

# Avery Substation and Transmission Line Project

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## **Q. What is a transmission line?**

A. A transmission line is a high voltage electric line that delivers power from a generation station to a substation. Once the transmission line enters the substation, the voltage is reduced and power is transmitted over sub-transmission lines to distribution substations. The power is transformed again to a lower voltage for delivery to customers. Final transformation usually occurs at the customer's location.

## **Q. What is a substation?**

A. Electric substations are a key component of any electric delivery system. Substations receive electric power from high voltage lines. Electrical equipment within the substations reduces, or "transforms," higher voltage levels to lower voltage levels. Once the voltage is reduced, it is distributed to customers by way of electric distribution lines, or "feeders."

## **Q. What is load?**

A. The amount of power demanded by consumers. It is synonymous with demand.

## **Q. What is an easement?**

A. An easement is defined as a permanent land right acquired by a person or party to use the land or property of another for a special or particular purpose. Landowners are paid a fair price for the easement and can continue to use the land for most uses, such as agriculture.

## **Q. What is the difference between a right-of-way and an easement?**

A. These terms are used interchangeably, but an easement is a permanent land right and the right-of-way is the land area on which the facilities are located.

## **Q. What easement rights will be needed for the construction of the power line?**

A. Xcel Energy will require an easement that allows for surveying, construction, operation and maintenance of transmission and distribution lines across a defined strip of the landowner's property. The easement will be in the name of Xcel Energy's operating company in Colorado, which is Public Service Company of Colorado.

## **Q. What activities are allowed within the easement area?**

A. Land within the right-of-way may be used for any purpose that does not interfere with the construction or operation of the transmission line. In agricultural areas, the land may be used for crop production and pasture. In areas where the land will be developed, such things as streets, lawn extensions, underground utilities and curb and gutters, etc., may cross the right-of-way with permission from the utility.

## **Q. What are the main building and planting restrictions in the easement?**

A. The primary building and planting restrictions are: 1) prohibiting the construction of buildings or structures within the right-of-way strip, and 2) prohibiting the planting of tall growing species of trees in the right-of-way strip.

## **Q. Why can't buildings be placed in the right-of-way?**

A. If a building or structure located in the right-of-way were to catch fire, it could burn into the power line and take the line out of service for an extended period. When a power line is out of service it affects the ability of thousands of people to heat and light their homes and businesses. At certain times of the

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year, especially during the winter months, outages are not only an inconvenience; they become life threatening. Utilities have determined that the best way to prevent the possibility of these types of outages is to restrict the placement of structure within the right-of-way. In addition, access to the line is required if an outage occurs. The construction of buildings or other structures within the right-of-way could hamper maintenance crews from accessing the line to make necessary repairs.

**Q. Why doesn't the utility buy a strip of land for the line instead of taking an easement?**

A. Utilities occasionally purchase right-of-ways for transmission lines in fee title. However, we have found in most cases landowners prefer to retain the ownership of the property so that they can maintain better control over the use of the property, subject of course to the limitations of the distribution or transmission line easement. In many cases, the landowner's retention of right-of-way ownership provides continued use of the property for such things as agricultural operation, yard extensions or open areas adjacent to residences. In each of these cases the property continues to provide benefits to the property owner as well as the public. Utilities are simply interested in assuring their right to operate the transmission line is protected. In most cases, adjacent uses pose no threat to the line, nor do they create a public hazard.

**Q. What happens if the project is not built?**

A. There are currently no viable contingency plans; therefore, reliable electric service may not be available to the area for existing and proposed developments under varying scenarios of growth and outages.

**Q. Is it possible to tap Xcel Energy's existing line to the east instead of the Platte River Power Authority line?**

A. Previous studies have indicated there would be a negative impact to the major import flow of power into the Denver metro area. To resolve this issue, Xcel Energy would need to build another substation at the tap point in addition to the Avery Substation, located near the load center. It would also require the construction of more transmission lines in the area to get to the Avery load center.

**Q. Why can't the Avery Substation be sited jointly with the Tri-State Carey Substation?**

A. Early in the planning stages of a project, neighboring utilities such as Tri-State and Xcel Energy often investigate opportunities to share costs and infrastructure where appropriate. In evaluating the feasibility of joint facilities such as substations, there are several questions that must be addressed and many factors are considered in determining the location of a substation.

Because of differences on load center distances and Tri-State's need to serve load sooner than Xcel Energy and at a greater distance, Xcel Energy determined that it would not be feasible to serve its load center in the Timnath area and limit distribution line loss to an acceptable level. The service goals associated with Xcel Energy and Tri-State did not align enough to justify a joint substation.

**Q. Could the transmission line follow the existing (PRPA) corridor?**

A. Use of the existing corridor will depend on the final location of the transmission interconnection and substation site. If feasible, the existing corridor will be evaluated as a possible route.

**Q. Will PRPA allow another tap off their existing transmission line in the area?**

A. After filing an interconnection request with PRPA, they have approved another tap location off their existing Timberline-Ault 230kV transmission line.

**Q. Instead of constructing the new project, can Xcel Energy's Cobb Lake and Windsor Substations be upgraded?**

A. With the distance in between the substations, they would not be able to fully support each other. Therefore, the Avery Substation will be located in the middle to support the two substations and provide better reliability.

**Q. Will this project improve our electric service?**

A. Yes. The addition of Avery Substation will provide more operating flexibility under outage scenarios at Cobb Lake and/or Windsor Substations and serve the growing developments in the area.

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**Q. Will this project increase our rates?**

A. The cost of the substation and transmission line facilities is blended in with the cost of power and transmission lines from all of Xcel Energy's facilities. Xcel Energy is compensated through its rate structure for providing reliable service. The company works hard to keep the cost of the electricity it provides to its customers as low as possible. As with all products and services, however, there is a constant upward pressure on costs, due to rising operations and maintenance associated costs, fuel prices, transportation prices, the cost of interest on borrowed money, etc.

**Q. How many more transmission lines will be constructed in this area?**

A. Currently, Xcel Energy does not have any plans identified in the near term for new transmission lines in this area, other than the proposed project.

**Q. What hazards, environmental damage, and contamination are expected from activities taking place at the transmission line?**

A. The proposed transmission line and substation modifications will not present hazards to the local community or the environment. The project will be constructed and operated to eliminate the potential for contamination. Environmental damage will be limited to site disturbances required for construction and operation of the project. When possible, aspects of project construction, operation and maintenance will preserve natural resources. Construction plans, methods and practices are extremely important for the project and shall be designed to minimize damage to privately owned lands involved in the project. All work will, therefore, be performed in a manner that will minimize impacts to the landscape or sedimentation of surface waters.

**Q. What noise pollution or odors will emanate from the transmission line?**

A. High voltage transmission lines do have a tendency to emit noise when they are wet. However, the proposed transmission

line will be designed to operate within the noise parameters deemed reasonable by the Colorado Public Utilities Commission, which is the legal authority in the state to make such a determination. The project will have adequate set backs for all commercial and residential use. Some noise will be generated during the construction period from construction machinery and employee vehicular traffic. Construction vehicles and equipment will be maintained in proper operating condition and will be equipped with manufacturers' standard noise control devices or better (e.g. mufflers, engine enclosures).

No odors should be generated by the proposed project.

**Q. What about the EMF health effects?**

A. Considerable research and study has been done to investigate potential health effects of electric and magnetic fields (EMF) from high-voltage transmission lines on living organisms. Based on evidence to date, no biological hazards have been identified from EMF produced by electric transmission lines. Nevertheless, the proposed transmission line will be designed to operate within the EMF parameters deemed reasonable by the Colorado Public Utilities Commission. The proposed transmission line will also be designed and constructed to meet or exceed all applicable requirements of the National Electric Safety Code.

The EMF associated with a high voltage transmission line occurs mainly on the transmission line right-of-way since the electric and magnetic fields surround the conductor and decrease rapidly with increasing distance from the conductor. Magnetic fields travel through most materials including iron, steel, lead, and the soil. Magnetic and electric field strengths drop rapidly as distance increases from the conductors such that at a few hundred feet from the line the fields are non-detectable. Depending on the flow of electrons, when there are two lines side by side, there can be cancellation of EMF. Magnetic fields are caused by current, not voltage. With a higher voltage more power is delivered with less current.