



2018 ITPNT
2018 INTEGRATED TRANSMISSION PLANNING NEAR-TERM
Short-Term Reliability Project Report

Published on August 1, 2018

Engineering

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
8/1/2018	SPP Staff	Posting for MOPC/Board of Directors	

CONTENTS

Revision History..... i

Section 1: Short-Term Reliability (STR) Project..... 1

SECTION 1: 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 2018 Integrated Transmission Planning Near-Term (ITPNT) 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 Project (STRP) described below can be found in the STRP Needs List on the [SPP website](#). 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, developed by SPP staff and proposed by SPP stakeholders through the Federal Energy Regulatory Commission (FERC) Order 890 process. SPP tested proposed solutions against every reliability need, including the time-sensitive needs identified in the STRP Needs List. 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, the optimal solution was selected.

SPP proposes the following Short-Term Reliability Project¹ as the best solution to mitigate the time-sensitive needs identified in the STRP Needs List.

New Blue Valley – Crosstown 161-kV line

In the 2018 ITPNT Assessment, SPP determined the new Blue Valley–Crosstown 161-kilovolt (kV) line project was the best solution to mitigate the time-sensitive thermal overload needs around the Kansas City area in Missouri. The Blue Valley-Crosstown Project consists of a new 5.6-mile, 161-kV line from the Blue Valley substation to the Crosstown substation. Other solutions evaluated included but are not limited to:

1. constructing a new Northeast 5-Guilot 161-kV line,
2. constructing a new 161-kV line from Navy to the North Kansas City bus,
3. constructing a new Blue Valley-Grand Avenue 161-kV line,
4. constructing a new Northeast-Crosstown 161-kV line,
5. rebuilding the existing Northeast to Grand Avenue to Navy 161-kV line, and
6. an existing operating guide.

¹ A Short-Term Reliability Project includes any upgrade that would otherwise be considered a Competitive Upgrade but is needed to meet a time sensitive need. See Attachment Y, Section I.3 of the SPP Tariff.

In June 2017, Kansas City Power & Light (KCPL) announced the retirement of six units at three power plants². The retirements of two units at Montrose and three units at Sibley, totaling 340 megawatts (MW) and 463 MW respectively, are set to be effective by Dec. 31, 2018. Due to these retirements, units are being dispatched in the 2018 ITPNT models that historically have not been. Specifically, the units at Northeast Station are dispatched and create additional north-to-south flow through Kansas City. Overloads on the 161-kV system on the north side of Kansas City were identified for the loss of either the Northeast-Grand Avenue-Navy 161-kV line or the Northeast-Grand Avenue West 161-kV lines that provide a large portion of outlet for the Northeast Station plant.

The proposed project is to construct a new 161-kV line from Crosstown to Blue Valley. This project will create a new feed onto the 161-kV system to the south and relieve loading on the 161-kV lines Northeast-Grand Avenue, Grand Avenue-Navy, and Navy-Crosstown.

Several alternative projects were considered, including rebuilds of the overloaded lines, a new 161-kV line from Navy to the North Kansas City bus, as well as utilizing an existing operating guide. The option requiring construction of new transmission were determined to be infeasible due to the lack of available space in the substations at Navy and Grand Avenue, as well as added challenges and cost to perform major work on the existing lines because they are underground.

Implementation of actions in the operating guide mitigates the need; however, the Transmission Working Group (TWG) determined this operating guide is not a valid long-term solution and is ineffective due to multiple factors identified by KCPL. KCPL's justification was that the operating guide does not specify an emergency rating, usage of the operating guide would result in a single feed into the high-load downtown Kansas City area, and that there are operational issues due to loop flows in this area when neighboring utilities are importing, regardless of generation output from the Northeast units.

Analysis showed that some alternatives solved fewer needs, while others addressed the same number of needs at a higher cost and did not provide as much mitigation of the existing needs. Other alternatives addressed the same needs but had less beneficial metrics. Based on this analysis and the application of sound engineering judgment, the Blue Valley-Crosstown Project was selected.

The thermal reliability needs addressed by the Blue Valley-Crosstown Project are related to the overload of Northeast-Guilot Northeast 161-kV, Guilot Grand-Guilot Northeast 161-kV and Grand – Guilot Grand 161-kV lines. In the 2017 ITPNT Assessment, Northeast-Guilot Northeast 161-kV, Guilot Grand-Guilot Northeast 161-kV, and Grand-Guilot Grand 161-kV lines were not identified as needs. In the 2018 ITPNT Assessment, the Northeast-Guilot Northeast 161-kV, Guilot Grand-Guilot Northeast 161-kV, and Grand-Guilot Grand 161-kV lines were loaded at 113.4 percent, 113.4 percent and 114.3 percent, respectively.

The 2018 ITPNT Assessment used model years 2019 and 2022. Need dates for the selected projects were determined using linear interpolation of percent line loading or per-unit voltage between model years 2019 and 2022. To determine the need date for the Blue Valley-Crosstown Project 2022 overload, SPP interpolated percent line loadings between the 2019 and 2022 models to

² <https://www.kcpl.com/about-kcpl/media-center/2017/june/kcpl-continues-sustainability-commitment-by-announcing-retirement-of-six-units-at-three-power-plants>

determine the year when the loading is projected to exceed 100 percent. Based on interpolation, it was determined that the overloads of the following lines are expected to occur in the 2020 summer timeframe:

1. Northeast-Guinot Northeast 161-kV line
2. Guinot Grand-Guinot Northeast 161-kV line
3. Grand-Guinot Grand 161-kV line

The retirements were not modeled in the previous ITPNT assessments because they were not announced until June 2017. These needs are considered time-sensitive because a solution is needed within three years.