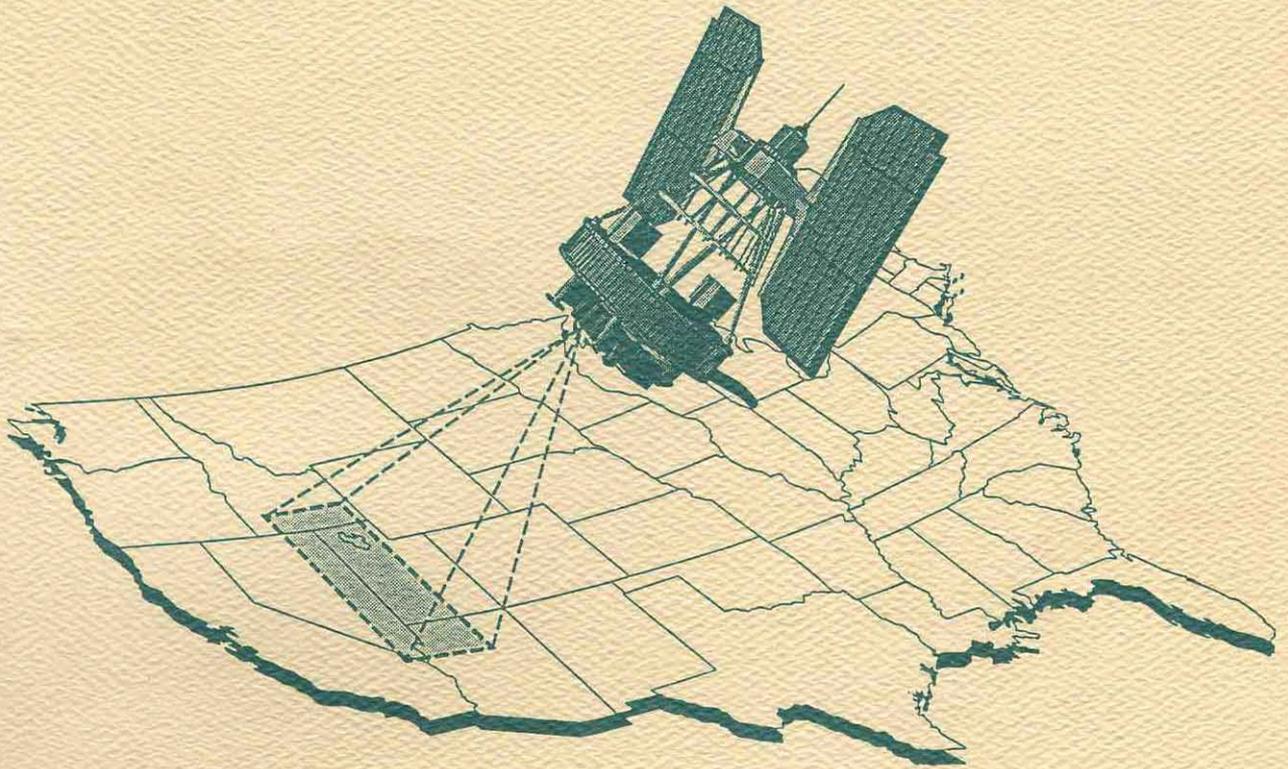

SOUTHWEST INTERTIE PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT DRAFT PLAN AMENDMENT DEIS/DPA



Prepared by the:

U.S. Department of the Interior
Bureau of Land Management
Burley, Shoshone, and Boise District Offices, Idaho
Elko, Ely, and Las Vegas District Offices, Nevada
Richfield District Office, Utah

In Cooperation with:

U.S. Department of Agriculture
Forest Service
Intermountain Region, R-4

U.S. Department of Interior
National Park Service
Pacific Northwest, Rocky Mountain,
and Western Regions

U.S. Department of Interior
Bureau of Indian Affairs
Cedar City, Utah

U.S. Department of Interior
Bureau of Reclamation
Pacific Northwest, Upper Colorado
and Lower Colorado Regions

June 1992



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
BURLEY DISTRICT OFFICE
ROUTE 3, BOX 1
BURLEY IDAHO 83318



IN REPLY REFER TO:

June 12, 1992

Dear Reviewer:

This Draft Environmental Impact Statement/Draft Plan Amendment (DEIS/DPA) on the proposed Idaho Power Company 500kV Transmission Line, the Southwest Intertie Project, is submitted for your review and comment. The Final Environmental Impact Statement/Proposed Plan Amendment (FEIS/PPA) would be prepared considering comments received. Please retain the DEIS/DPA for future reference as the FEIS/PPA may be abbreviated. The environmentally preferred alternative identified in this document is Route A for the Midpoint to Dry Lake transmission system and the Cutoff Route for the Crosstie transmission system.

Comments on the DEIS/DPA may be submitted in writing or presented verbally at a formal public meeting. As indicated below, six formal public meetings will be held to receive oral comments:

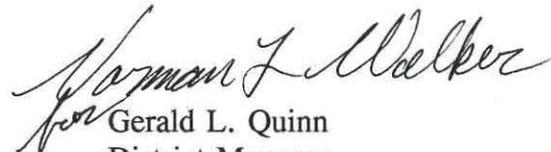
<u>Date</u>	<u>Time</u>	<u>Location</u>
August 3, 1992	7-9 pm	Weston Plaza Twin Falls, Idaho
August 4, 1992	7-9 pm	Wells High School Wells, Nevada
August 5, 1992	7-9 pm	Bristlecome Convention Center Ely, Nevada
August 6, 1992	7-9 pm	City Council Chambers Delta, Utah
August 19, 1992	7-9 pm	Soil Conservation Service Office Caliente, Nevada
August 20, 1992	7-9 pm	BLM District Office

In order to be considered in the FEIS/PPA, all comments must be received or postmarked by September 18, 1992. Please make your comments as specific as possible. Comments providing only opinions or preferences will not have a formal response, but will be included as part of the decision-making process.

A copy of the FEIS/PPA will be sent to all persons, organizations, or agencies who provide comments on the DEIS/DPA, or to anyone requesting a copy. Please address written comments or requests for copies of the DEIS/DPA or FEIS/PPA to:

Karl Simonson
Bureau of Land Management
Burley District Office
Route 3 Box 1
Burley, Idaho 83318

Sincerely yours,


for Gerald L. Quinn
District Manager

COVER SHEET
Southwest Intertie Project
Draft Environmental Impact Statement/Draft Plan Amendment

(X) Draft
() Final

(X) Administrative
() Legislative

Lead Agency

U.S. Department of Interior
Bureau of Land Management

EIS/PA Contact

Comments on this DEIS/DPA Bureau of
should be directed to:

Karl Simonson
Bureau of Land Management
Burley District Office
Route 3, Box 1
Burley, Idaho 83318

Cooperating Agencies

U.S. Department of Agriculture
Forest Service

U.S. Department of Interior
Bureau of Reclamation

Copies of the draft have been sent
to and comments requested from:
refer to Appendix G

U.S. Department of Interior
National Park Service

**Date DEIS/DPA Mailed to
the Public:**
June 2, 1992

U.S. Department of Interior
Bureau of Indian Affairs

**Date by Which Comments Must Be
Received or Postmarked By:**
September 18, 1992

Abstract

Idaho Power Company proposes to construct and operate a 500kV transmission line from their Midpoint Substation near Shoshone, Idaho to a new proposed substation in the Dry Lake Valley northeast of Las Vegas. A crosstie route would also be constructed from the Ely, Nevada area to a point near Delta, Utah. New substations would be required near Ely, Las Vegas, and Delta, and series compensation stations would be needed midway between the Midpoint Substation and Ely, Nevada, and between Ely and Dry Lake. New microwave facilities would be required on the route from Midpoint to Dry Lake.

The facilities from Midpoint Substation and Dry Lake would increase the ability to conduct northwest-southwest power exchanges, would increase the capacity and reliability of the interconnected electrical grid in the western U.S., and would enhance competition and economic efficiency of the regional power market. The project would establish an "open-marketplace" for power transfers in the Las Vegas area. Because of the increased capacity to share regional resources, an additional benefit would be deferring new generation facilities and diversifying fuel resources. The crosstie route between Ely, Nevada, and Delta, Utah, would increase the reliability between the existing transmission systems in the Delta area and the planned north-south SWIP system.

Alternatives considered are the no-action, energy conservation, alternative generating sources, alternative transmission systems, alternative transmission technologies, and the proposed action and its eight routing alternatives from Midpoint to Dry Lake and four routing alternatives from Ely to Delta. Routing alternatives include:

Midpoint to Dry Lake Alternatives

- Route A - 345kV*-Thousand Springs-Goshute Valley-Steptoe-Egan Range-Dry Lake Route
- Route B - 345kV*-Trout Creek-Wendover-Steptoe-Antone Pass-Dry Lake Route
- Route C - 345kV*-Trout Creek-Goshute Valley-Steptoe-Egan Range-Dry Lake Route
- Route D - 345kV*-Wells-Steptoe-Egan Range-Dry Lake Route
- Route E - 345kV*-Thousand Springs-Wendover-Steptoe-Egan Range-Dry Lake Route
- Route F - Hagerman-Trout Creek-Goshute Valley-Egan Range-Dry Lake Route
- Route G - 345kV*-Cottonwood Creek-Thousand Springs-Goshute Valley-Steptoe-Egan Range-Dry Lake Route

345kV* parallels Midpoint to Valmy 345kV transmission line

Crosstie Alternatives

- Direct Route
- Cutoff Route
- 230kV Corridor Route
- Southern Route

This Draft Environmental Impact Statement/Draft Plan Amendment (DEIS/DPA) assesses the environmental consequences of the federal approval for the project. Impacts of the proposed action would result from the access roads, tower sites, and staging areas. Impacts are expected to soils, vegetation, wildlife, cultural resources, scenic resources, and land uses. Electric and magnetic effects have also been studied for this project.



State Director
BLM
Idaho

SUMMARY

SUMMARY

Southwest Intertie Project

Idaho Power Company (IPCo) is proposing to construct over 500 miles of single-circuit 500 kilovolt (kV) transmission line between the existing Midpoint Substation near Shoshone, Idaho, and a new proposed substation site in the Dry Lake Valley northeast of Las Vegas, Nevada. The transmission line project, known as the Southwest Intertie Project (SWIP), would be constructed generally using the following tower types:

- V-guyed (or other guyed) steel lattice or self-supporting steel lattice
- steel-pole H-frame in agricultural areas
- self-supporting steel lattice at specific intervals for lateral support

The towers could range from 90-160 feet in height, but would average 120-130 feet. The project would require equipment additions to the Midpoint Substation, a new substation near Ely, Nevada, and a new substation in Dry Lake Valley in southern Nevada. Series compensation stations would be needed to increase the electrical performance of the system northeast of Wells, Nevada, which is about halfway between the two northern substation sites. Another series compensation station may be required in the Delamar Valley in southern Nevada. A new microwave communication system to operate the system would also be required between Midpoint Substation and the proposed substation at Dry Lake.

In the Ely area, another transmission line segment would connect from the proposed substation in this area, east to a new substation near Delta, Utah. This nearly 200-mile portion of the project is referred to as the "Crosstie". This transmission segment would require a new substation near Delta, Utah. An existing communication system between Ely, Nevada, and Delta, Utah would be used with only minor upgrades. If the crosstie is approved, IPCo would transfer the right-of-way grant to the Los Angeles Department of Water and Power (LADWP). The crosstie would be constructed and operated by the LADWP.

Purpose and Need

Electrical utilities have a responsibility to provide adequate supplies of reliable and economical electricity to all classes of customers. Transmission line systems interconnect most states and regions of the West to meet this mandate and to meet increasing demands and seasonal variations in electrical power supply. There is a gap in this system through the inland West. Since 1964 there has been recognition of this shortfall by Congress and utilities throughout the West.

The proposed addition of the Southwest Intertie Project would allow IPCo and other utilities in the Northwest and Southwest to add capacity and reliability to the western electrical system at an economical price. Specifically, the proposed project from Midpoint Substation to Dry Lake would:

- allow for power exchanges from the Northwest to the Southwest
- increase the reliability and capacity of the transmission system in the western U.S.
- increase competition and economic efficiency by increasing transmission access
- allow for mutually beneficial transactions to northwest and southwest utilities at an open marketplace
- increase wheeling capacity for other utilities
- furnish access to the economy energy market
- provide access to long-term purchases and sales
- diversify fuel resources used to generate electrical power

The cross-tie route would contribute toward satisfying regional reliability and enhance the electrical grid in the western U.S. by:

- creating a bidirectional transfer path between the Pacific Northwest and the intermountain regions of the West
- creating a bidirectional transfer path between the intermountain region and southern Nevada
- contribute to the reliability of the Utah-Nevada Transmission Project (UNTP) Phase I (Delta to Marketplace line) and the SWIP line from Midpoint Substation to Dry Lake
- allow for the bidirectional transfer of bulk power bought, sold, and/or exchanged in the marketplace between utilities in Utah, southern Nevada, and Idaho

Scoping and Project-Related Studies

Scoping Process

As required by the National Environmental Policy Act (NEPA) of 1969, the United States Department of the Interior (USDI), Bureau of Land Management (BLM), the USDA Forest Service (FS), the USDI Bureau of Reclamation (BOR), and the National Park Service (NPS)

completed numerous scoping activities. Scoping is an information-gathering process open to the public early in a project to identify the range or scope, of issues to address in the ensuing environmental studies. Scoping served to identify significant issues to be analyzed, determine the scope with which they were to be treated in the Draft Environmental Impact Statement/ Draft Plan Amendment (DEIS/DPA), and eliminate issues and alternatives from detailed study, where appropriate. Scoping information provided the basis for identifying alternative routes, and developing the work plan for environmental baseline, impact assessment, and mitigation planning for the project.

Scoping activities included:

- review of previous studies of transmission projects in the area
- completion of a regional siting study, including resource sensitivity analyses, agency contacts, and public scoping meetings
- identification of alternative transmission line routes

A Notice of Intent to prepare a DEIS/DPA for a transmission line project between Midpoint Substation, Ely, Nevada, and Delta, Utah, was published in the Federal Register on March 3, 1989 (Vol. 54, No. 41). Public scoping meetings were held in four communities during March 1989.

In April 1990, the project was expanded to include a route from the Ely, Nevada, area to the Dry Lake Valley area in southern Nevada. A Notice of Intent to expand the scope of the SWIP DEIS/DPA and to tier from the White Pine Power Project EIS was published in the Federal Register on June 4, 1990. Three additional public scoping meetings were held in Las Vegas, Ely, and Caliente, Nevada, during June 1990. A public information meeting was held in Moapa, Nevada, during December 1990 to discuss the ongoing studies in southern Nevada.

Corridor Studies

Alternative transmission line routes were identified based on previous studies, the regional siting study, and public and agency input. Subsequently the environment was inventoried and the data were compiled along all final alternative routes, a total of 21 data layers. This baseline was then used in assessing project-related impacts.

Six public workshops were held in January and April 1991 to report results of environmental studies, present preliminary alternatives, and gain public input regarding the acceptability of those alternatives.

Alternatives Including The Proposed Action

Six general alternatives were evaluated by IPCo to meet its system needs:

- energy conservation and load management
- new generation sources
- alternative transmission systems
- alternative transmission technologies
- proposed action
- no action

The first four of these alternatives were eliminated from further consideration because they did not meet the system requirements or meet the stated purpose and need.

IPCo has developed and implemented numerous energy conservation and load management programs. Conservation, although effective in reducing energy use, cannot be considered an alternative action that would meet the stated need for the project.

IPCo evaluated many alternative generation sources, including hydroelectric, thermal, solar, wind, cogeneration, solid waste, combustion turbine, fluidized bed, and nuclear fusion. These alternatives would not meet the goal of deferring new generation, providing for seasonal exchanges, diversifying fuel resources, and other stated purposes of the project, and therefore, this action was eliminated as an alternative.

IPCo evaluated the feasibility of increasing power purchases from other utilities and wheeling power over the existing transmission system. This alternative was not considered viable because the present system is operated at capacity whenever possible. Any increase in power brought into the system over existing facilities would greatly reduce the reliability of the entire system, reduce the stability of the system, and make outages more frequent and severe.

Alternative transmission technologies (e.g., voltages other than the proposed 500kV, direct current (DC) instead of alternating current (AC), underground construction, microwave, laser, super conductors, etc.) were evaluated. However, these technologies were not considered to be viable alternatives, due to their substantially higher costs, increased environmental impacts, and/or technological unfeasibility.

Advantages of no action would include preclusion of environmental impacts within the project study area and elimination of financial costs associated with construction and operation of a 500kV transmission line. The disadvantages would include environmental, socioeconomic, and electrical service impacts that would result due to other mitigating

actions taken to ensure adequate and affordable energy supplies within the western electrical system.

Proposed Action

IPCo proposes to construct, operate, and maintain a single-circuit, overhead 500kV transmission line between the existing Midpoint Substation near Shoshone, Idaho, and a new proposed substation site in the Dry Lake Valley northeast of Las Vegas, Nevada. The transmission line project would also connect about midway between these two connection points, near Ely, Nevada, east to a new substation near Delta, Utah. The line would be supported by V-guyed and self-supporting steel-lattice, and steel-pole H-frame structures placed an average of 1500 feet apart.

The proposed action would require equipment additions to the Midpoint Substation, one new substation (and possibly a second substation) near Ely, Nevada, a new substation in the Dry Lake Valley in southern Nevada, and a new substation near Delta, Utah. Series compensation stations would be needed to increase the electrical performance of the system northeast of Wells, Nevada, which is about halfway between the two northern substation sites. This series compensation station near Wells may be expanded to accommodate switching equipment (substation). Another series compensation station would be required in the Delamar Valley in southern Nevada.

A new microwave communication system to operate the system would also be required between Midpoint Substation and the proposed substation at Dry Lake. An existing communication system would be used on the transmission line system between Ely, Nevada, and Delta, Utah.

The project is scheduled to begin commercial operation by late 1997. Construction would begin in 1995.

Routing Alternatives

Final routing alternatives for the proposed line were determined through a process of documentation and elimination of alternatives with serious constraints. Alternative routes were eliminated for a number of reasons, including environmental conflicts, public and agency opposition, and system planning/performance criteria.

For routing options remaining, detailed environmental studies were conducted to form the basis for comparing those alternatives. Approximately 2000 miles of alternatives routes were studied in detail. To select routing preferences, the environmental consequences of each route were summarized, based on impact assessment results, environmental resource preferences, and agency and public comments. A network of routes was organized into two major routing alternatives:

- the north-south system from Midpoint Substation south to the Dry Lake Valley
- the "crosstie" routes from Ely, Nevada, to Delta, Utah

Each of these contained several routing options. The final routing alternatives are as follows:

Midpoint Substation to Dry Lake

- **Route A** - 345kV*-Thousand Springs-Goshute Valley-Steptoe-Egan Range-Dry Lake Alternative
- **Route B** - 345kV*-Trout Creek-Wendover-Steptoe-Antone Pass-Dry Lake Alternative
- **Route C** - 345kV*-Trout Creek-Goshute Valley-Steptoe-Egan Range-Dry Lake Alternative
- **Route D** - 345kV*-Wells-Steptoe-Egan Range-Dry Lake Alternative
- **Route E** - 345kV*-Thousand Springs-Wendover-Steptoe-Egan Range-Dry Lake Alternative
- **Route F** - Hagerman-Trout Creek-Goshute Valley-Egan Range-Dry Lake Alternative
- **Route G** - 345kV*-Cottonwood Creek-Thousand Springs-Goshute Valley-Steptoe-Egan Range-Dry Lake Alternative

* parallels the Midpoint to Valmy 345kV transmission line

Crosstie Routes from Ely, Nevada, to Delta, Utah

- Delta Direct Route
- Cutoff Route
- 230kV Corridor Route
- Southern Route

Affected Environment

The climate of eastern Nevada, southern Idaho, and western Utah is influenced largely by location, regional weather systems, and topographic orientation. The climate throughout

much of this area is characterized by hot, dry summers followed by cold, dry winters. Surface winds are channeled through valleys between generally north-south trending mountain ranges. Winds flow predominately in northeasterly or southwesterly directions. Annual precipitation depends largely on elevation. Precipitation occurs primarily in the form of snow at higher elevations during the winter months. The snows maintain high water tables and provide groundwater recharge. Some additional precipitation occurs from thunderstorms produced by daytime heating of air masses in valleys.

Northern segments of the SWIP, within southern Idaho and northeastern Nevada, are in the Snake River Plain section of the Columbia Plateau physiographic province. This section is a vast, relatively flat plain and young lava plateau, which is deeply dissected by the canyons of the Snake River and Salmon Falls Creek, the dominant landscape features within this area. Irrigated agricultural lands, this area's main land use, are found clustered north and south along the Snake River.

To the south, on the Snake River Plain, agricultural areas extend to bordering foothills and mountains in a transitional landscape between the Basin and Range and Columbia Plateau provinces. This transitional landscape includes foothills, plateaus, mesas, and buttes formed of eroded lava and sedimentary rock layers.

The majority of northeastern and southern Nevada and western Utah, falls within the Basin and Range physiographic provinces. Topographically, this landscape is distinguished by isolated, roughly parallel mountain ranges separated by closed (undrained) desert basins or playas. The mountain ranges often run 50 to 75 miles in length and are generally north-south trending. Surrounding the base of the mountains and extending into the basins, there are often distinctive alluvial areas.

Portions of western Utah also include a transition zone of the Basin and Range province into what is locally referred to as the "West Desert" landscape. This landscape includes portions of the Sevier Desert and Sevier Lake. The topography within this area is extremely flat and includes large playas or mud flat areas, that exhibit little landform diversity. Again, these areas are divided by rugged, rocky mountain ranges.

Earth resource features that have a high sensitivity are landslide hazard areas, areas of high paleontological sensitivity, soils with either a high wind erosion or high water erosion hazard, areas of active mining, perennial streams and lakes, springs, and wetland areas. Significant paleontological resources are found at the Hagerman Fossil Beds National Monument near Hagerman, Idaho.

Eleven vegetative communities have been identified in the SWIP study corridors, including shadscale, greasewood, samphire-iodine bush, Great Basin sagebrush, Mojave desert scrub, grassland, wetlands, riparian areas, piñon-juniper, alpine tundra, limber/bristlecone pine, and quaking aspen. These vegetation types support a large variety of mammals, birds, amphibians, and reptiles.

Approximately 560 species of vertebrates are likely to occur, over the course of a year in habitats traversed by the alternative routes.

Seventy species of fish are known to occur within aquatic habitats within the study corridors. Native and introduced game fish are present in warm and cold water lakes, ponds, and reservoirs, and in perennial streams and rivers. Others inhabit hot and cold springs and marshes. Approximately 31 percent of the fish fauna occupying waters within the study corridors are introduced.

Fifteen species of amphibians are expected to occur in aquatic, riparian, and wetland habitats in the study corridors. Sixty-two species of reptiles potentially occur in terrestrial habitats within study corridors.

A total of 111 species of mammals are expected to occur within habitats traversed by alternative routes. Small mammals including rodents, lagomorphs (rabbits and hares), bats, and shrews are the most numerous, although not readily observed. Over one half of the mammals that may occur within the study corridors are rodents (51 species). Large mammals include 19 species of carnivores (e.g., lynx, wolverine, etc.) and five species of native ungulates (e.g., antelope, mule deer, bighorn sheep).

Free roaming horses (*Equus caballus*) and burros (*E. asinus*) occur on public lands in the study corridors. These animals are descendants of horses and burros that escaped from man or were turned out onto the open range.

In recent years, dramatic declines in tortoise population numbers have been observed throughout much of its range, including southern Nevada. A number of factors have contributed to the observed decline, including loss of habitat to development, degradation of habitat from livestock grazing, disease, predation on juveniles by ravens attracted to areas where human refuse accumulates, illegal collection, and off-road vehicle (ORV) use. The Mojave population of the desert tortoise was formally listed as a federally threatened species by the U.S. Fish and Wildlife Service (FWS) in April 1990. Concern has been expressed for the maintenance of viable populations in Clark County, Nevada, and especially the Las Vegas Valley where rapid commercial and residential development is occurring.

Declines in sage grouse numbers are largely associated with destruction of sagebrush habitat. Conversion of sagebrush to agricultural lands, and attempts to convert sagebrush areas to grassland for livestock grazing are a few of the human developments contributing to the decrease in grouse numbers.

The majority of the lands crossed by the alternative routes are used for cattle grazing and are classified as rangeland. Other significant uses within the study corridors include agriculture, mining, airports and airstrips, utilities, commercial, governmental and other industrial facilities. Residences near urban areas and in remote locations, both occupied and unoccupied are located within the study corridors. Principal urban areas or residential concentrations in or near the study corridors include

- Hagerman, Eden, and Hansen in Idaho
- Wells, Ely, Curry, Jackpot, and McGill in Nevada
- Delta, Eskdale, and Hinckley in Utah

Several alternative routes in Utah and Nevada could potentially affect military aircraft operations at Hill Air Force Base in Utah and Nellis Air Force Base in southern Nevada.

Approximately half of the lands crossed by the study corridors in Idaho fall into the category of agriculture. The high-desert lands of the Snake River Valley are fertile and productive when irrigated. Many of the lands crossed in Idaho are classified as prime or important farmland by the Soil Conservation Service (SCS).

Dispersed recreation occurs throughout these areas in Nevada, Idaho, and Utah. Developed campsites and recreation areas are usually located along perennial streams or reservoirs. Great Basin National Park, near Baker, Nevada, is passed by several of the alternative cross-tie routes. Several wilderness study areas (WSAs) inventoried within the study corridors include portions of Salmon Falls Creek WSA in Idaho and fourteen WSAs in Nevada including South Pequop, Bluebell, Goshute Peak, Goshute Canyon, Marble Canyon, Mt. Grafton, Fortification Range, Delamar Mountains, Evergreen, Meadow Valley Mountains, Fish and Wildlife 1, 2 & 3, and Arrow Canyon. WSAs within Utah include Howell Peak, King Top, Notch Peak, Fish Springs, and Swasey Mountain.

Cultural resources are historic and traditional cultural properties that reflect our nation's heritage. Federal regulations define such historic properties to include prehistoric and historic sites, buildings, structures, districts, and objects included in, or eligible for inclusion in the National Register of Historic Places (NRHP), as well as artifacts, records, and remains related to such properties. These regions of Nevada, Idaho, and Utah have been occupied for thousands of years. This section briefly summarizes what is known about this long history of human use of the region. More details are provided in this document and in the technical reports (Rogge 1991).

Prehistory - The project area overlaps portions of two culture areas, the Great Basin and the Colorado Plateau, but the vast majority of the project area is within the "cultural," if not the geographic, Great Basin. The extreme southern portion is along the western margin of the Colorado Plateau. Within the study area three prehistoric cultural stages, Paleo-Indian, Archaic, and Formative are represented and local phases or variations within each stage have been defined.

Ethnohistory - During the ethnohistoric era, these regions of Nevada, Idaho, and Utah were occupied by the Northern Shoshone, Bannock, Western Shoshone, Pahvant Ute, and Southern Paiute. Generally speaking, the Northern Shoshone and Bannock inhabited the study corridors in southern Idaho. The Western Shoshone ranged through eastern Nevada and Northwestern Utah. The central portion of Utah was occupied by the Pahvant Ute while the Southern Paiute inhabited southwestern Utah and southern Nevada.

History - After the arrival of Europeans in the New World, portions of the study corridors were claimed by Spain, Great Britain, France, Mexico, and Canada, as well as the United States. The earliest European exploration was led by Escalante who skirted the eastern margin of the study area in Utah. After the famous Lewis and Clark Expedition to the Pacific Coast in 1804-1806, fur trappers and mountain men were lured to the Rocky Mountains until the decline of fur trading in about 1840.

Environmental Consequences

The consequences, or impacts, to the environment caused by implementing the proposed project were assessed by considering the existing condition of the environment and the effects of the activities of the proposed project (construction, operation, and maintenance) on the environment. The "initial" impacts were evaluated to determine if mitigation measures would be effective in lessening the impacts. Those impacts remaining after mitigation measures were applied are referred to as "residual" impacts. Many of the identified impacts are considered to be adverse, direct, and long-term. Some impacts (e.g., visual, some cultural and biological impacts) are considered adverse, indirect, and long-term.

The principal type of impacts associated with earth resources is the potential for increased erosion hazards. Some short-term soil compaction impacts could occur in agricultural areas. Some stream sedimentation could also occur at the crossings of perennial streams.

Typical impacts to biological resources include effects on threatened, endangered, or protected species, rare or unique vegetation types, migration corridors for wildlife, areas of low revegetation potential, or highly productive wildlife habitat. The impacts are generally associated with the removal of vegetation and habitat cause by construction and operation activities, and from human activity from more access into remote areas. The presence of the transmission towers would increase the potential for long-term predation of sage grouse by golden eagles on adult and immature birds. Adding towers also would provide roost/hunting sites for ravens and magpies, thus increasing the long-term potential for predation on grouse nests.

Land use impacts include those that would displace, alter, or other physically affect any existing or planned residential, commercial, or industrial use or activity, any agricultural use, or any recreational, preservation, educational, or scientific facility or use. Few land use impacts would occur from the construction of the SWIP, although impacts would be long-term.

Potential socioeconomic effects could include construction-period impacts to area communities, social and economic impacts along the selected route, and fiscal impacts with local jurisdictions. These effects can be both adverse and beneficial.

Visual impacts are considered adverse, direct, and long-term. They include effects to the quality of any scenic resource, the view from any residential or other sensitive land use or travel route, or the view from any recreation, preservation, education, or scientific facility. Visual impacts to existing and proposed sensitive viewpoints for Great Basin National Park is a concern. Other visual impacts are generally associated with residential concentrations or dispersed homes, scenic roads and highways, and recreation viewpoints, including wilderness areas and WSAs.

Direct, adverse physical impacts can occur to cultural resources during construction, while indirect impacts can result after construction due to increased erosion or increased access to sites. Adverse visual effects may occur to sites with high aesthetic or interpretive values.

Potential electrical, biological, health and safety effects from the proposed action were assessed. These include corona effects, electric and magnetic field effects, and effects on cardiac pacemakers, agriculture, and public safety.

The Stateline Resource Area is currently preparing a Resource Management Plan (RMP) which will designate utility corridors. The RMP corridor studies and the SWIP EIS studies have been coordinated, and the preferred alternatives are similar. The Federal Land Policy and Management Act (FLPMA) of 1976 mandates to the extent practical, BLM will consolidate future utility projects within the corridor that is established.

Route Comparisons

The comparative environmental consequences are summarized below for each of the final alternative routes.

Midpoint to Dry Lake Routes

- Route A:
 - crosses 130 miles within Military Operating Areas (MOAs) of Nellis Air Force Base
 - crosses 35.2 miles of sage grouse leks and wintering range
 - crosses the most (32.8 miles) bald eagle nesting areas
 - most number of residences within one mile
 - crosses 52.1 miles of Category I desert tortoise habitat

- Route B:
 - crosses 182 miles within MOAs of Hill and Nellis Air Force Bases
 - crosses 36.8 miles of sage grouse leks and wintering range
 - crosses the least (7.2 miles) crucial pronghorn habitat
 - impacts to peregrine falcon for 23.1 miles
 - least number of residences within one mile
 - crosses 52.1 miles of Category I desert tortoise habitat

- Route C:
 - crosses 130 miles within MOAs of Nellis Air Force Base
 - crosses 30.7 miles of sage grouse leks and wintering range
 - crosses least BLM-administered lands
 - crosses least miles of Visual Resource Management (VRM) Class II landscapes
 - crosses 52.1 miles of desert tortoise habitat

- Route D:
 - crosses 128.4 miles within MOAs of Nellis Air Force Base
 - crosses 34.1 miles of sage grouse leks and wintering range
 - crosses most miles of riparian areas
 - crosses least (6.0 miles) bald eagle nesting areas
 - crosses 52.1 miles of desert tortoise habitat

- Route E:
- crosses 130 miles within MOAs of Nellis Air Force Base
 - crosses 36.3 miles of sage grouse leks and wintering range
 - crosses most miles of BLM-administered lands
 - impacts to peregrine falcon for 23 miles
 - crosses 52.1 miles of desert tortoise habitat
- Route F:
- visual impacts to Fossil Bed National Monument
 - impacts airstrip used by agricultural spraying operations
 - crosses 130 miles within MOAs of Nellis Air Force Base
 - crosses 32.8 miles of sage grouse leks and wintering range
 - most agricultural lands crossed
 - crosses most private land
 - most miles within utility corridors
 - most cultural sites within one mile
 - crosses 52.1 miles of desert tortoise habitat
- Route G:
- reduces visual impacts to U.S. Highway 93
 - crosses 130 miles within MOAs of Nellis Air Force Base
 - crosses 40.6 miles of sage grouse leks and wintering range
 - crosses 39.7 miles of crucial pronghorn habitat
 - crosses least private land
 - crosses 52.1 miles of desert tortoise habitat
- Utility:
- reduces visual impacts to U.S. Highway 93
 - crosses 130 miles within MOAs of Nellis Air Force Base
 - crosses 40.6 miles of sage grouse leks and wintering range
 - crosses 39.7 miles of crucial pronghorn habitat
 - crosses 52.1 miles of desert tortoise habitat
- Agency :
- reduces visual impacts to U.S. Highway 93
 - crosses 130 miles within MOAs of Nellis Air Force Base
 - crosses 37.2 miles of sage grouse leks and wintering range
 - crosses most (43.2 miles) crucial pronghorn habitat
 - least prehistoric cultural sites within one mile
 - crosses 52.1 miles of desert tortoise habitat

Ely to Delta Routes

- Direct Route:
- shortest route and crosses least public and private land
 - avoids visual impacts to Great Basin National Park
 - crosses wetlands known as the Leland-Harris Spring Complex
 - crosses 130 miles within restricted air space and MOAs of Utah Testing and Training Range (UTTR)
 - crosses 7.9 miles of sage grouse leks and wintering range
 - crosses least miles of crucial pronghorn habitat

- Cutoff Route:
- avoids visual impacts to Great Basin National Park
 - crosses 104.2 miles within MOAs of UTTR
 - crosses 6.8 miles of sage grouse leks and wintering range
- 230kV Corridor Route
- utilizes existing 230kV corridor
 - crosses 102.5 miles within MOAs of UTTR
 - crosses 7.1 miles of sage grouse leks and wintering range
 - crosses most miles of high water erosion hazard
 - crosses most miles (17.8) of bald eagle nesting areas
 - highest number of residences within one mile
 - highest number of known cultural sites within one mile
 - crosses most private and national forest lands
 - most miles within utility corridors
 - crosses most miles of predicted high sensitivity cultural zones
- Southern Route:
- longest route
 - highest overall environmental impacts
 - crosses least amount of MOAs of UTTR
 - crosses 11.8 miles of sage grouse leks and wintering range
 - most miles of construction in steep terrain
 - crosses most miles of BLM-administered lands
 - most miles (85.7) of crucial pronghorn habitat

Preferred Route Selection

Based upon review of potential impact characterizations, significant, unavoidable adverse effects, agency and public comments, and cumulative environmental consequences of the alternative routes, the preferred routes were identified (refer to Identification of Preferred Alternatives in Chapter 2).

Route A is the environmentally preferred route between Midpoint Substation to Dry Lake. The environmentally preferred crosstie route is the Cutoff Route, however, this would depend upon which Ely-area substation is selected. If the Robinson Summit site is chosen over the North Steptoe site, the 230kV Corridor Route would be environmentally preferred.

The agency preferred route between Midpoint Substation to Dry Lake is a combination of Route A and Route G. The agency preferred crosstie route is the 230kV Corridor Route.

IPCo prefers Route G from Midpoint Substation to Dry Lake with several modifications near Contact, Nevada. The utility preferred crosstie route is the 230kV Corridor Route.

The significant, unavoidable adverse effects of this route involve biological, visual, and cultural resources only, as summarized below:

Resource Category

Significant Unavoidable
Adverse Impacts

Biological Resources

On the routes between Midpoint Substation and Dry Lake, Route A would potentially disturb 3.2 miles of riparian habitat, 52.1 miles of sensitive desert tortoise habitat, and 35.2 miles of sage grouse leks and wintering range. Route G would potentially disturb 4.8 miles of riparian habitat, a similar disturbance to desert tortoise, and 40.6 miles of sage grouse leks and wintering range.

On the crosstie between Ely and Delta, the Cutoff Route would potentially disturb 1.2 miles of riparian habitat and 6.8 miles of sage grouse leks and wintering range. The 230kV Corridor Route would potentially disturb 0.9 miles of riparian habitat and 7.1 miles of sage grouse leks and wintering range.

Although the impacts to riparian areas and desert tortoise can be largely mitigated, they are considered significant because of the sensitivity of the resources. The impacts to sage grouse are significant where habitats are crossed where there are no existing transmission lines.

Visual Resources

On the routes between Midpoint Substation and Dry Lake, Route A would potentially result in 13.5 miles of high impacts to the area's visual resources. Significant impacts could be predicted to 83 residences within one mile of the route, and to one scenic highway crossed. The route would cross 7.3 miles of BLM lands managed to retain visual quality (VRM Class II) and FS lands managed to retain visual quality (VQO Retention). Route G would potentially result in 14.7 miles of high impacts to the area's visual resources. Impacts could be predicted to 93 residences within one mile of the route, and to one scenic highway crossed.

On the crosstie between Ely and Delta, the Cutoff Route would potentially result in 1.2 miles of high impacts to the area's visual resources. Significant impacts could be predicted to 5 residences within one mile of the route. The 230kV Corridor Route would potentially result in 7.3 miles of high impacts to the area's visual resources. Impacts could be predicted to 26 residences within one mile of the route.

Resource Category

Cultural Resources

Significant Unavoidable
Adverse Impacts

On the routes between Midpoint Substation and Dry Lake, Route A would potentially result in 6.8 miles of high impacts to cultural resources. Among the 454 sites identified within one mile, 53 are historic, 13 are ethnohistoric, and 388 are prehistoric. Route G would potentially result in 7.3 miles of high impacts to cultural resources. Among the 474 sites identified within one mile, 61 are historic, 14 are ethnohistoric, and 399 are prehistoric.

On the crosstie between Ely and Delta, the Cutoff Route would potentially result in 4.6 miles of high impacts to cultural resources. Among the 39 sites identified within one mile, 5 are historic, 8 are ethnohistoric, and 26 are prehistoric. The 230kV Corridor Route would potentially result in 5.5 miles of high impacts to cultural resources. Among the 100 sites identified within one mile, 12 are historic, 8 are ethnohistoric, and 80 are prehistoric.