Mineral counties) could be mitigated by encouraging workers to double up in motel units and by encouraging construction contractors to arrange additional RV areas and rental rooms in private homes.

BPA's mitigation of site-specific construction period impacts would also require close coordination with construction contractors. BPA could sensitize its own supervisors and contractor personnel to local agricultural and forestry practices and concerns. This practice could be supplemented with specific guidelines designed to minimize erosion, interferences with agricultural and forestry practices, and trespass by persons who are not associated with construction activities. If the transmission line were to parallel existing lines, BPA could encourage its contractors to use existing access roads in order to minimize the combined effects of the parallel lines.

Finally, BPA could facilitate good construction contractor-landowner relationships by developing a program to provide supervision of the construction process and prompt response to landowner complaints. Such a program would require that BPA designate one or more persons to receive landowner complaints. This person would have to be clearly identified to the public and be given the resources and authority to respond in a timely manner. Again, BPA's Missoula field office could be used effectively in establishing such a process. The program could be extended into the operations period where it would serve to mitigate long-term effects on landowners.

6.4 Operations Period

The transmission line's operations period impacts would consist primarily of inconvenience effects on certain types of land use and the visual effects which would be experienced to varying degrees by most of the area's residents. BPA's siting process has attempted to minimize inconvenience and visual effects by siting the route alternatives on as much public land as possible and by avoiding concentrations of people and sensitive agricultural areas when the alternatives would cross private land. As noted in Section 6.2, BPA could also attempt to minimize operations period effects on sensitive land uses by consulting landowners about final center line locations.

Once the transmission line is energized, BPA could maintain contact with affected landowners and instruct maintenance personnel in practices that would minimize inconvenience to these individuals. These practices are often formalized in written agreements and could include corridor, access road, weed control, and gate management measures, as well as specific procedures to notify landowners beforehand about planned access to or work on rights-of-way. In urban/residential or dispersed development areas, where the transmission line's effects would be predominantly visual, BPA could use its well-defined repertoire of visual mitigation measures.

6.5 Long-term Monitoring

The recommendations for long-term monitoring of the socioeconomic impacts of BPA's Garrison-Spokane 500-kV Transmission Project have two major emphases. The first is to provide an early warning of potential problems during the preconstruction, construction, and operations phases in order that appropriate action may be initiated to remedy them. The second is research-oriented; it seeks to develop primary data that will (1) provide desired information to residents along the right-of-way, (2) speed future evaluations, and (3) reduce the uncertainties in the socioeconomic assessment of similar projects in the future.

6.5.1 Impact Monitoring

Previous sections have recommended that BPA establish well-defined channels for landowner contact during the project's construction and operations periods. This type of program could be augmented by establishing a communication network with county officials so that problems could be quickly reported and appropriately remedied. The basic process would be for complaints or indications of a particular problem to be directed to a designated person at BPA, who would then develop solutions with construction contractors or maintenance personnel. County officials could function as the early warning devices in this system.

6.5.2 Impact Research

Because uncertainty surrounds the potential health and safety and land value effects of transmission lines, BPA would be well advised to continue its current research in these areas. In addition, BPA could develop a program that effectively disseminates available information to the public. If BPA's research demonstrates that transmission lines cause adverse health and safety or land value effects, it would be necessary to establish an efficient and fair mechanism for compensating those affected. One concern expressed by residents along the proposed alternatives was that they would never be able to claim compensation if currently unproven effects did occur. To maintain its credibility, BPA should continue its efforts to assess and acknowledge adverse effects from high-voltage lines.

Finally, although it appears that the impacts caused by construction workers would be slight, the project would provide an ideal opportunity for BPA to obtain valuable data regarding transmission line workers and community impact problems. An economic/demographic profile could be developed through the use of a survey instrument similar to that used by Mountain West Research, Inc. on other transmission line projects. Of particular interest would be information on the local/nonlocal composition of the work force by skill and union affiliation. In addition, data on age/sex characteristics, family characteristics, expenditure patterns, and lodging preferences and locations would be valuable. The collection and analysis of such information would not be costly.

In addition, a carefully structured survey of residents along the corridor would provide validation of the existing assessment techniques and help determine whether actual impacts were consistent with forecast impacts. It would establish a data base of information on the perceived effects of concerns resulting from the construction and operation of the 500-kV line through a scenic and forested area. This data would be useful in making future siting decisions. Information about area residents' perception of the importance of various aspects of the line's effects would provide some empirical basis for weighting effects in future ranking processes.

7. THE WASHINGTON WATER POWER COMPANY ALTERNATIVE PLANS

7. THE WASHINGTON WATER POWER COMPANY ALTERNATIVE PLANS

7.1 Introduction

In order to provide more reliable electrical service to the Kellogg-Wallace mining area and to increase its east-west 230-kV transmission capacity in the Noxon-Cabinet area, The Washington Water Power Company (TWWP) has designed four alternative expansion plans. These alternatives are somewhat dependent on which plan BPA selects for the Garrison-Spokane 500-kV Transmission Project; consequently, they are covered in this appendix.

This appendix is divided into four sections. Section 7.2 provides a brief description of the TWWP alternatives, focusing on those characteristics of the project that have the most potential to affect the socioeconomic environment. Section 7.3 presents results of the economic, demographic, and social impact analyses for each alternative. Section 7.4 presents a comparison of the four alternatives from a socioeconomic perspective.

7.2 Description of TWWP Alternatives

7.2.1 Project Purpose[1]

This project would serve two purposes. First, it would help TWWP maintain reliable electrical service in the Kellogg-Wallace mining area of northern Idaho. Second, it would increase TWWP's east-west transmission capacity in the western Montana-northern Idaho area when new generation from Libby and Colstrip comes on line.

The Wallace-Kellogg mining area is currently served by two 115-kV lines which run from TWWP's Pine Creek substation to the Montana Power Company's Thompson Falls substation. The loss of either of these lines would require that a major portion of the mining area load be dropped. Furthermore, these lines are expected to be insufficient to carry increasing mining area loads by the winter of 1984. TWWP has determined that by 1984, additional 230-kV transmission facilities and a 230/115-kV substation facility will be required in the Wallace-Kellogg area.

TWWP's 230-kV lines running west out of the Noxon-Cabinet area have been frequently overloaded because of heavy springtime generation levels and single transmission line outages. This problem is compounded by the fact that TWWP's transmission lines out of the Noxon-Cabinet area are of wood frame construction, which requires periodic maintenance and rebuilding approximately every twenty-two to twenty-five years. These

[1]Materials for this section from The Washington Water Power Company, Hot Springs-Bell Project, The Washington Water Power Company Alternatives to BPA Plans, Spokane, Wash.: 7 October 1980.

maintenance and rebuilding operations increase outages and reduce the local transmission capacity even further. TWWP would like to add 230-kV transmission facilities to increase the area's east-west transmission capacity and would like to have them in place when Libby and Colstrip increase their generating capacity.

7.2.2 Proposed Route Alternatives[1]

TWWP has proposed four route alternatives that would solve the transmission capacity problems identified above. Two of the alternatives, the Thompson Falls plan and the Noxon plan, could be developed independent of any action taken by BPA. The other two alternatives would be dependent on BPA actions. The Eagle Creek plan could be built only if BPA constructed the Hot Springs or Plains plans for its Garrison-Spokane 500-kV Transmission Project. TWWP's final alternative, the Taft plan, would depend on BPA's constructing the Taft plan for its Garrison-to-Spokane project.

Before describing the TWWP alternatives, it is important to note that all four have a common section of transmission line and two common substations. As will be shown below, all four of the alternatives would lead into a new substation near Wallace and then follow an existing TWWP right-of-way west to the existing Pine Creek substation, which would be expanded. TWWP currently plans to expand the Pine Creek substation, build the new Wallace substation, and connect the two with a 230-kV line. This action will commence in 1982 and be complete by mid-1984. If one of the four alternatives were constructed during the 1984-1986 period, it would at that time simply run from its starting point to the existing Wallace substation. However, this analysis will consider the project as a whole and assess impacts from the starting point all the way to the Pine Creek substation.

7.2.2.1 Thompson Falls Plan

The Thompson Falls plan could be developed independent of any action taken by BPA. The plan would require construction of a switching station in the existing 230-kV Hot Springs-Noxon Number 2 line near Thompson Falls. A 230-kV line would leave the switching station, parallel an existing BPA line above Prospect Creek, travel west to Glidden Gulch and on to Canyon Creek, where it would parallel an existing TWWP line to the proposed Wallace substation. This section of the line would be single-circuit steel. The line from the Wallace substation to the Pine Creek substation would parallel an existing right-of-way which runs north of Silverton, Osborn, and Interstate 90. This section of the line would be supported by wood pole structures. The line from the Thompson Falls switching station would be about 48.4 miles long.

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[1]Materials for this section from The Washington Water Power Company, Hot Springs-Bell Project, The Washington Water Power Company Alternatives to BPA Plans, Spokane, Wash.: 7 October 1980.

7.2.2.2 Eagle Creek Plan

The Eagle Creek plan could only be developed if BPA constructed the Hot Springs or Plains plans. The plan would require joint TWWP-BPA construction of a substation in the Eagle Creek area. From here, TWWP would construct a 230-kV steel tower line down Beaver Creek to the proposed Wallace substation, where it would be also be connected to the Pine Creek substation by means of a 230-kV line. The line from the Eagle Creek substation to the Pine Creek substation would be about 36.7 miles long.

In addition to the construction noted above, this plan would involve rebuilding the existing Noxon-Pine Creek 230-kV line. The existing line would be removed and a new steel tower line would be constructed from Noxon to the Eagle Creek substation. The rebuilt line would be about 26 miles long.

7.2.2.3 Noxon Plan

The Noxon plan could be developed independent of any action taken by BPA. The plan would require rebuilding 2.8 miles of the existing Noxon-Pine Creek line and constructing a new 230-kV steel tower line to the proposed Wallace substation. The 230-kV line would parallel the existing Noxon-Pine Creek corridor to the Coeur d'Alene River, head southeast up Beaver Creek to the proposed Wallace substation, and then continue on to the Pine Creek substation. The new route required for this plan would be about 33 miles long.

7.2.2.4 Taft Plan

The TWWP Taft plan could only be developed if BPA constructed the Garrison-Spokane Taft plan. The plan consists of a 230-kV line from BPA's proposed Taft substation to the proposed Wallace substation and then on to the Pine Creek substation. This plan has two variations. The northern Taft plan, which would utilize steel towers, would leave the Taft substation, parallel BPA's Hot Springs-Dworshak line for three miles, and then head west. The line would travel north of the South Fork of the Coeur d'Alene River to the Wallace substation. The Northern Taft plan would be 36 miles long from the Taft substation to the Pine Creek substation.

The southern Taft plan, which would utilize wood poles, would head west out of the Taft substation and pass through mountainous terrain south of the Coeur d'Alene River. It would cross the river southwest of Mullan and parallel an existing line into the Wallace area, where it would connect with the proposed Wallace substation. The southern Taft plan would be about 32 miles long.

7.2.3 Construction Schedule and Labor Requirements

As noted earlier, TWWP plans to expand its Pine Creek substation, build a 230-kV line to Wallace, and build the Wallace substation by mid-1984. Table 7-1 presents a tentative construction schedule for these facilities by type of task. The transmission line right-of-way would be prepared during a three-month period in the summer of 1983.

Tower assembly and erection and conductor stringing would take place during a four-month period in the summer of 1984. Labor requirements for the transmission line construction from Pine Creek to Wallace would total about 122 man-months.

The Pine Creek substation expansion would occur during a four-month period in mid-1984 and have labor requirements of only 14 man-months. The Wallace substation construction period would last about two years and have labor requirements totaling 108 man-months.

Table 7-2 presents construction schedules for the transmission line alternatives and their associated substations, which would run from an as yet undetermined point to the Wallace substation. Although the exact construction schedule and labor requirements for the transmission line might vary by alternative, Table 7-2 presents an average employment schedule for all of the alternatives. The transmission line right-of-way would be prepared during a three-month period in the summer of 1985. Transmission line construction would occur during a four-month period in the summer of 1986.

TWWP's Taft plan would connect to BPA's proposed Taft substation, but the necessary work would be performed by BPA. Hence, the labor requirements for this potential connection have been incorporated into the BPA Taft substation estimates.

All of the above tasks could be accomplished by construction contractors or by currently employed TWWP crews. This decision would depend on the route alternative selected and on the availability of TWWP personnel during the construction period.

7.2.4 Project Cost

Table 7-3 presents TWWP cost estimates for the different plans in 1980 dollars. The cost estimates for the plan vary from the Taft (south) plan, which would cost about $8.1 million, to the Eagle Creek plan, which would cost about $18.7 million. The variation in cost can be explained by several factors, including length, the terrain crossed, the type of towers used to support the conductor, and the number of substations required.

7.3 Short- and Long-term Impacts

Analysis of TWWP's four route alternatives has revealed two types of socioeconomic impacts. The first type includes impacts that are relatively small and that do not differ appreciably from one route alternative to another. Included in this type of socioeconomic impact are the effects of the construction work force on local communities and construction period economic effects. These impacts are summarized below in the employment, transient lodging, demographic, and income impact sections. However, these impacts were not incorporated into the route comparison analysis because they did not contribute to differentiation among routes.

The second type of impact includes those whose occurrence or magnitude is route-specific. Examples of this type of impact are the number of affected landowners, fiscal effects, short- and long-term economic effects on types of land use, and the project's perceived or actual effects on the local quality of life. These types of impacts are summarized below in the agriculture and foresty, fiscal, and social impact sections.

7.3.1 Employment Impacts

The estimated employment levels associated with the four TWWP alternatives are presented in tables 7-1 and 7-2. As shown in the tables, construction is expected to commence in mid-1982 and be complete by mid-1986. Transmission line construction employment would not vary by alternative. It would employ seventeen to eighteen persons for three- to four-month periods during the summers of 1983 to 1986.

Substation construction employment would vary by alternative. The construction of a new substation at Wallace and possibly another at Eagle Creek or Thompson Falls would last about two years. A four-person site preparation crew would be employed in the first year, and a four-person steel and electrical crew would be employed in the second year. In the last three months of construction, the steel and electrical crew would be joined by two to eight additional workers who would perform final wiring, testing, and communications tasks. Substation expansion employment would consist of only a few workers and would be of short duration.

All of the tasks outlined in tables 7-1 and 7-2 and described above could be performed by currently employed TWWP crews or by construction contractors. Any of the tasks performed by TWWP crews would employ only nonlocal workers. Because of the specialized skills required for most of these tasks, it is also likely that tasks performed by construction contractors would employ nonlocal workers. The only exception would be the clearing crews, where current conditions in the local timber industry would make laborers with the appropriate skills readily available. This analysis has assumed that 75 percent of clearing crews would be local workers. All other employment is assumed to consist entirely of nonlocal workers.

As shown above, the employment generated by this project is not expected to be of long duration. When combined with the fact that TWWP or its contractors would be making few local expenditures over a short period of time, this project is not expected to induce employment in any of the local area's other economic sectors.

7.3.2 Transient Lodging

The analysis of transient lodging for the TWWP alternatives has accounted for the demands of the BPA Garrison-Spokane project workers by assuming that only those available units not used by BPA project workers would be available for TWWP project workers. Specifically, the transient lodging balances shown in tables 4-5 to 4-7 were compared to the expected demands from TWWP project workers.

The results of this comparison yielded two types of transient lodging effects. The first type of effect, which occurred for all but one alternative, consisted of a transient lodging surplus. In these cases, the TWWP workers' effect would be positive because they would be filling rooms that otherwise would remain vacant.

A transient lodging deficit was forecast only for the Thompson Falls alternative. Under this alternative, TWWP construction workers could be expected to add to the transient lodging deficits already forecast for Thompson Falls under BPA's Hot Springs and Plains plans. The incremental deficits caused by TWWP workers would amount to approximately nine persons per night from June to August 1985 and four persons-nights from September to November 1985. In June 1986, TWWP workers' demands would convert the Thompson Falls six-unit surplus to a fourteen-unit deficit.

7.3.3 Demographic Impacts

The demographic impact analysis for the TWWP alternatives assumed that nonlocal construction workers on a 230-kV line would have the same family size and accompaniment characteristics as those workers recently surveyed on 500-kV transmission projects in the the Pacific Northwest. The results of this survey indicated that for every 100 nonlocal transmission line workers, a total population influx of 167 persons (including 37 children) can be expected. (Mountain West Research, Inc. 1981.)

The allocation of workers and their families to communities assumed that workers would choose to locate in communities with more amenities (primarily transient lodging facilities) and minimize their daily commuting distances. The assumed percentage allocations of nonlocal workers to communities are presented by project component in tables 7-4 and 7-5. The allocation of workers to Noxon assumes that TWWP-operated lodging facilities would be available for nonlocal workers in Noxon.

When these community allocations and the local/nonlocal work force assumptions presented in Section 7.3.1 are appplied to the construction schedules outlined in Section 7.2.3, the population influxes shown in tables 7-6 to 7-10 are obtained.

7.3.3.1 Pine Creek to Wallace Substation

Table 7-6 presents the Pine Creek substation to Wallace substation demographic impacts that are anticipated to occur in 1982 to 1984 regardless of the alternative selected. As shown, the maximum population influxes for Kellogg, Pinehurst, and Wallace would be eighteen, fifteen, and twenty-six persons, respectively. The demographic impacts on Kellogg and Pinehurst would be limited to the summer months, when the transmission line would be under construction. From 1982 to 1984, the Wallace population influx would be relatively stable at six persons but would increase to a larger number during the transmission line construction periods.

7.3.3.2 Wallace Substation to Alternative Sites

Table 7-7 presents the population influxes that would be associated with the Wallace to Thompson Falls section of the Thompson Falls alternative. As shown, the population influx in Wallace would occur during the summers of 1985 and 1986 and never exceed fifteen people. The population influx in Thompson Falls would remain stable at about six people for most of the period between 1984 and 1986 but would peak at fifteen people in 1985 and thirty-three people in 1986, when both substation and transmission line construction would be under way.

Table 7-8 presents the population influxes that would be associated with the Wallace to Noxon section of the Eagle Creek alternative. Construction of the Eagle Creek substation would cause population influxes of approximately four persons each in Wallace and the Pritchard-Murray area over a two-year period. Transmission line construction would add to this population influx in Wallace during the summers of 1985 and 1986 and cause a population influx to occur in Noxon at the same time.

Table 7-9 presents the population influxes that would be associated with the Wallace to Noxon section of the Noxon alternative. The transmission line construction would cause population influxes of six persons each in Wallace and Noxon in the summer of 1985. In the summer of 1986, the Noxon substation expansion employment would be added to transmission line construction employment, and Wallace and Noxon would experience peak population influxes of fifteen and twenty-three persons, respectively.

Table 7-10 presents the population influxes that would be associated with the Wallace to Taft section of the Taft alternatives. As shown, the population influxes would be limited to Wallace and Mullan and would only occur during transmission line construction in the summers of 1985 and 1986. Peak population influxes for Wallace and Mullan would be eighteen and ten persons, respectively.

7.3.4 Income Impacts

Section 2.2.4 provided a description of income effects that are associated with the construction of transmission line projects. Briefly summarized, these effects consist of wages paid to previously unemployed local workers hired on the project and the local expenditures of nonlocal workers and construction contractors. In addition, another income effect will consist of multiplier effects from the expenditures noted above.

7.3.4.1 Local/Nonlocal Wages

Following the methodology outlined in Section 2.2.4, the total project wages were calculated and divided into local and nonlocal components for each alternative and county. Table 7-11 presents the results of this analysis.

As noted in Section 7.3.1, local employment on the TWWP project is expected to consist of 75 percent of the clearing crew work force. Consequently, local wages of approximately $189,300 would not vary by alternative and would be restricted to Sanders and Shoshone counties (see Table 7-11). Although Mineral County would be crossed by the Taft alternative, the few clearing crew workers who would be employed would be more likely to come from Shoshone County.

Nonlocal wages would also accrue only to Sanders and Shoshone counties, since it is assumed that as all nonlocal workers would establish their local residences there. Nonlocal wages would be maximized at about $2.1 million by the Thompson Falls and Eagle Creek alternatives and minimized at $1.1 to $1.7 million by the Taft alternatives.

7.3.4.2 Multiplier Effects

It was assumed that local workers would spend all of their income locally and that nonlocal workers would spend 40 percent of their income locally. When such expenditures are made in local and nearby counties, they generate more income in other economic sectors. This indirect income is spent according to the economic hierarchy explained in Section 2.2.4.

The direct and indirect income effects of construction worker expenditures are presented in Table 7-12. The expenditures of workers who live in Sanders and Shoshone counties could be expected to spread across a five-county area which includes Missoula, Kootenai, and Spokane counties. The construction workers' own direct expenditures would create even more indirect income in the affected counties.

7.3.4.3 Total Income Effects

It was assumed that 5 percent of the total project cost would eventually reach the local economy in the form of TWWP or construction contractor expenditures for goods and services. When this income and its multiplier effects are added to construction wage effects, the result is the total income effect of the project.

Table 7-13 presents the total income effects that would result in each state from each alternative. Total income effects would be maximized at about $3.1 million by the Eagle Creek and Noxon alternatives and minimized at about $1.9 million by the Taft alternatives. The state-by-state incidence of income effects would also depend on the alternative selected for construction.

7.3.5 Agriculture and Forestry Impacts

The TWWP alternatives' short- and long-term economic effects on agricultural and forestry productivity would consist of land removed from production and potential interference with agricultural and forestry management practices. These effects were detailed in Section 4.2.5.

The analysis of TWWP alternatives followed the same methodology used in the analysis of BPA economic effects on forestry and agriculture. However, the TWWP analysis assumed that the 230-kV right-of-way would be 100 feet wide and therefore affect twelve acres of land per mile of transmission line.

7.3.5.1 Agricultural Productivity Losses

Because the TWWP alternatives would not cross rangeland, agricultural effects would be limited to cropland.

Short-term effects

The proposed TWWP alternatives' effect on agriculture would be limited to one mile of dry cropland that would be crossed by the Thompson Falls alternative. Assuming that these twelve acres would be removed from production for one year during the construction period and that they would be capable of producing a crop worth $235 per acre, the short-term loss in productive capacity would be $2,820.

Long-term effects

The annual loss in productive capacity from land used for tower bases in the Thompson Falls alternative would not exceed $60. Assuming a thirty-five-year project life and a 10 percent annual discount rate, the net present value of these productive capacity losses would be about $580.

7.3.5.2 Forestry Productivity Losses

Short-term effects

Using the methodology and assumptions described in Section 2.2.5, the short-term analysis of forestry productivity losses estimated the value of timber that would be harvested in the right-of-way. The result of this analysis provides order-of-magnitude estimates that are useful in comparing route alternatives. The actual short-term effect would consist of the difference between the potential maximum future value and the current value of timber in the right-of-way.

As shown in Table 7-14, the total value of timber in the rights-of-way ranges from about $550,000 to $765,000. The estimated values are very close, but they would be minimized by the Taft (South) alternative.

Long-term effects

Using the methodology and assumptions described in Section 2.2.5, the long-term analysis of forestry productivity losses estimated the net present value of expected timber growth in the rights-of-way for each alternative. As shown in Table 7-15, the net present values range from about $27,000 to $39,500. Although the estimates are very close, the net present value of expected timber growth in the right-of-way would be minimized by the Taft (South) alternative.

7.3.6 Fiscal Impacts

Unlike BPA, which is a tax-exempt federal agency, TWWP is a private utility that is subject to local property taxes. This section presents the results of a fiscal analysis that used the same property tax methodology outlined in Section 2.2.8. Although fiscal impacts from the project will also include personal and corporate income taxes and (in some cases) sales taxes, these types of taxes would not provide major revenues to local jurisdictions. Consequently, this analysis has not attempted to quantify them. Property taxes on worker and construction contractor vehicles, liquor and cigarette taxes, and fuel taxes were not quantified because of the small size of the work force and short construction period.

7.3.6.1 Short-term Property Tax Effects

Regardless of the alternative selected for construction, the TWWP system would have two components: (1) the transmission line and (2) the substations. After the total cost of the transmission line was assessed, it was distributed among the states according to the ratio of cost incurred in the state to total project costs. In Idaho, this value was allocated to the counties on the basis of TWWP's investment in each county. In Montana, the state allocates value according to the number of wire miles in the county multiplied by the system's average cost per mile in the state. The assessed value of a substation accrues only to the county in which it is located.

Taxable value can be equal to assessed value or a specified fraction of assessed value. In Montana, taxable value is 12 percent of the assessed value. In Idaho, taxable value is 100 percent of the assessed value.

Once taxable values were determined, they were multiplied by the appropriate mill levy to obtain the tax liability. In this study, average rural mill levies were used because the transmission line alternatives generally avoid cities, towns, and special taxing districts.

The estimated first-year property tax liabilities by county for each alternative are presented in Table 7-16. Total first-year property tax liabilities would range from approximately $90,000 for the Taft (South) alternative to $255,000 for the Noxon alternative. When compared to the affected counties' 1979 revenues, none of the first-year property tax payments would result in significant increases in total county revenues. The maximum increase would be realized under the Thompson Falls and Noxon alternatives, which would both increase Sanders County's 1979 revenues by 1.6 percent.

7.3.6.2 Long-term Property Tax Effects

The long-term value of the TWWP transmission project is very uncertain. It would depend, among other things, upon the profitability and market value of the company. Because of the interest-related uncertainty of future value, two alternative scenarios of long-term property tax effects are presented. The conservative approach assumes that the income and market value of the system would not increase during the projects' assumed thirty-five-year life and that tax assessors would allow a straight-line depreciation of its assets.

The more liberal approach assumes the value of the utility would increase enough to compensate for the transmission line's expected depreciation. Thus, this second scenario assumes the value of the system would remain constant over the project's life.

Table 7-17 presents the net present value of the estimated property tax liabilities under both the straight-line depreciation and constant value scenarios. The net present values under the constant value scenario are almost twice the net present values under the straight-line depreciation scenario. The actual net present value of property tax payments would probably fall somewhere in between the values indicated for these two scenarios. In any event, these order-of-magnitude estimates reveal that total long-term property taxes would be minimized by the Taft (South) alternative and maximized by the Noxon alternative.

7.3.7 Social Impacts

The methodology used in determining the social effects of transmission projects was explained in Section 2.3. Although the characteristics of a 230-kV transmission project differ significantly from those of a 500-kV transmission project, many of their effects on land use and people are similar. Consequently, the social impact quantification scheme outlined in Section 4.3.1 is used again here to quantify and compare social impacts associated with the TWWP alternatives.

7.3.7.1 Residential Density

Because all of the TWWP alternatives primarily cross forest land, residential density on all of the routes must be considered low. All of the alternatives would cross .4 miles of urban land. Consequently, the alternatives' impacts on residential densities are differentiated only by their crossing of dispersed residential development, as shown below.

TWWP Alternatives	Miles of Dispersed Development Crossed
Thompson Falls	4.3
Eagle Creek	3.5
Noxon	3.2
Taft (North)	2.9
Taft (South)	2.6

Most of the dispersed development that would be crossed is located on the section of line between Pinehurst and Wallace which is common to all alternatives. This factor and the unknown residential densities of each mile of dispersed development that would be affected make it difficult to rationalize any distinctions between the TWWP route alternatives. Hence, this analysis does not draw conclusions about the relative effects of TWWP alternatives on residential density.

Land ownership

Because TWWP is a privately-owned entity that would pay property taxes on its transmission project, local residents may be less sensitive to the utility's crossing private land. However, because the amount of private land crossed serves as an index of the projects' potential effects on local landowners, the miles of private land that would be crossed are reported below.

TWWP Alternatives	Miles of Private Land Crossed
Thompson Falls	24.5
Eagle Creek	18.1
Noxon	19.0
Taft (north)	17.5
Taft (south)	18.1

The miles of private land crossed identify the Thompson Falls alternative as the least desirable but do not allow differentiation between the other four alternatives for which the miles of private land crossed are clustered in the 17.5-19.0 range.

Inconvenience by land use type

As explained in Section 4.3, transmission-line-related inconveniences by land use types have been given the following weights:

Land Use Type	Inconvenience Weight
Urban/residential	4
Irrigated cropland	4
Dispersed development	3
Nonirrigated cropland	2
Rangeland	1
Forest land	1

The TWWP alternatives would only cross urban/residential land, dispersed developments, nonirrigated cropland, and forest land. Table 7-18 presents the number of miles of each type of land use that would be crossed by each alternative. When the mileages for each alternative are multiplied by the appropriate weight and summed, the result is the land use inconvenience score. The estimated inconvenience by land use type would be highest under the Thompson Falls alternative and lowest under the Taft (South) alternative.

New access roads

The new access roads required for the TWWP alternatives would be constructed primarily across public forest land. If planned in cooperation with forest managers, the access roads could have positive impacts on forest management practices. However, from a social perspective, the environmental or psychological presence of access roads may adversely affect recreationists who are using the public forest land. In order to compare the extent of this effect for each alternative, this analysis has estimated the total miles of new access roads each would require. As shown in Table 7-19, new access road requirements would be maximized by the Thompson Falls alternative and minimized by the Taft (South) alternative.

New corridor requirements

Section 4.3 presented the argument that new transmission lines minimize social effects on landowners when they parallel existing transmission line corridors. As noted, there was a trade-off between inconveniencing new landowners and increasing the inconvenience to currently affected landowners. Exceptions to this general rule could occur in cases where an additional line would be placed in a geographic area already burdened by several types of corridors.

The TWWP alternatives involve three types of potential corridor development. In order of decreasing social effects, they are: (1) establish a new corridor, (2) parallel an existing corridor, and (3) rebuild a line in an existing corridor. These three types of development have been assigned social effect weights of 3, 2, and 1, respectively (see Table 7-20). When the number of miles of each type of development is multiplied by the appropriate weight, the result is a social effect score. The social effects of corridor development are maximized by the Thompson Falls alternative and minimized by the Taft (South) alternative.

Alienation and special considerations

None of the proposed TWWP alternatives have aroused significant social opposition or alienation. The lack of alienation can be attributed to several factors. First, the proposed alternatives are smaller in size and have been less well publicized than the BPA alternatives. Second, most of the private land crossed by the alternatives would be located in a mining area between Pinehurst and Wallace where several types of road, transmission line, and industrial development already exist. Because of these types of development, residents would be less inclined to object to the project on aesthetic grounds. And perhaps most important, the TWWP alternatives have been designed to serve the area's mining industry, an economic sector on which the whole economy depends. Consequently, any social opposition to the TWWP alternatives appears to overshadowed by local perceptions of the economic need for a more reliable electrical supply.

7.4 Comparison of TWWP Alternatives

When comparing the socioeconomic impacts of the TWWP alternatives, some of the impacts described above are more useful than others. The combined effects of employment, demographic, and income impacts are generally beneficial and do not vary greatly by route alternative. Although the transient lodging, agricultural, forestry, and fiscal impacts were shown to vary, the person-night deficits and dollar amount differences between alternatives would not be great enough to distinguish a least-impact route. Consequently, the routes are best differentiated by their effects on people, as categorized under social impacts.

The social impact section examined several different types of effects. Residential density, land ownership, alienation, and special consideration effects were found to be very similar or nonexistent for all four alternatives. However, it was possible to differentiate the route's potential social impacts when they were examined in terms of the following criteria: (1) inconvenience by land use type, (2) new access road requirements, and (3) corridor development.

Table 7-21 ranks the scores from these analyses. Although the ranking system is an unrefined way of comparing the scores, it does facilitate combining the scores into an overall ranking scheme. When the ranks for each alternative are added across the analyses, they result in an overall ranking score for the alternative. These scores are presented below.

Alternative	Overall Ranking Score
Thompson Falls	15
Eagle Creek	11
Noxon	9
Taft (north)	7
Taft (south)	3

This system yielded a wide range of scores, with the Taft (South) alternative minimizing socioeconomic impacts. This alternative is followed by the Taft (North) alternative, and then by the Noxon, Eagle Creek, and Thompson Falls alternatives.

In retrospect, many of the Taft (South) alternative's socioeconomic advantages over the other alternatives result from its shorter length, which minimizes the amount of forest land crossed and the need to establish new access roads and new transmission line corridors. When combined, these factors are significant enough to designate the Taft (South) route the least-impact alternative from a socioeconomic perspective.

TABLE 7-1

TWWP Alternative Plans
Total Labor Requirements
(man-months)

1982

Project Component Task(s)	J	F	M	A	M	J	J	A	S	O	N	D
Transmission Line (Pine Creek-Wallace)												
Right-of-way clearing												
Site preparation												
Structure (assembly, erection)												
Conductor												
Supervision												
Substation (Pine Creek Expansion)												
Site preparation												
Steel and electrical												
Relay and testing												
Division electrical crew												
Communication (optional)												
Substation (Wallace)												
Site preparation							4	4	4	4	4	4
Steel and electrical												
Relay and testing												
Division electrical crew												
Communication (optional)												

1983

Project Component Task(s)	J	F	M	A	M	J	J	A	S	O	N	D
Transmission Line (Pine Creek-Wallace)												
Right-of-way clearing						10	10	10				
Site preparation						5	5	5				
Structure (assembly, erection)												
Conductor												
Supervision						3	3	3				
Substation (Pine Creek Expansion)												
Site preparation												
Steel and electrical												
Relay and testing												
Division electrical crew												
Communication (optional)												
Substation (Wallace)												
Site preparation	4	4	4	4	4	4						
Steel and electrical							4	4	4	4	4	4
Relay and testing												
Division electrical crew												
Communication (optional)												

1984

Project Component Task(s)	J	F	M	A	M	J	J	A	S	O	N	D
Transmission Line (Pine Creek-Wallace)												
Right-of-way clearing												
Site preparation												
Structure (assembly, erection)				4	4	4	4					
Conductor				10	10	10	10					
Supervision				3	3	3	3					
Substation (Pine Creek Expansion)												
Site preparation			4	4								
Steel and electrical					4	4						
Relay and testing						1						
Division electrical crew												
Communication (optional)						1						
Substation (Wallace)												
Site preparation												
Steel and electrical	4	4	4	4	4	4						
Relay and testing				2	2	2						
Division electrical crew						4						
Communication (optional)						2						

Source: Mountain West Research, Inc. Based on labor estimates provided by Bob Mansfield, System Planner, The Washington Water Power Company, 13 October 1981:personal communication.

TABLE 7-2

TWWP Alternative Plans
Total Labor Requirements
Wallace Substation to Thompson Falls, Eagle Creek, Noxon, or Taft

Project Component Task(s)	1984 J	F	M	A	M	J	J	A	S	O	N	D
Transmission Line												
Right-of-way clearing												
Site preparation												
Structure (assembly, erection)												
Conductor												
Supervision												
Substation (Thompson Falls or Eagle Creek)												
Site preparation							4	4	4	4	4	4
Steel and electrical												
Relay and testing												
Division electrical crew												
Communication (optional)												
Substation (Noxon expansion)												
Site preparation												
Steel and electrical												
Relay and testing												
Division electrical crew												
Communication (optional)												

Project Component Task(s)	1985 J	F	M	A	M	J	J	A	S	O	N	D
Transmission Line												
Right-of-way clearing						10	10	10				
Site preparation						5	5	5				
Structure (assembly, erection)												
Conductor												
Supervision						3	3	3				
Substation (Thompson Falls or Eagle Creek)												
Site preparation	4	4	4	4	4	4						
Steel and electrical							4	4	4	4	4	4
Relay and testing												
Division electrical crew												
Communication (optional)												
Substation (Noxon expansion)												
Site preparation												
Steel and electrical												
Relay and testing												
Division electrical crew												
Communication (optional)												

Project Component Task(s)	1986 J	F	M	A	M	J	J	A	S	O	N	D
Transmission Line												
Right-of-way clearing												
Site preparation												
Structure (assembly, erection)				4	4	4	4					
Conductor				10	10	10	10					
Supervision				3	3	3	3					
Substation (Thompson Falls or Eagle Creek)												
Site preparation												
Steel and electrical	4	4	4	4	4	4						
Relay and testing				2	2	2						
Division electrical crew						4						
Communication (optional)						2						
Substation (Noxon expansion)												
Site preparation			4	4								
Steel and electrical					4	4						
Relay and testing						1						
Division electrical crew												
Communication (optional)						1						

Source: Mountain West Research, Inc. Based on labor estimates provided by Bob Mansfield, System Planner, The Washington Water Power Company, 13 October 1981:personal communication.

TABLE 7-3

TWWP Alternative Plans
Estimated Project Costs
(1980 dollars)

Component of Cost	Plan				
	Thompson Falls	Eagle Creek	Noxon	Taft (North)	Taft (South)
Transmission Line	$9,262,917	$12,170,000	$13,058,750	$6,450,417	$3,854,617
Alternative Substation(s)	1,726,972[a]	2,158,715[b] 107,000[c]	676,203[d]	-	-
Wallace Substation	3,712,884	3,712,884	3,712,884	3,712,884	3,712,884
Pine Creek Substation Expansion	569,203	569,203	569,203	569,203	569,203
TOTAL COST	$15,271,976	$18,717,802	$18,017,040	$10,732,504	$8,136,704

Source: Bob Mansfield, System Planner, The Washington Water Power Company, 21 October 1981:personal communication.

[a]Thompson Falls substation - new construction.

[b]Eagle Creek substation - new construction.

[c]Noxon substation - minor expansion.

[d]Noxon substation - major expansion.

TABLE 7-4

TWWP Alternative Plans
Nonlocal Transmission Line and Substation
Construction Worker Community Allocations
Pine Creek to Wallace Section

Project Component	Community	Percentage of Nonlocal Workers
Transmission Line	Kellogg	66
	Wallace	17
	Pinehurst	17
Pine Creek Substation Expansion	Pinehurst	100
Wallace Substation	Wallace	100

Source: Mountain West Research, Inc., 1981.

TABLE 7-5

TWWP Alternative Plans

Nonlocal Transmission Line and Substation Construction
Worker Community Allocations
Wallace to Alternative Sites

Thompson Falls Alternative	Percent Nonlocal Workers	Eagle Creek Alternative	Percent Nonlocal Workers	Noxon Alternative	Percent Nonlocal Workers	Taft (north or south) Alternative	Percent Nonlocal Workers
Transmission Line		Transmission Line		Transmission Line		Transmission Line	
Wallace	50%	Wallace	50%	Wallace	50%	Wallace	66%
Thompson Falls	50%	Noxon	40%	Noxon	50%	Mullan	34%
		Pritchard-Murray Area	10%				
Thompson Falls Substation		Eagle Creek Substation		Noxon Substation Expansion			
Thompson Falls	100%	Wallace	60%	Noxon	100%		
		Pritehard-Murray Area	40%				

Source: Mountain West Research, Inc., 1981.

TABLE 7-6

TWWP Alternative Plans
Total Population Influx
Pine Creek to Wallace Section

Community	1982												1983												1984											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Kellogg																																				
Workers																		7	7	7								11	11	11	11					
Spouses																		2	2	2								3	3	3	3					
Children																		3	3	3								4	4	4	4					
TOTAL																		12	12	12								18	18	18	18					
Pinehurst																																				
Workers																		2	2	2							4	7	7	9	3					
Spouses																		1	1	1							1	2	2	3	1					
Children																		1	1	1							1	3	3	3	1					
TOTAL																		4	4	4							6	12	12	15	5					
Wallace																																				
Workers							4	4	4	4	4	4	4	4	4	4	4	6	6	6	4	4	4	4	4	4	4	9	9	15	3					
Spouses							1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	3	3	5	1					
Children							1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	3	3	6	1					
TOTAL							6	6	6	6	6	6	6	6	6	6	6	10	10	10	6	6	6	6	6	6	6	15	15	26	5					

Source: Mountain West Research, Inc., 1981.

TABLE 7-7

TWWP Alternative Plans
Total Population Influx
Wallace Substation to Thompson Falls

Community	1984											
	J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers												
Spouses												
Children												
TOTAL												
Thompson Falls												
Workers							4	4	4	4	4	4
Spouses							1	1	1	1	1	1
Children							1	1	1	1	1	1
TOTAL							6	6	6	6	6	6

Community	1985											
	J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers						5	5	5				
Spouses						1	1	1				
Children						2	2	2				
TOTAL						8	8	8				
Thompson Falls												
Workers	4	4	4	4	4	9	9	9	4	4	4	4
Spouses	1	1	1	1	1	3	3	3	1	1	1	1
Children	1	1	1	1	1	3	3	3	1	1	1	1
TOTAL	6	6	6	6	6	15	15	15	6	6	6	6

Community	1986											
	J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers				9	9	9	9					
Spouses				3	3	3	3					
Children				3	3	3	3					
TOTAL				15	15	15	15					
Thompson Falls												
Workers	4	4	4	14	14	20	8					
Spouses	1	1	1	4	4	6	2					
Children	1	1	1	5	5	7	3					
TOTAL	6	6	6	23	23	33	13					

Source: Mountain West Research, Inc., 1981.

TABLE 7-8

TWWP Alternative Plans
Total Population Influx
Wallace Substation to Eagle Creek with Eagle Creek Loop in Noxon Line

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers							3	3	3	3	3	3
Spouses							1	1	1	1	1	1
Children							1	1	1	1	1	1
TOTAL							5	5	5	5	5	5
Pritchard-Murray Area												
Workers							1	1	1	1	1	1
Spouses							0	0	0	0	0	0
Children							0	0	0	0	0	0
TOTAL							1	1	1	1	1	1
Noxon												
Workers												
Spouses												
Children												
TOTAL												

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers	2	2	2	2	2	8	8	8	2	2	2	2
Spouses	1	1	1	1	1	2	2	2	1	1	1	1
Children	1	1	1	1	1	3	3	3	1	1	1	1
TOTAL	4	4	4	4	4	13	13	13	4	4	4	4
Pritchard-Murray Area												
Workers	2	2	2	2	2	2	2	2	2	2	2	2
Spouses	1	1	1	1	1	1	1	1	1	1	1	1
Children	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL	4	4	4	4	4	4	4	4	4	4	4	4
Noxon												
Workers						5	5	5				
Spouses						1	1	1				
Children						2	2	2				
TOTAL						8	8	8				

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers	2	2	2	13	13	16	9					
Spouses	1	1	1	4	4	5	3					
Children	1	1	1	5	5	6	3					
TOTAL	4	4	4	22	22	27	15					
Pritchard-Murray Area												
Workers	2	2	2	2	2	5						
Spouses	1	1	1	1	1	1						
Children	1	1	1	1	1	2						
TOTAL	4	4	4	4	4	8						
Noxon												
Workers			8	8	8	8						
Spouses			2	2	2	2						
Children			3	3	3	3						
TOTAL			13	13	13	13						

Source: Mountain West Research, Inc., 1981.

TABLE 7-9

TWWP Alternative Plans

Total Population Influx

Wallace Substation to Noxon Substation

Community	1984												1985												1986											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Wallace																																				
Workers																		5	5	5								9	9	9	9					
Spouses																		1	1	1								3	3	3	3					
Children																		1	1	1								3	3	3	3					
TOTAL																		7	7	7								15	15	15	15					
Noxon																																				
Workers																		5	5	5							4	12	12	14	8					
Spouses																		1	1	1							1	4	4	4	2					
Children																		1	1	1							1	4	4	5	3					
TOTAL																		7	7	7							6	20	20	23	13					

Source: Mountain West Research, Inc., 1981.

TABLE 7-10

TWWP Alternative Plans

Total Population Influx

Wallace Substation to Taft Substation

Community	1984 J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers												
Spouses												
Children												
TOTAL												
Mullan												
Workers												
Spouses												
Children												
TOTAL												

Community	1985 J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers						7	7	7				
Spouses						2	2	2				
Children						3	3	3				
TOTAL						12	12	12				
Mullan												
Workers						4	4	4				
Spouses						1	1	1				
Children						1	1	1				
TOTAL						6	6	6				

Community	1986 J	F	M	A	M	J	J	A	S	O	N	D
Wallace												
Workers				11	11	11	11					
Spouses				3	3	3	3					
Children				4	4	4	4					
TOTAL				18	18	18	18					
Mullan												
Workers				6	6	6	6					
Spouses				2	2	2	2					
Children				2	2	2	2					
TOTAL				10	10	10	10					

Source: Mountain West Research, Inc., 1981.

TABLE 7-11

TWWP Alternative Plans
Local/Nonlocal Payroll by County of Local Residence

County	Alternative							
	Thompson Falls		Eagle Creek		Noxon		Taft[a]	
	Local	Nonlocal	Local	Nonlocal	Local	Nonlocal	Local	Nonlocal
Sanders	$47,300	$781,600	-	-	$47,300	$343,400	-	-
Shoshone	142,000	1,381,400	189,300	2,163,000	142,000	1,381,400	189,300	1,112,800
TOTAL	$189,300	$2,163,000	$189,300	$2,163,000	$189,300	$1,724,800	$189,300	$1,112,800

Source: Mountain West Research, Inc., 1981.

[a]Figures are for Taft (North) alternative. Figures for Taft (South) alternative would be approximately 36 percent less.

TABLE 7-12

TWWP Alternative Plans

Estimated Induced Income Effect of Construction Worker Expenditures
(thousands of dollars)

County	Thompson Falls		Eagle Creek		Noxon		Taft[a]	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Sanders	360	172.8	-	-	-	-	184.7	88.6
Missoula	-	122.4	-	-	-	-	-	62.8
Shoshone	694.5	458.4	634.4	418.7	1,054.5	695.9	694.6	458.4
Kootenai	-	83.3	-	76.1	-	126.5	-	83.3
Spokane	-	472.2	-	253.8	-	421.8	-	328.0
TOTAL	1,054.5	1,309.1	634.4	748.6	1,054.5	1,244.2	879.3	1,021.1

Source: Mountain West Research, Inc., 1981.

[a]Figures represent Taft (North) alternative. Figures for Taft (South) alternative would be 36 percent less.

TABLE 7-13

TWWP Alternative Plans

Total Income Effects

(thousands of dollars)

Income	Thompson Falls			Eagle Creek			Noxon			Taft[a]		
	Montana	Idaho	Washington	Montana	Idaho	Washington	Montana	Idaho	Washington	Montana	Idaho	Washington
Direct Payroll Income	360	694.5	-	-	1,054.5	-	184.7	694.6	-	-	634.4	-
Induced Income	295.2	541.7	472.2	-	822.4	421.8	151.4	541.7	328.0	-	494.8	253.8
Subtotal	655.2	1,236.2	472.2	-	1,876.4	421.8	336.1	1,236.3	328.0	-	1,129.2	253.8
TWWP or Contractor Local Purchases	216.1	247.0	-	-	930.5	-	176.4	724.4	-	64.9[a]	471.7[a]	-
Value Added (67%)	144.8	165.5	-	-	623.4	-	118.2	485.3	-	43.5	316.0	-
Induced Income	118.7	129.1	105.3	-	486.2	249.4	96.9	378.5	226.0	35.7	246.5	138.1
Subtotal	263.5	294.6	105.3	-	1,109.6	249.4	215.1	863.8	226.0	79.2	562.5	138.1
TOTAL INCOME EFFECT	918.7	1,530.8	577.5	-	2,986.5	249.4	551.2	2,100.1	554.0	79.2	1,691.7	391.9

Source: Mountain West Research, Inc.

[a]Figures represent Taft (North) alternative. Figures for Taft (South) option would be approximately 36 percent less.

TABLE 7-14

TWWP Alternative Plans
Estimated Value of Timber in the Right-of-Way

Alternative	Montana		Idaho		Estimated Total Value
	Acres in ROW[a]	Estimated Value[b]	Acres in ROW[a]	Estimated Value[b]	
Thompson Falls	204	$89,972	232	$546,592	$636,564
Eagle Creek			325	765,700	765,700
Noxon			289	680,884	680,884
Taft (North)	48	21,169	240	565,440	586,609
Taft (South)	56	24,698	223	525,388	550,086

Sources:

[a]Bonneville Power Administration, unpublished land use data, 1981.

[b]Mountain West Research, Inc., 1981.

TABLE 7-15

TWWP Alternative Plans
Net Present Value of Expected Timber Growth in the Right-of-Way

Alternative	Forest Productivity: High — Acres[a]	High — Net Present Value[b]	Moderate — Acres[a]	Moderate — Net Present Value[b]	Low — Acres[a]	Low — Net Present Value[b]	Total Net Present Value[b]
Thompson Falls	304	$29,792	127	$9,652	7	$0	$39,444
Eagle Creek	320	31,360	5	380	0	0	31,740
Noxon	284	27,832	5	380	0	0	28,212
Taft (North)	267	26,166	53	4,028	0	0	30,194
Taft (South)	263	25,774	16	1,216	0	0	26,990

Sources:

[a] Bonneville Power Administration, unpublished land use data, 1981.

[b] Mountain West Research, Inc., 1981.

TABLE 7-16

TWWP Alternative Plans
Estimated First-year Property Tax Liability by County
(thousands of 1980 dollars)

County Revenue	1979 County Revenue[a]	Thompson Falls		Eagle Creek		Noxon		Taft (South)		Taft (North)	
		First Year Tax Liability	Percent of 1979 Revenue	First Year Tax Liability	Percent of 1979 Revenue	First Year Tax Liability	Percent of 1979 Revenue	First Year Tax Liability	Percent of 1979 Revenue	First Year Tax Liability	Percent of 1979
Sanders	9,465	156	1.6	69	.7	151	1.6	-	-	-	-
Mineral	3,422	-	-	-	-	-	-	27	.8	39	1.1
Shoshone	13,832	79	.6	173	1.3	104	.8	63	.5	82	.6
TOTAL		235		242		255		90		121	

Source: Mountain West Research, Inc., 1981.

[a]Montana Department of Community Affairs, Local Government Finances, Montana Counties, Raw Data by Year, 1980; Idaho State Auditor's Department, Consolidated Financial Statement of Fourty-Four Counties, 1979.

Note: Including county revenue and trust and agency revenue.

TABLE 7-17

TWWP Alternative Plans

Net Present Value of Property Tax Payments over Thirty-five-year Life
(thousands of 1980 dollars)

County	1979 County Revenue	Thompson Falls Cumulative Total		Eagle Creek Cumulative Total		Noxon Cumulative Total		Taft (South) Cumulative Total		Taft (North) Cumulative Total	
		Straight-Line Depreciation	Constant Value	Straight-Line Depreciation	Constant Value	Straight-Line Depreciation	Constant Value	Straight-Line Depreciation	Constant Value	Straight-Line Depreciation	Constant Value
Sanders	9,465	2,806	5,460	1,249	2,415	2,728	5,285	-	-	-	-
Mineral	3,422	-	-	-	-	-	-	493	945	701	1,365
Shoshone	13,832	1,416	2,765	3,118	6,055	1,864	3,640	1,132	2,205	1,482	2,870
TOTAL		4,222	8,225	4,367	8,470	4,572	8,925	1,625	3,150	2,183	4,235

Source: Mountain West Research, Inc., 1981.

TABLE 7-18

TWWP Alternative Plans
Land Use Types and Inconvenience Scores

Alternative	Urban/ Residential (4)	Dispersed Development (3)	Unirrigated Cropland (3)	Forest Land (1)	Inconvenience Score
Thompson Falls	.4	4.3	1.0	36.5	54.0
Eagle Creek	.4	3.5	0.0	27.1	39.2
Noxon	.4	3.2	0.0	24.1	35.3
Taft (North)	.4	2.9	0.0	26.7	37.0
Taft (South)	.4	2.6	0.0	23.2	32.6

Sources: Mountain West Research, Inc., 1981; Bonneville Power Administration, unpublished land use data, 1981.

TABLE 7-19

TWWP Alternative Plans
New Access Road Requirements

Alternative	High (4 miles/ line mile)	Medium (2 miles/ line mile)	Low (1 mile/ line mile)	Total Requirements
Thompson Falls	12.5	17.4	18.5	103.3
Eagle Creek	1.0	13.2	47.5	77.3
Noxon	3.3	8.2	50.4	80.0
Taft (North)	0.0	23.0	12.7	58.7
Taft (South)	1.2	17.7	13.0	53.2

Source: Bonneville Power Administration, unpublished new access road requirements data, 1981.

TABLE 7-20

TWWP Alternative Plans
Type of Corridor Development

Alternative	Establish New Corridor (3)	Parallel Existing Corridor (2)	Rebuild Line in Existing Corridor (1)	Corridor Development Score
Thompson Falls	31.4	17.0	0.0	128.2
Eagle Creek (including rebuild)	17.3	19.4	25.9	116.6
Noxon	12.9	20.4	28.5	108.0
Taft (North)	27.7	8.0	0.0	99.1
Taft (South)	20.0	11.0	0.0	82.0

Source: Bonneville Power Administration, unpublished corridor development data, 1981.

TABLE 7-21

TWWP Alternative Plans
Comparison of Alternatives

Alternative	Inconvenience by Land Use Type		New Access Roads		Corridor Development	
	Score	Rank	Score	Rank	Score	Rank
Thompson Falls	54.0	5	103.3	5	128.2	5
Eagle Creek	39.2	4	77.3	3	116.6	4
Noxon	35.3	2	80.0	4	108.0	3
Taft (North)	37.0	3	58.7	2	99.1	2
Taft (South)	32.6	1	53.2	1	82.0	1

Source: Mountain West Research, Inc., 1981.

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PERSONAL COMMUNICATIONS

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NAME	AGENCY	TITLE	DATE
Ackley, Dick	BPA Substation Construction Division		11 Aug. 1981
Appling, Rick	Day Mining Company, Wallace, Idaho	Engineer	9 July 1981
Bandy, William	Powell County	Appraiser	15 July 1981
Carter, R.L.	Touchette Homeowner's Association	Landowner	14 July 1981
Combes, John	Timber Management U.S. Forest Service	Assistant Director	16 Sept. 1981
Conley, Chris	Hecla Mining Co.	Personnel Supervisor	9 July 1981
Cooper, Ron	Flathead River Basin Environmental Impact Study	Project Director	10 July 1981
Crosby, Garth	Day Mining Company, Wallace, Idaho	Engineer	9 July 1981
Darcy, Mike	Kootenai County School District No. 271		7 July 1981
Draheim, Ken	Kelly Realty	Realtor	7 July 1981
Erickson, Dave	Lake County Planning Dept.	Planner	9 July 1981
Fairchild, Julie	Red Lion Motor Inn	Marketing Manager	7 July 1981
Fergen, Gary	Spokane County Planning Dept.	Director	6 July 1981
Fogg, Bob	Spokane, Washington	Realtor	7 July 1981
Frye, Marilyn	Sanders County Appraiser's Office	Appraiser's Assistant	10 July 1981
Hoffman, Don	Montana Dept. of Revenue	Intercounty Bureau Chief	22 July 1981
Horobioski, Steve	Spokane County	Subdivision Administrator	7 July 1981

PERSONAL COMMUNICATIONS

NAME	AGENCY	TITLE	DATE
Howland, Ralph	Spokane County Appraiser's Office	Appraiser	6 July 1981
Hyde, Gene	Hecla Mining Co.	Engineer	9 July 1981
Karstens, Kyle	Lake County Appraiser's Office	Appraiser	9 July 1981
Koffman, Ed	Clark Fork Valley Protective Assoc.	President	14 July 1981
Lavallee, Bill	Flamingo Motel Coeur d'Alene, Idaho	Owner	8 July 1981
Leonard, Al	BPA Construction Division		11 Aug. 1981 25 Aug. 1981 21 Sept. 1981 25 Sept. 1981
Lincoln, Jack	Mineral County, Montana	Land Developer	9 July 1981
Lundley, Harold	Spokane County	Developer	7 July 1981
Mansfield, Bob	The Washington Water Power Company	System Planner	13 Oct. 1981
Marcille, Gene	Polson Community Development Agency	Director	9 July 1981
Moore, Tom	Kootenai County Appraiser's Office		7 July 1981
Moorhouse, Jerry	Powell County	Planner	30 July 1981
Morrison, Brad	Spokane County Appraiser's Office	Appraiser	6 July 1981
Munden, Ms.	Deer Lodge State Prison		July 1981
Murray, Randy	Shoshone County Appraiser's Office	Appraiser	9 July 1981
Muster, John	Sanders County, Montana	County Commissioner	10 July 1981
Overmeyer, Dan	Missoula County Planning Office	Planner	14 July 1981
Patten, W.P.	Kootenai County Planning Office	Director	7 July 1981

PERSONAL COMMUNICATIONS

NAME	AGENCY	TITLE	DATE
Pierarson, Randy	Missoula County Appraiser's Office		13 July 1981
Pond, E.	BPA Lands Division		Sept. 1981
Schneider, Cleo	Bonner County Planning Office	Planner	4 Aug. 1981
Skogley, Earl	Plant and Soils Science Dept., Montana State University	Professor	24 Aug. 1981
Sprague, Don	BPA	Manager of Operations & Maintenance	11 Aug. 1981 21 Sept. 1981
Staninger, Kenneth	Staninger and Assoc.	Realtor	13 July 1981
Stravens, Jim	Shoshone County Planning Dept.	Planner	8 July 1981
Strencha, Pat	Granite County Planning Office	Planner	15 July 1981
Tomchak, Karen	Missoula County Planning Office	Assistant Planner	14 July 1981
Wachsmuth, Ron	Lolo National Forest	Forester	6 Oct. 1981
Walker, Connie	Kootenai County Planning Office	Planner	7 July 1981
Ward, George	U.S. Forest Service		7 July 1981
Watson, Larry	Shoshone County Appraiser's Office	Appraiser	9 July 1981
Wilson, Tim	Beaver Creek Protective Assoc.	Farmer and Landowner	10 July 1981
Wright, Jack	Mineral County Planning Office	Planner	9 July 1981
Zable, Dave	Shoshone County	Landowner	9 July 1981

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