



**Anna – Collin And Collin - Northwest Carrollton
345 kV Line Upgrades
(SPS Exit Strategy)**

TXU Electric Delivery Transmission Grid Planning

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**ANNA – COLLIN AND COLLIN – NORTHWEST CARROLLTON 345 kV LINE
UPGRADE PROJECTS**

Introduction

This report documents the need for the proposed upgrade of the Anna – Collin 345 kV line and the Collin – Northwest Carrollton 345 kV line. The Anna – Collin 345 kV line is a single circuit lattice tower line that uses 2-795 kcmil ACSR conductor operating up to 120 degrees C. This line is approximately 13.2 miles long. The Collin – Northwest Carrollton 345 kV line is a single circuit line constructed with single circuit lattice towers for a majority of its length. This line uses 2-795 kcmil ACSR that operates up to 90 degrees C and is approximately 19.3 miles long. The upgrade of these two lines will allow the Valley 345 kV SPS to be exited. Presently the Valley 345 kV SPS is a major component of the NE SPSs. At the end of this year, with the completion of the Paris – Valley South – Anna circuit and the Valley South switchyard, and the retirement of Valley #1, the Valley 345 kV SPS can be reduced to protecting only the Anna – Collin 345 kV line. Of the existing protected facilities, the Anna – Collin 345 kV line is the one most likely to activate the SPS as there are several contingencies that could result in this facility overloading under lower, and more likely, levels of generation in the Northeast. Completing the proposed 345 kV line upgrades will add capacity back into the transmission system making it better able to address present and future needs. This additional capacity will also support reducing the number of SPSs in Northeast Texas, which will simplify operations.

Need For Project

Studies looking at 2007 summer peak conditions show that there are 7 different contingencies that can overload the Collin – Anna 345 kV line with Northeast generation/resources at or near maximum. These overloads range from 101% to 131%. The contingencies of concern are as follows:

1. Farmersville – Royse North 345 kV circuit outage.
2. Farmersville – Royse double circuit 345 kV line outage.
3. Allen – Royse North 345 kV circuit outage.
4. Allen – Monticello 345 kV circuit outage.
5. Allen – Royse North and Monticello 345 kV double circuit outage.
6. Monticello – Allen and Sulphur Springs 345 kV double circuit outage.
7. Anna –McKinney 138 kV double circuit outage.

Outages # 2 and # 5 shown above will also result in overloads of the Collin – Northwest Carrollton 345 kV circuit (105% and 104%, respectively). This line is presently protected by the SPS since it is downstream from the Anna – Collin line, which will overload first. In order to remove monitoring of the Anna – Collin 345 kV line from the Valley SPS it is proposed that the Anna – Collin 345 kV line be reconductored using 2-959.6 kcmil ACSS/TW conductor designed to operate at 180 degrees C (obtaining 3200 Amps in

capacity). In addition, it is proposed that the Collin – Northwest Carrollton 345 kV line be upgraded to operate the existing conductor at 120 degrees C (obtaining 2292 Amps in capacity). It is estimated that the upgrade of the Anna – Collin 345 kV line will cost approximately \$4,000,000. The raising of various structures to allow the Collin - Northwest Carrollton 345 kV line to operate at 120 degrees C will cost approximately \$3,000,000.

Available Alternatives

The continued use of the SPS is an alternative that could be utilized. However, this will not restore margin to the transmission system to enable it to better meet present and future needs. Additionally, the ERCOT SPS-RAP Policy requires that an SPS's use be "limited to the time required to construct replacement transmission facilities, or replacement transmission facilities have been determined by ERCOT to be unnecessary (e.g., due to unacceptably high cost, inability to construct, or agreement by all affected parties)."

A second alternative would be to rebuild the line for double circuit operation. This option was not pursued because it would drive the need to rebuild for double circuit all the way to Northwest Carrollton (costing \$36,000,000+), it would require a CCN, and it would result in much higher congestion costs due to significantly longer construction clearances.

Recommendation

TXU Electric Delivery recommends the reconductoring of the 13.2-mile Anna – Collin 345 kV line using 2-959.6 kcmil ACSS/TW conductor to get an ampacity of 3200 Amps, and also recommends the upgrade of the 19.3-mile Collin – Northwest Carrollton 345 kV line for elevated temperature operation of the existing conductor to get an ampacity of 2292 Amps. It is further recommended that these system improvements take place in 2007. These system improvements are a necessary step in exiting the Northeast SPSs and will add capacity margin back into the transmission system.