

United Power System Improvement Project Phase III



# **TRI-STATE G&T**

A Touchstone Energy® Cooperative



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## **Background**

This the final phase of a three-phase project to improve system reliability and increase the available transmission system capacity in the area served by the United Power's existing Bromley 115-13.2 kV Substation (previously 34.5-12.5 kV) and the future load centers that became the Reunion 230-12.5 kV Substation and Prairie Center 115-13.2 kV Substation. Phase I provided 115 kV service to Bromley in 2004. Phase II provided 230 kV service to Reunion in 2004 and 115 kV service to Prairie Center in 2011.

## **Phase III**

Construct a 115 kV line between the existing Bromley and the Prairie Center Substations and install appropriate 115 kV switching equipment at Bromley and Prairie Center including a 115 kV circuit breaker at Prairie Center. The in-service date is 2013.

The purpose and need for this line is to provide redundant transmission service that would be an alternate source of electric service to either the Bromley or Prairie Center Substations in the event of a transmission line outage to either of the existing 115 kV lines serving the Bromley or Prairie Center Substations. This alternative would be a cost effective and reliable second source for the loads served from these substations.

The proposed tie line interconnecting the two substations will allow for increased electric load-serving capacity to the urban, residential, and commercial development located in Adams County and surrounding the city of Brighton. Customers affected by the loss of the existing transmission source to the Bromley and Prairie Center Substations include the Platte Valley Medical Center, Adams County office (including 911 and data processing centers) and justice complexes, Brighton police, fire and water treatment facilities and the Prairie Center Shopping Mall businesses.

The proposed tie line (and second source) will also allow individual line sections to be taken out of service for maintenance without the necessity of dropping load or transferring to other distribution sources.

Closing the project line in at Bromley and Prairie Center so that there is contiguous 115 kV service from Henry Lake to Reunion will require a system impact study performed to determine if any operating criteria violations occur during contingencies.

## **Alternatives**

The alternatives proposed for the United Power System Improvement-Phase III project:

- a) No Action: The existing 115 kV lines to Bromley and Prairie Center are radial. The loss of either line results in loss of service to a significant portion of the existing loads since United Power's 13.2 kV distribution system does not have capacity available to backup the majority of either substation's load.
- b) Selected Alternative: Construct the Bromley-Prairie Center 115 kV Line with a 115 kV circuit breaker at Prairie Center. This alternative has the lowest cost

(other than No Action) and is planned to be environmentally approved, permitted and constructed by 2013.

### **Conclusion**

Phase III of the United Power System Improvement project is proposed to provide transmission service between Bromley and Prairie Center by constructing approximately 5.0 miles of 115 kV overhead line, using 795 KCM ACSR conductor. The line breaker at Prairie Center Substation will be operated normally-open at this time and only closed for the loss or maintenance of the Henry Lake-Bromley or Reunion-Prairie Center 115 kV lines until system studies conclude that such closure can occur under single contingencies without operating criteria violations.