



DPU Data Request 8.1

During the October 11, 2017 technical conference, the Company stated that the most recent area reliability study did not show a need for the proposed transmission project to meet reliability standards. Please confirm this statement, and provide the most recent applicable area study.

Response to DPU Data Request 8.1

The statement was intended to convey that the Company is currently in compliance with the North American Electric Reliability Company (NERC) TPL-001-4 standard, Transmission System Planning Performance Requirements. PacifiCorp's most recent TPL-001-4 annual assessment is provided as Confidential Attachment DPU 8.1.

Confidential information is provided subject to Public Service Commission of Utah (UPSC) Rule 746-1-602 and 746-1-603.



Summary Report for TPL 2016 Assessment

PacifiCorp East and West

12/9/2016

Rev	Status	Date	Author	Change Tracking
A	Draft	12/09/2016	Du	New document
B	Draft	12/21/2016	Toppo, Yegorov	Technical review and comment
C	Draft	12/21/2016	Allsup, Beyer, Hausler, Kara, Quist	Technical review and comment
0	Final	12/31/2016	Du	Initial Publication

Summary Report for TPL 2016 Assessment

PacifiCorp

1. Introduction

This report describes PacifiCorp's annual transmission system planning assessment for 2016 to demonstrate compliance with the North American Electric Reliability Corporation (NERC) Standard TPL-001-4 and Western Electric Coordinating Council (WECC) Criterion TPL-001-WECC-CRT-3. The purpose of the assessment is to demonstrate that PacifiCorp's Bulk Electric System (BES) is planned such that the interconnected transmission system can be operated reliably over a wide range of system conditions throughout the 10-year transmission planning horizon.

The 2016 assessment is supported by current studies comprised of the steady-state, transient stability and short circuit analyses (**R2**). No past studies are used to support the 2016 planning assessment (**R2.6**). For the steady-state and stability portions of the assessment, studies are performed to determine whether PacifiCorp's BES meets the performance requirements for planning events, to assess the impact of extreme events and to evaluate various sensitivity scenarios. The short circuit analysis portion of the assessment is performed to determine whether circuit breakers and circuit switchers on PacifiCorp's BES have sufficient interrupting capability in the near-term planning horizon (**R2.3**).

The assessment takes into account all planned projects that are expected to be completed and in-service for each study season (**R1.1.3**). When the analysis identifies an inability of the system to meet the required level of performance, a corrective action plan is developed to mitigate the identified system deficiencies to meet NERC and WECC requirements.

The assessment of PacifiCorp's system includes both PacifiCorp's East (PACE) and PacifiCorp's West (PACW) transmission facilities. Because the two balancing authority areas are geographically separated by large distances, the assessment is conducted separately for PACE and PACW in order to focus on each area's unique system needs. This report combines summarized results of the PACE and PACW system assessments.

No.	Category	Contingency	Simulation Results
46	P7	Single phase fault on Emery - Huntington and Spanish Fork - Emery 345 kV lines	Stable
47	P7	Single phase fault on Emery - Sigurd #1 and Sigurd - Emery #2 345 kV lines	Stable
48	P7	Fault at Terminal - Trips Terminal - Cudahy - Parrish and Terminal - Parrish 138 kV line, single phase fault with normal clearing	Stable

5.7.5. Advancement of Gateway Projects

The 2021 heavy summer case was considered for the change in the in-service date of Energy Gateway Projects from 2024 to 2021. The Energy Gateway projects consist of the construction of major 500 kV, 345 kV and 230 kV transmission corridors from Wyoming to Idaho and to Southern Utah. It includes the construction of several 500 kV substations: Aeolus, Anticline, Clover, Populus, Borah and Cedar Hill. They are designed to create transfer paths to move wind generation from Wyoming to the Wasatch Front load center in Utah and to the west. The list of contingencies simulated is shown in Table 21.

Table 21 Stability Sensitivity Study Results – Advancement of Gateway Projects

No.	Category	Contingency	Simulation Results
1	P1-2	Three phase fault at Aeolus 230 kV bus with loss of Aeolus-Windstar 230 kV line	Stable
2	P1-2	Three phase fault at Aeolus 500 kV bus with loss of Aeolus-Clover 500 kV line	Stable
3	P1-2	Three phase fault at Aeolus 500 kV bus with loss of Aeolus-Anticline 500 kV line	Stable
4	P1-2	Three phase fault at Anticline 500 kV bus with loss of Anticline-Populus 500 kV line	Stable
5	P1-2	Three phase fault at Anticline 345 kV bus with loss of Anticline- Bridger 345 kV line	Stable
6	P1-3	Three phase fault at Aeolus 500 kV bus with loss of Aeolus 500-230 kV auto transformer	Stable
7	P1-3	Three phase fault at Populus 500 kV bus with loss of Populus 500-345 kV auto transformer	Stable
8	P1-4	Three phase fault at Aeolus 230 kV bus with loss of the Aeolus Static Var Compensator	Stable

The study showed no adverse impact to the stability of the PACE system with Energy Gateway projects.

5.8 Short Circuit Study Results

The short circuit analysis identified three overdutied circuit breakers on the PACW BES, 25 overdutied circuit breakers and one circuit switcher on the PACE BES in the 2017 case. In addition, one overdutied circuit breaker was identified on the PACE BES in the 2021 case. They are as shown in Table 22 and Table 23. These breakers are planned to be replaced within the near-term planning horizon (R2.8.1).

Table 22 Short Circuit Analysis Results - PACW

No.	Overdutied Device	Projected Year of Impact	Corrective Action Plan	
			Resolution	ISD
1	Lone Pine 115 kV breaker 2R2 (New)	Existing	Replace with higher rating breaker	2017
2	Lone Pine 115 kV breaker 2R97 (New)	Existing	Replace with higher rating breaker	2017
3	Lone Pine 115 kV breaker 2R98 (New)	Existing	Replace with higher rating breaker	2017

Table 23 Short Circuit Analysis Results – PACE

No.	Overdutied Device	Projected Year of Impact	Corrective Action Plan	
			Resolution	ISD
1	McClelland 138 kV breaker CB113 (New)	Existing	Replace with higher rating breaker	2017
2	Cottonwood 138 kV breaker CB126	Existing	Replace with higher rating breaker	2018
3	McClelland 138 kV breaker CB112	Existing	Replace with higher rating breaker	2017
4	Midvalley 138 kV breaker CBL134	Existing	Replace with higher rating breaker	2020
5	Midvalley 138 kV breaker CBL136	Existing	Replace with higher rating breaker	2020

6. Conclusions

The results of the steady-state, stability and short circuit analyses, performed as part of the 2016 system assessment, were evaluated and corrective action plans were developed to meet all applicable performance requirements. The study results show that 22 unique projects or other resolutions are necessary to meet the steady-state and stability performance criteria for planning events. A new 345-138 kV spare transformer and a new 345-16.5 kV GSU transformer are recommended to resolve system deficiencies identified for the unavailability of major equipment without a spare in the steady-state analysis. Thirty circuit breakers or circuit switchers are recommended for replacement during near-term planning horizon to address the equipment rating violations identified in the short circuit analysis.

With the projects identified in the 2016 TPL assessment in service, PacifiCorp's interconnected Bulk Electric System meets the NERC TPL-001-4 standard and WECC TPL-001-WECC-CRT-3 criterion. Operating procedures were used as interim mitigation where needed to ensure compliance with TPL-001-4 performance criteria until the planned projects are in service.