



Planning for the Future

Wood River Electrical Plan

Executive Summary
Updated May 2011

To view entire plan document, please visit

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Acronyms/Definitions

BLM – U.S. Bureau of Land Management

CAC – Community Advisory Committee

KING – King Transmission Station, located in Hagerman

kV – kilovolts (thousands of volts). 1,000 volts = 1 kV; 138 kV = 138,000 volts

kW – kilowatts (thousands of watts). 1,000 watts = 1 kW

MPSN – Midpoint Substation, located south of Shoshone

MW – megawatt (millions of watts). 1,000,000 watts = 1 MW

Station – A facility that provides transmission line switching *without* electrical transformation (voltage reduction) to distribution voltages that serve local area loads.

Substation – A facility that provides transmission line switching *with* electrical transformation (voltage reduction) to distribution voltages that serve local area loads.

USFS – U.S. Forest Service

WDRI – Wood River Transmission Station, located north of Hailey

WREP – Wood River Electrical Plan

Relationship between Power and Voltage – There are two quantities referred to in this report when describing the electrical system; Power and Voltage.

Power: the amount of energy or work performed in one second. The term is used to express the electrical workload of the Wood River Valley and the capability of a transmission line to move electricity. Power is measured in watts (kilowatts and megawatts).

Voltage: A component of power that enables the power to flow on a transmission line. It is the “push” behind the power. In general, a higher voltage line can carry more power than a lower voltage line. Voltage is measured in volts at your household (110 and 220-v) and kilovolts in the transmission network (138-kV).

Executive Summary

Current Conditions

The Wood River Valley (the Valley) is a vibrant year-round recreation and resort community that depends on a full-time, reliable electric power system. The tourism-based economy focuses on making the Valley a highly desirable place to live, work, play and visit. Electricity is a vital component required to maintain and enhance the unique experience of living in and visiting the Valley. Whether it is powering the furnace fan and lights in your home, the high-speed chairlifts and snowmaking on the mountain, or your computer or internet-based small business, electricity has become a necessity of life in today's modern society. Additionally, as residents and visitors become more and more dependent on electricity charge-based technology such as smart phones, tablets, and computers any interruption in electrical service has negative consequences for the desirability and future of the Valley. This is especially true in the cold winter months when a power outage could create a public safety emergency as residents have difficulty heating their homes and water pipes freeze.

Today's maximum electrical demand in the Wood River Valley occurs in the coldest part of the winter months each year during the height of tourist season. Cold temperatures drive up heating demands and the peak of the ski and tourism season creates a surge in population and user-related power needs. Also, as population in the Valley and the resort community continues to grow over time, the corresponding electrical demand will increase. Recent major emergency events in the area including the summer 2007 Castle Rock fire and the 2009 Christmas Eve power outage emphasize the need for a reliable power system. Idaho Power is proactive in working with the community to plan for reliable new infrastructure to serve the electrical needs of the Wood River Valley today and into the future.

The Need

The primary need for any power system improvements in the Wood River Valley is to provide a reliable electric service to all customers. The existing power transmission system does not adequately meet the Valley's current need for reliable power.

The transmission system lacks sufficient reliability due to these factors:

- The electrical system serving the North Valley (from Hailey to Sun Valley and Ketchum) has only one transmission line which provides no redundancy should an outage occur on that line.
- The transmission line between Hailey and Sun Valley/Ketchum is 49 years old, having been built in 1962. While this line has been relatively dependable in the past, the risk of a major outage continues to increase due to its age.
- The remote location of large portions of the line between Hailey and Sun Valley/Ketchum makes access very difficult, especially in the winter. A failure on the line in the coldest part of winter could result in a long term outage. It could potentially be days before the line could be repaired and power restored to the Sun Valley/Ketchum resort area.

- The electrical system south of Hailey has two transmission lines, but neither line has the capability to provide 100% of the electricity needed for extreme peak loads in the Wood River Valley without rotational power outages. The Christmas 2009 outage was a dramatic reminder of the limitations of the existing system.

In the future, the system will lack sufficient capacity to satisfy projected electricity needs:

- Current power demands in the Wood River Valley at peak load are approximately 100 MW and future demands at build-out are projected to be approximately 320 MW, using current usage patterns to project future use.
- The current system capacity is about 120 MW.
- The system will need 200 MW of increased capacity and delivery infrastructure to serve the Wood River Valley's build-out needs. Any growth-related system upgrades will be built only when required by increased system demands.

Purpose of the Wood River Electrical Plan

The purpose of the Wood River Electrical Plan (WREP) is to outline and prioritize improvements and additions to the high voltage transmission and substation infrastructure to address the Valley's power needs from now through build-out. The development of the Plan was accomplished through a cooperative effort with the Community Advisory Committee (CAC). The CAC consisted of 19 members representing Blaine County, the cities of Sun Valley, Ketchum, Hailey, Bellevue, Picabo and Carey, Blaine County planning administrators, Lincoln County, private business/developers, area residents, the BLM, USFS and the Nature Conservancy. The Plan specifies locations for major transmission lines serving the Valley for many years to come and provides direction for the location of a new distribution/transmission substation to serve the southern part of the Valley. Individual projects resulting from this Plan will still require jurisdictional approval and will be subject to a public siting process. This plan gives the jurisdictions and citizens a "heads-up" as to where high-voltage transmission equipment may be located and allows them to plan accordingly.

In preparing the WREP, Idaho Power and the CAC considered the effect that demand-side management could have on future load in the Wood River Valley. Demand-side management includes energy efficiency efforts that reduce total energy consumption and peak response programs that reduce the maximum demand on the power system. Idaho Power is committed to reducing electrical load through the use of demand-side management at all customer levels. In conjunction with activities outside Idaho Power's control – such as expected improvements in Idaho building standards, customer involvement, and energy efficiency technology advancements – Idaho Power expects new electrical load can be reduced by 20 to 30 percent. Actual reduction in power consumption will be taken into account as infrastructure improvements are implemented. However, even if new electrical load is reduced by 30 percent, new electrical infrastructure is still required to reliably and dependably serve existing and new load.

Renewable power sources are an important component of the total resource portfolio that provides energy to the Wood River Valley. Small scale development of renewable resources (mostly solar) has occurred throughout the Valley while much larger wind, solar and geothermal

resources have been and continue to be developed in the region around the Wood River Valley. The power system infrastructure, including transmission lines and substations, enables access to these regional resources for the residents of the Valley. Once brought in to the Valley, the electrical power from renewable resources still require transmission lines, substations and distribution lines to bring the energy to the consumer. A dependable transmission system that serves as the primary full-time power source will continue to be required to reliably meet the power demands of the Wood River Valley.

Because of the high cost, limited potential, significant space requirements, visual impacts and intermittent nature of any large scale renewable resources, it is impractical to assume the transmission system could be replaced by renewable resources in the Valley. Significant additional energy resource development in the Valley could mitigate the need for some of the growth related upgrades outlined in the Plan. However, the need for reliability driven projects such as the second transmission line into Ketchum does not change with more renewable development.

The Committee's Recommendations (see recommendations map; Figure 1)

Through the consensus agreement of the CAC, the WREP recommends the following infrastructure improvements and additions: *(Items are labeled on the map in Figure 1 by letter)*

South Valley – South of Timmerman

- (A) Develop a new substation along Highway 75 near Burmah Road to serve the south Valley load and to act as a switching station for new transmission.
- (B) Construct a new 138 kV transmission line from Midpoint Station (near Shoshone) to the new Burmah substation. This line would be installed in parallel with Highway 75.
- (C) Construct a new 138 kV transmission line from the new Burmah substation to Moonstone Substation (located east of Fairfield).
- (D) Construct a new 138 kV transmission line from Burmah substation to Silver Substation (located near Picabo).
- (E) Upgrade the existing King (near Hagerman) to Moonstone 138 kV transmission line to 230 kV.

Mid Valley – Timmerman to Hailey

- (F) Improve the capability of the existing transmission lines from Silver Substation and Moonstone Substation into the Wood River Transmission Station in Hailey using higher capacity wire while maintaining the current 138 kV operating voltage.

North Valley – Hailey to Ketchum

- (G) Construct an additional 138 kV transmission line between Wood River Transmission Station and Ketchum Substation to improve the reliability to the north end of the Valley. The CAC recommended that the new line run parallel with and adjacent to Highway 75. This route was considered the most sensible option because it follows the Valley's main transportation corridor.

The Wood River Electrical Plan was formed after a series of meetings of the Community Advisory Committee (CAC) held throughout 2007. The CAC met two more times in 2010 and

one final time in the spring of 2011 to further refine their recommendations and review additional transmission line design details specifically for the new Hailey to Sun Valley/Ketchum transmission line (item G above). The consensus CAC recommendation is to build an overhead 138 kV transmission line from Wood River substation north to the St. Luke's hospital area. This new line would be in place of existing overhead distribution power lines along Buttercup Rd and Highway 75. From the hospital area north to the Ketchum substation, an underground 138 kV transmission line is preferred by the CAC. The underground option is contingent on local community funding.

The Idaho Public Utilities Commission requires the costs of underground transmission lines that exceed the cost of the overhead line be paid by entities other than Idaho Power and its customers in general. For any underground transmission line between Hailey and Sun Valley / Ketchum, the local community must pay the difference in cost between the underground line and the equivalent overhead transmission line. Preliminary funding options are currently being developed. This funding issue is expected to be a significant part of the public siting and permitting process in the near future for the new line between Hailey and Sun Valley/Ketchum.

Idaho Power extends a heartfelt thank you to every member of the CAC. The time and effort the committee gave to this project was tremendous. Their work has provided Idaho Power and the affected communities with a framework from which to begin the public siting process to build the power system that corrects the present deficiencies and addresses future requirements of the power system serving the Wood River Valley.

