2023 INTEGRATED TRANSMISSION PLANNING ASSESSMENT

SHORT-TERM RELIABILITY PROJECT REPORTS

By SPP ENGINEERING

Published on 12/1/2023

Version 0.1

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
0.1	SPP Staff	Posting for MOPC/ Board of Directors	Draft

CONTENTS

SHORT-TERM RELIABILITY (STR) PROJECT

In accordance with Attachment Y, Section I.3 of the SPP Open-Access Transmission Tariff, SPP provides the following information:

During the 2023 Integrated Transmission Planning (ITP) Assessment, SPP performed analysis to determine reliability needs utilizing the models SPP developed through its stakeholder process. The list of all time-sensitive transmission facility overload and voltage needs related to the Short-Term Reliability Projects (STRP) described below can be found on GlobalScape in the 2023 ITP Needs Assessment. These needs are considered time-sensitive because a solution is needed within three years.

To determine the best solution for the identified time-sensitive reliability needs, SPP evaluated proposed solutions, including those submitted through the Detailed Project Proposal process. SPP tested proposed solutions against every reliability need, including the time-sensitive needs identified in the 2023 ITP Needs Assessment. Once solutions were identified for the reliability need(s), reliability metrics were calculated for each solution capable of solving each need. Through use of the metrics and application of sound engineering judgment, an optimal solution was selected.

SPP proposes the following Short-Term Reliability Projects[1] as the best solution to mitigate the time-sensitive needs identified in the 2023 ITP Needs Assessment.

[1] A Short-Term Reliability Project includes any upgrade that would otherwise be considered a Competitive Upgrade but is needed to meet the time sensitive need to be in service within 3 years or less to address an identified reliability violation. See Attachment Y, Section I.3 of the SPP Tariff.

1 EXTEND CRAIG-WEST GARDNER 345 KV, CLEARVIEW-EUDORA 115 KV TAP, NEW 345/115 KV SUBSTATION

In Lawrence, Kansas, the Lawrence Hill-Wren 115 kV and Bismark-Fairgrounds 115 kV lines overload in the year 5 and year 10 models. Lawrence Hill-Wren 115 kV overloads for the loss of the Fairgrounds-Bismark-Midland Junction 115 kV circuit or the Baldwin Creek-Lawrence Hill 115 kV line. The Bismark-Fairgrounds 115 kV line also overloads for the loss of Lawrence Hill-Wren 115 kV.

Rebuilding the overloaded lines was considered but ultimately was not feasible due to right-of-way issues and surrounding topology. Known load additions coming to the area required a holistic solution to address both the new system needs in the area arising from the new loads coming through the process in Attachment AQ of the SPP Tariff, as well as the existing ITP needs that are aggrevated by the load additions. While this violation is only present in the year 5 and year 10 models, this load addition is taking place in 2025, making this a time-sensitive issue.

The solution chosen to address all of the needs in the area was to extend the Craig-West Gardner 345 kV line north to the Eudora-Clearview 115 kV line near Clearview, where a new 345/115 kV substation will be built. The new 345/115 kV source will address the two overloaded lines in Lawrence, provide additional transmission capacity for future load growth and is the most feasible to implement.

While SPP was aware of these violations, they were invalidated by the scheduled retirement of the two generating units at the Lawrence Energy Center. The retirement of those units was recently delayed which caused these violations to be revalidated and made them time-sensitive needs.

2 CUNNINGHAM-QUAHADA 115 KV TAP LINE-BUCKEYE TAP 115 KV NEW LINE

Losing the Wildcat wind generator along with the 115 kV line between Buckeye Tap and Cunningham causes multiple low voltage violations to occur throughout the southeastern portion of New Mexico in year 2 light load and summer and year 5 and year 10 summer models. Considering the year 2 violations, we have determined that the Cunningham-Quahada 115 kV tap line-Buckeye Tap 115 kV new line project must be fast tracked to maintain the reliability of the system.

Tapping into the 115 kV system between Texaco Tap and Buckeye Tap and constructing a transformer was considered along with constructing a new line from the tap all the way to San Andres. Both of these projects did not improve the system enough to justify its cost, therefore they were not considered for the final portfolio.

This project was not in previous studies because the Buckeye to Cunningham contingency was considered to be an invalid contingency in previous ITP studies. In the 2023 ITP, low voltage was observed on multiple monitored buses after loss of a nearby generator in combination with the contingency of the Buckeye to Cunningham line. This multiple-contingency event was left valid in order to address the low voltage observed on the buses in the area.