Panhandle Transfer Capability Analysis Scope (Revised\_2)

 Prepared by ERCOT, July 17, 2015

# Background

In response to the Public Utility Commission of Texas’ (Commission) April 17, 2015 Open Meeting request, Electric Reliability Council of Texas, Inc. (ERCOT) will evaluate transmission solutions (including reactive equipment) to increase transfer capability in the Texas Panhandle (Panhandle) using the cost-effectiveness standard under the Competitive Renewable Energy Zones (CREZ) Order (Trial 1) and the current reliability and economic planning criteria in ERCOT Protocol Section 3.11.2 (Trial 2). The study approaches, assumptions, and anticipated delivery for the Panhandle analysis are described below.

#  Study Approaches and Assumptions

## 2.1 Panhandle Wind Generation Capacity

Based on the ERCOT comment filed on April 14, 2015 in PUC Project No. 42647,[[1]](#footnote-1) the study will include 3,604 MW of wind generation in the Panhandle that meets the requirements of ERCOT Planning Guide Section 6.9, *Addition of Proposed Generation Resources to the Planning Models*. The ERCOT comment noted that as of April 2015, there was 1,061 MW of wind generation in operation in the Panhandle and 2,543 MW of additional proposed wind generation that meets the requirements of Planning Guide Section 6.9. At the May 19, 2015, RPG meeting several stakeholders requested sensitivity analyses addressing the potential for additional generation in the Panhandle based on active wind generation projects currently in the interconnection process.

## 2.2 Base Case

The DWG 2016 High Wind Low Load (HWLL) case will be the starting base case for the reliability analysis to identify the transfer capability in the Panhandle. The latest topology updates will be included for the Panhandle, if needed. ERCOT will include the collector systems and dynamic models provided by the Resource Entities through Resource Asset Registration Forms (RARFs) or Full Interconnection Study (FIS) stability reports. The 2017 UPLAN case from the 2014 Regional Transmission Plan will be the starting base case for the economic analysis to identify the curtailment of Panhandle annual generation and annual production costs for the entire ERCOT Region.

## 2.3 Study Criteria

Reliability criteria used in the study includes:

* ERCOT Planning Guide;
* NERC Standard TPL-001-4; and
* Panhandle System Strength, based on Weighted Short Circuit Ratio (WSCR), is equal to or above 1.5.

Economic criterion for Trial 1 used in the study includes:

* Determination of the transmission solution that will cost-effectively increase Panhandle transfer capability to a specified MW level, with curtailment due to transmission constraints of Panhandle annual generation equal to or less than 2%.

$$Curtailment \left(\%\right)=100×\frac{Energy \left(no\_{tl}\right)- Energy \left(with\_{tl}\right)}{Energy \left(no\_{tl}\right)}$$

$$where: $$

$Energy \left(no\\_tl\right)$: Panhandle annual energy without Panhandle transfer limit

$Energy \left(with\\_tl\right):$ Panhandle annual energy with Panhandle transfer limit

Economic criterion for Trial 2 used in the study includes:

* Determination of whether the annual production cost savings of a transmission project are greater than or equal to the first year annual revenue requirement for the transmission project. The first year annual revenue requirement for a transmission project will be assumed to be 15% of the estimated capital cost of the project.

## 2.4 Assumptions

Study assumptions are as follows:

1. Panhandle wind generation output is proportionally dispatched with respect to its capacity to meet the reliability criteria;
2. Apply 90% of the identified transfer capability in the Panhandle in the economic analysis to account for operational application of the limit; and
3. Have all series capacitors, except for Rocky Mound series capacitors[[2]](#footnote-2), in service in the study.

# Study Scenarios

The solutions described in the April 2014 PREZ Study Report will serve as a reference for the consideration of transmission solutions to increase the transfer capability in the Panhandle. The study scenarios listed in Table 1 include the transmission solution options to be analyzed in the study.

ERCOT will analyze and document the transmission improvements that meet the economic criteria for each of Trial 1 and Trial 2.

Table 1. A list of study scenarios

|  |  |  |
| --- | --- | --- |
| Scenario | Panhandle Wind Generation Capacity (MW) | Transmission Options |
| Synchronous Condenser(s) | Second Circuit on the Alibates-Windmill-Ogallala-Tule Canyon 345 kV line |
| 0 (Base Case) | 3604 | No | No |
| 1 | 3604 | Yes | No |
| 2 | 3604 | No | Yes |
| 3\* | 3604 | Yes | Yes |
| 4\*\* | 3604 + X MW | Yes | Yes |

\* Scenario 3 will be considered if transmission options in scenario 1 and 2 do not meet the study criteria.

\*\* If the results of scenario 1, 2, and 3 indicate that the second circuit on the Alibates-Windmill-Ogallala-Tule Canyon 345 kV line improvement does not meet the Trials 1 and/or 2 economic criteria, scenario 4 will be considered by increasing generation capacity (X MW) on the Alibates-Windmill-Ogallala-Tule Canyon 345kV line until Trials 1 and/or 2 economic criteria are met. For scenario 4, ERCOT will report the level of additional generation capacity (X MW) needed to meet Trials 1 and/or 2 criteria.

# Schedule and Delivery

ERCOT System Planning will present the study scope and report the final study results to ERCOT Regional Planning Group before filing the report with the Commission in PUC Project No. 42647. The report will list potential system improvement options and the recommended projects based on the study criteria. The table below includes the anticipated study schedule.

|  |  |  |
| --- | --- | --- |
| Task | Description | Completion Date |
| 1. | Present Study Scope to RPG  | May 19, 2015 |
| 2. | Present Study Results to RPG | August 18, 2015 |
| 3. | RPG Comments due | August 28, 2015 |
| 4. | Final Report filed with PUC | September 15, 2015 |

1. *See* Item 56, ERCOT Response to the Discussion at the March 26, 2015, in PUC Project No. 42647, *ERCOT Planning and System Costs Associated with Renewable Resources and New Large DC Ties*. [↑](#footnote-ref-1)
2. *See* Item 600, Joint Notification of CREZ Project Update, in PUC Project No. 38517 in which ERCOT and Oncor Electric Delivery Company LLC (Oncor) notified the Commission that the Rocky Mound reactive compensation project is on-hold until further notice to permit additional study of SSO in ERCOT. [↑](#footnote-ref-2)