



Rothwood Substation

March 26, 2008

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Transmission Planning

Background

CenterPoint Energy Houston Electric, LLC (CenterPoint Energy) submitted to the ERCOT Regional Planning Group the Houston Area Constraint Mitigation (HACM) Phase II project in January 2007, which contained projects designed to increase North ERCOT Congestion Zone to Houston ERCOT Congestion Zone transfer capability. One of the projects CenterPoint Energy submitted was a new 345/138 kV Rothwood substation. CenterPoint Energy's primary reason for recommending Rothwood was to alleviate the constraint on North to Houston transfers caused by the loss of one Tomball autotransformer which results in the loading of the other Tomball autotransformer as seen in the CenterPoint Energy HACM Phase II analysis. CenterPoint Energy evaluated three different locations for adding 345/138 kV autotransformers to reduce the loading on the second Tomball autotransformer under this scenario. This evaluation concluded that the Rothwood location provided the most cost effective solution. Consistent with CenterPoint Energy's analysis, ERCOT Planning's subsequent review of the CenterPoint Energy submittal identified congestion on the Tomball autotransformer; however, the production cost savings from installing Rothwood did not meet ERCOT Planning's threshold for recommendation as an economic project.

As part of the ERCOT 2007 Five-Year Study, ERCOT identified unserved energy in 2012 related to overloading of several facilities in the CenterPoint Energy transmission system, including one of the Tomball autotransformers. In this case unserved energy indicates a reliability concern because only system improvements or load shed can alleviate the overload. The overload can not be alleviated by generation commitment or redispatch. Thus, after further analysis and discussion with ERCOT, Rothwood was reevaluated and included in the ERCOT Five-Year Study set of projects and subsequently documented in the "ERCOT 2007 Report on Existing and Potential Electric System Constraints and Needs" and the ERCOT "Documented Results of 2007 Five-Year Plan, Version 1.2". Therefore, CenterPoint Energy submits the Rothwood substation and related projects to the ERCOT Regional Planning Group for expedited review based on the analysis performed by ERCOT Planning. Timely review and approval of this project will allow CenterPoint Energy to meet the ERCOT identified need date of summer 2010.

Updated Cost Estimates

In the ERCOT "Documented Results of 2007 Five-Year Plan, Version 1.2", the cost for Rothwood is stated to be \$20.5 million. CenterPoint Energy has subsequently performed more detailed engineering of Rothwood and determined that the substation estimate has increased to \$21.5 million. Also, CenterPoint Energy analysis indicates the newly formed ckt 66 Tomball to Rothwood to Rayford needs to be upgraded at a cost of \$1.5 million.

Attachment B

Project	Transmission cost	Substation cost	Total
Build Rothwood 345/138 kV substation. Add 800 MVA auto looping 345 kV ckt 74 Kuykendahl tap - King and 138 kV ckt 66 Tomball - Westfield where 345 kV ckt crosses Rayford tap section. Loop in only one of the tap sections. Convert Rayford into a loop tap substation	\$2,700,000	\$18,800,000	\$21,500,000
Upgrade ckt 66 Tomball - Rothwood - Rayford to a minimum continuous rating of 360 MVA and minimum emergency rating of 440 MVA	\$1,500,000	\$0	\$1,500,000
Total	\$4,200,000	\$18,800,000	\$23,000,000