# System Impact Study
# SPP-2017-050
# For Transmission Service
# Requested By:
# WRGS

## From BLKW to SPS

## For a Reserved Amount Of
## 30 MW
## From 01/01/2018
## To 04/01/2018

## 1. Executive Summary

SPSM has requested a system impact study for monthly firm transmission service from BLKW to SPS. The period of the transaction is from 01/01/208 00:00 to 04/01/2018 00:00. The request is for reservation 85902379 (SR1527_10525).

The 30 MW transaction from BLKW has an impact on the following flowgates with no AFC: SPSNMTIES, PLXSUNTOLYOA, and TOLPLXTOLPLX. To provide the AFC necessary for this transfer, the impact on these flowgates must be relieved.

After studying many scenarios using generation redispatch, there are several feasible scenarios that will relieve the flowgate(s) in question.

## 2. Introduction

WRGS has requested a system impact study for transmission service from BLKW to SPS.

There are 3 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- SPSNMTIES: CROSSRDS – EDDY_CO 345 kV.

- PLXSUNTOLYOA: PLXSUB – SUNDOWN 230 kV for the loss of TOKSUB – YOAKUM 230 kV.

- TOLPLXTOLPLX: TOLKSUB – PLXSUB 230 kV Circuit 1 for the loss of TOLKSUB – PLXSUB 230 Circuit 2

## 3. Study Methodology

### A. Description

Southwest Power Pool used Transmission Adequacy & Reliability Assessment (TARA) to obtain possible unit pairings that would relieve the constraint. TARA calculates impacts on monitored facilities for all units within the Southwest Power Pool Footprint. The SPP ATC Calculator is used to determine response factors for the time period of the reservation.

### B. Model Updates

The 2017 Southwest Power Pool model was used for the study. This model was updated to reflect the most current information available.

### C. Transfer Analysis

Using the short-term calculator, the limiting constraints for the transfer are identified. The response factor of the transfer on each constraint is also determined.

The product of the transfer amount and the response factor is the impact of a transfer on a limiting flowgate that must be relieved. With multiple flowgates affected by a transfer, relief of the largest impact may also provide relief of smaller impacts.

Using Transmission Adequacy & Reliability Assessment (TARA), specific generator pairs are chosen to reflect the units available for redispatch. The quotient of the amount of impact that must be relieved and the generation sensitivity factor calculated by TARA is the amount of redispatch necessary to relieve the impact on the affected flowgate.

## 4. Study Results

After studying the impacts of the request, three flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

| Flowgate | Duration | Sensitivity (%) | Required Relief (MW) |
|---|---|---|---|
| 5529:SPSNMTIES | 1/1/2018 00:00 - 4/1/2018 00:00 | 18.21% | 5 |
| 5591:PLXSUNTOLYOA | 1/1/2018 00:00 - 4/1/2018 00:00 | 6.38% | 2 |
| 5637:TOLPLXTOLPLX | 1/1/2018 00:00 - 4/1/2018 00:00 | 26.71% | 8 |

Table 2 displays a list of generator pairs that are possible relief options for each flowgates in question and the amount of redispatch capacity needed.

**Table 2**

| 5529:SPSNMTIES | | | |
|---|---|---|---|
| **Increment** | **Decrement** | **Sensitivity** | **MW** |
| Cunningham | Tolk | 78.29% | 6 |
| Cunningham | Plant X | 77.71% | 6 |
| Cunningham | Harrington | 76.96% | 6 |
| Hobbs | Tolk | 68.79% | 7 |
| Maddox | Tolk | 68.28% | 7 |
| Hobbs | Plant X | 68.21% | 7 |
| Maddox | Plant X | 67.70% | 7 |
| Hobbs | Harrington | 67.46% | 7 |
| Maddox | Harrington | 66.96% | 7 |

| 5591:PLXSUNTOLYOA | | | |
|---|---|---|---|
| **Increment** | **Decrement** | **Sensitivity** | **MW** |
| Mustang | Plant X | 36.32% | 6 |
| Mustang | Tolk | 32.98% | 6 |
| Hobbs | Plant X | 28.83% | 7 |
| Maddox | Plant X | 28.80% | 7 |
| Mustang | Harrington | 27.58% | 7 |
| Hobbs | Tolk | 25.49% | 8 |
| Maddox | Tolk | 25.46% | 8 |
| Hobbs | Harrington | 20.09% | 10 |
| Maddox | Harrington | 20.06% | 10 |

| 5637:TOLPLXTOLPLX | | | |
|---|---|---|---|
| **Increment** | **Decrement** | **Sensitivity** | **MW** |
| Nichols | Tolk | 55.55% | 14 |
| Blackhawk | Tolk | 54.92% | 15 |
| Holcomb | Tolk | 50.17% | 16 |
| Nichols | Antelope | 16.40% | 49 |
| Blackhawk | Antelope | 15.77% | 51 |
| Nichols | Jones | 14.15% | 57 |
| Blackhawk | Jones | 13.52% | 59 |
| Holcomb | Antelope | 11.01% | 73 |
| Holcomb | Jones | 8.77% | 91 |

## 5. Conclusion

Generation redispatch (and reservation curtailment) options were studied in order to relieve the necessary constraints. The results of this study shows that the constraints on the flowgates in question could be relieved by executing one or more of the options described in the Study Results section of this document. Before the Transmission Provider accepts the reservations, proof of the necessary relief options must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.