

SYSTEM LOAD

SAN LUIS VALLEY ELECTRIC SYSTEM IMPROVEMENT PROJECT

How Tri-State's Power Delivery System Works

Transmission lines are used to carry electricity at high voltages across far distances. Once the electricity is generated at a power facility, such as a coal-based power plant, hydroelectric dam or renewable energy source, it is carried to residential and business consumers via a network of transmission and distribution power lines. Voltages on a transmission line typically range from 69 to 500 kilovolts. Distribution lines carry the energy at lower voltages (12.5 to 24.5 kilovolts) until it reaches a small transformer that converts it to a usable voltage for the consumer of 110 and 220 volts.

San Luis Valley's Existing Electric System

Tri-State owns several existing transmission lines in the San Luis Valley where it provides wholesale power to its member systems. The member-owned cooperatives serve as the electric utilities to farms, homes and businesses in the area. Tri-State's power supply accounts for approximately 51 percent of the electric load within the San Luis Valley – the other major electric provider in the valley is Public Service Company of Colorado (Xcel Energy).

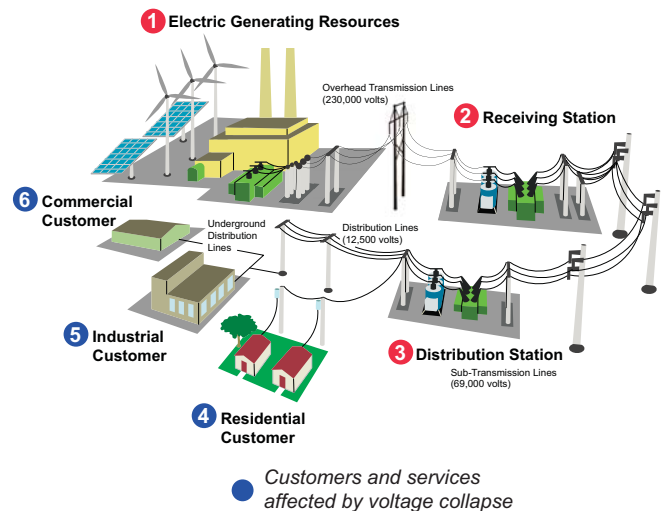
San Luis Valley's existing electrical system has reached its limit due to continued residential and irrigation growth. One major concern is that the radial (single source) nature of the existing transmission system does not provide the reliability benefits of redundant service. The other major problem currently experienced on the transmission system is a drop in voltage (known as "voltage collapse") that occurs when the load on the electric system in the valley is above 65 megawatts.

In 2007, peak loads in the San Luis Valley exceeded 120 megawatts and average loads exceeded 65 megawatts over 2,000 hours during the year. Voltage collapse is possible when the net San Luis Valley loads exceed 65 megawatts and the existing Poncha to San Luis Valley 230-kilovolt transmission line experiences an outage. Voltage collapse not only is an annoyance to those affected, but also can be a safety concern when hospitals, water treatment facilities and other essential services must shift to emergency power sources.

Transmission planning and development typically is able to meet at least a single-contingency capability, in which the system will continue to operate in the event of a system component failure. Tri-State's electric system planners conducted studies documenting the need for additional energy capacity to serve the San Luis Valley, including the San Luis Valley High Voltage System Study Report and the San Luis Valley Substation Second 230-kilovolt Source PV Study Report. The results of the studies indicated that the current system would not adequately support existing peak loads during a single contingency outage. As is common for projects of this scale, other utilities may participate in order to meet regional capacity requirements and to ensure planning of a smart energy corridor in the San Luis Valley.

In addition to reliability and dependability concerns, Tri-State and San Luis Valley Rural Electric Cooperative have been approached by a number of renewable energy developers. Adequate transmission capacity is a critical element necessary for any such development in the area.

The additional capacity of a new 230-kilovolt transmission line will not only reinforce the power delivery system in the San Luis Valley by preventing voltage collapse and adding redundant service, but also will allow for the development and export of renewable generation resources.



Contact Information

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For more details about the project, visit www.tristategt.org/transmission/