DISIS 2017-001

Incremental Long-Term Congestion Rights Study Report

GEN-2017-018

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By SPP Generation Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
09/01/2022	SPP	Initial report issued.	
9/23/2022	SPP	Updated report issued	

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INTRODUCTION

Incremental Long-Term Congestion Rights (ILTCRs) were made available by FERC 685 Guideline 3 as a reimbursement mechanism for sponsors of transmission upgrades. The guideline specifies that long-term firm transmission rights made feasible by transmission upgrades or expansions must be available upon request to any party that pays for such upgrades or expansions in accordance with the transmission organization's prevailing cost allocation methods for upgrades or expansions. Effective July 1, 2020, ILTCR is the default cost recovery mechanism for eligible Network Upgrades (NU) with Directly Assigned Upgrade Cost (DAUC) as a result of a Generation Interconnection Study (GIS), Aggregate Transmission Service Study (ATSS), or a Sponsored Upgrade Study in SPP.

The objective of the ILTCR analysis is to determine the incremental Available Transfer Capability (ATC) created on each of the Customer submitted source-to-sink paths over a ten-year period resulting from the construction of the Sponsored Upgrade. The Upgrade Sponsor may then have the option to use the results of this study to obtain candidate ILTCRs on the path selected.

The ILTCR study process was completed for GEN-2017-018 (the Customer) that has Directly Assigned Upgrade Costs (DAUC) for the following network upgrades from DISIS 2017-001 Studies.

- Finney 345kV Reactive Support (DISIS-2017-001)

STUDY INPUTS

MODEL BASIS

The 2021 ITP Transmission Services (TS) cases were the starting point for the analysis. The following details specify the particular models utilized for this evaluation.

- Model years 2023, 2024, 2027, 2032
    - Summer Peak (2023SP, 2024SP, 2027SP, 2032SP)
    - Winter Peak (2023WP, 2024WP, 2027WP, 2032WP)
    - Light Load (2023LP, 2024LP, 2027LP, 2032LP)

MONITORED FACILITIES

The monitored elements include all SPP control area branches, ties, and buses 69 kV and above, and all first tier Non-SPP control area branches and ties 100 kV and above. NERC Power Transfer Distribution Flowgates for SPP and first tier Non-SPP control areas are monitored. Additional NERC Flowgates are monitored in second tier or greater Non-SPP control areas.

- All branches and ties within the following areas:
    - SPP Internal Areas for 60kV – 999kV facilities:
        - 506– 546, 640 – 659, 998, 999
    - SPP External Areas for 100kV – 999kV facilities:
        - 327, 330, 351, 356, 502, 600, 615, 620, 627, 635, 661, 680
- NERC, SPP, and Tier 1 Permanent Monitor Flowgates (thermal)

CONTINGENCY EVENTS

The contingency set includes all SPP control area branches and ties 69kV and above, first tier Non-SPP control area branches and ties 115 kV and above, any defined contingencies for these control areas, and generation unit outages for the SPP control areas with SPP reserve share program redispatch.

- All branches, ties, shunts, and generators within the following areas:
    - SPP Internal Areas for 60kV – 999kV facilities: o
        - 515 – 546, 640, 641, 642, 645, 650, 652, 659, 998, 999
    - SPP External Areas for 100kV – 999kV facilities:
        - 327, 330, 351, 356, 502, 600, 615, 620, 627, 635, 661, 680
- NERC, SPP, and Tier 1 Permanent Contingent Flowgates
- SPP T.O. Specific P1, P2, P4, and P5 TPL-004-1 Contingencies
- SPP T.O. Specific Op Guide Implementation

SPONSORED UPGRADES

The Sponsored Upgrades were sorted based on construction lead-time in order to reflect the sequence of in-service dates for the upgrades. Each Sponsored Upgrade was evaluated sequentially and as a standalone addition. Sequentially, the first Sponsored Upgrade was evaluated in comparison to the TS Case. The second Sponsored Upgrade was evaluated on top of the previously added Sponsored Upgrade. The process was repeated until all Sponsored Upgrades were evaluated.

Sponsored Upgrades that share the same construction lead-time were evaluated as incremental upgrades to the final set of Sponsored Upgrades with the same lead-times. The studied Sponsored Upgrades and associated lead time for the Customer is listed in Table 2-1.

Table 2-1: Sponsored Upgrades

Upgrade ID	Upgrade Name	Estimated Lead-Time (months)
143263	Finney 345kV Reactive Support (DISIS-2017-001)	18

CONTINGENT UPGRADES

Contingent upgrades are not yet in-service. These facilities have been assigned to higher queued interconnection customers. These facilities were included in the models respective of their estimated lead-time for this study prior to determining the incremental transfer amount that each Sponsored Upgrade provided. The list of contingent upgrades and their associated lead-time for the participating Customers is listed in Table 2-2.

Table 2-2: Contingent Upgrade Sequence

Upgrade ID	Upgrade Name	Estimated Lead-Time (months)
82127	GEN-2015-093 Circuit Breaker Addition to Gracemont 138kV substation	0
NTC 210560	Neset - Northshore 230 kV Ckt 1 NTC 210560	15
NTC 2010609	Border 345kV Reactive Support NTC 210609	18
NTC 2010575/210587	Multi - Border - Woodward 345 kV Tap NTC 210575/210587	20
122598	Wolf Creek to Blackberry 345kV	60

SPONSOR TRANSFER PATHS

The Customer is eligible to select up to three (3) source-to-sink transfer paths per Sponsored Upgrade. The list of valid source-to-sink paths is posted on the SPP OASIS site under Source/Sink Summary and were available to Customers with a valid OASIS certificate.

Customers may select paths for ILTCR studies using their new generator that was studied as a source. The generator must be registered in the Marketplace before it is able to participate in the Congestion Hedging process.

Each source-to-sink transfer path was collected by SPP for the Customer and those submissions are captured in the Results section.

STUDY METHODOLOGY

TRANSFER ANALYSIS

A DC transfer analysis was conducted using PowerGEM TARA to determine the limiting flowgates in each applicable case for the respective transfer paths provided by the Customer. Constraints were defined as any overloaded facility in which the transfer had a three (3) percent or more TDF or OTDF impact for system intact or contingency conditions respectively. AC Contingency Analysis was performed on each case to identify existing overloaded flowgates that were not caused by the Customer, Sponsored Upgrade, or the source-to-sink transfer path. These flowgates were filtered out of the transfer analysis results for the respective case in which they were reported in the AC Contingency Analysis.

Once the initial DC limiting flowgates were filtered to valid results, the top five (5) limiting flowgates in each applicable case for the respective transfer paths provided by the Customer were AC verified. If the AC verified results reported a non-converged condition and all other AC verified transfers were not zero, then the AC non-converged condition was reviewed for appropriate adjustments until an AC transfer limit was established. If no adjustments were found to resolve the AC non-converged condition, then the AC transfer limit was reported as 0 MW to reflect the condition in which no transfer could be achieved.

With the transfer limits AC verified, the deltas between the minimum AC transfer amounts across all analyzed cases for each path with and without the associated Sponsored Upgrade were determined as follows:

- If ATC pre-NU < 0 and ATC post-NU < 0, then individual increment = 0
- If ATC pre-NU < 0 and ATC post-NU > 0, then individual increment = ATC post-NU
- If ATC pre-NU > 0 and ATC post-NU > 0, then individual increment = ATC post-NU – ATC pre-NU

If the Sponsored Upgrade costs were shared between multiple Customers, then the minimum delta was allocated to each participating Customer in the same proportion as the pro-rata share of the total cost of the upgrade allocated. The lowest amount of candidate MWs that can be awarded is 0.1 MW. Therefore, any candidate MWs below 0.1 MWs is reported as 0.0 MWs.

ILTCR STUDY RESULTS

Table 4-1 summarizes the minimum incremental ATC created across all seasons for each of the source-to-sink paths provided by the Customer for the Network Upgrades.

Appendix A includes the detailed results of the top five (5) most limiting flowgates for each transfer path as submitted by the Customer.

Table 4-1: GEN-2017-018 Candidate ILTCRs

NU #	NU	Source	Sink	Min Delta (MW)	Cost Allocation (%)	cILTCR (MW)
143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	KCPL	0	1.50%	0
143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	SUNC	0	1.50%	0
143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	WR_WR	0	1.50%	0

CONCLUSION

The ILTCR analysis determined the incremental ATC created on the Customer submitted source-to-sink paths as provided by the associated Sponsored Upgrade. The Customer may choose the one source-to-sink path in which to receive candidate ILTCRs based on the ATC results presented. If a source-to-sink path that reported no incremental ATC (0 MW) is chosen, then the Customer will not receive any candidate ILTCRs for the Sponsored Upgrade. This data will be included in applicable agreement(s) and executed before filing with FERC.

The Customer must notify SPP 45 days in advance of energization of the associated Sponsored Upgrade via RMS ticket. Tracking of the Sponsored Upgrade progress can be achieved by utilizing the SPP Quarterly Project Tracking workbooks posted on the SPP website. Once the Sponsored Upgrade is energized, SPP will make available TCR MWs for the candidate ILTCR until the end of that TCR year in the next feasible monthly TCR auction.

APPENDIX A

IC	NU	Network Upgrade Name	Source	Sink	Limit	Case	Monitored Facility	Contingency Name	Base FCITC	Upgrade FCITC	ATC Increase
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	KCPL	1	27WP0	542978 CRAIG 5 161 542979 PFLUMM 5 161 1	P52:345:KCPL:STILWEL7:::EHV:	27.2	27.2	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	KCPL	2	27SP0	542979 PFLUMM 5 161 543047 OVERLPK5 161 1	P23:345:KCPL-GMO:IATAN-R7-9:::EHV:	55	55	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	KCPL	3	32SP0	542979 PFLUMM 5 161 543047 OVERLPK5 161 1	P52:345:KCPL:STILWEL7:::EHV:	60.7	60.7	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	KCPL	4	23SP0	542979 PFLUMM 5 161 543047 OVERLPK5 161 1	P52:345:KCPL:STILWEL7:::EHV:	71.8	71.8	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	KCPL	5	32WP0	542978 CRAIG 5 161 542979 PFLUMM 5 161 1	P52:345:KCPL:STILWEL7:::EHV:	130.6	130.6	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	SUNC	1	23SP0	530693 VINETAP3 115 530581 N HAYS3 115 1	P43:115-230:MIDW:KNOLL::SB6801:HV:	214.9	214.9	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	SUNC	2	24SP0	530693 VINETAP3 115 530581 N HAYS3 115 1	P43:115-230:MIDW:KNOLL::SB6801:HV:	277.4	277.4	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	SUNC	3	23SP0	530581 N HAYS3 115 530561 KNOLL 3 115 1	P43:115-230:MIDW:KNOLL::SB6801:HV:	354.2	354.2	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	SUNC	4	27SP0	530693 VINETAP3 115 530581 N HAYS3 115 1	P43:115-230:MIDW:KNOLL::SB6801:HV:	363.3	363.3	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	SUNC	5	24SP0	530581 N HAYS3 115 530561 KNOLL 3 115 1	P43:115-230:MIDW:KNOLL::SB6801:HV:	418	418	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	WR_WR	1	27SP0	533326 EMANHAT3 115 533327 LEVEE 3 115 1	532865 NMANHT6 230 3WXFMR NMAN TX-1 1	170.7	170.7	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	WR_WR	2	32SP0	533347 NMANHT3 115 533333 KSU W 3 115 1	533326 EMANHAT3 115 533327 LEVEE 3 115 1	243.8	243.8	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	WR_WR	3	32SP0	533327 LEVEE 3 115 533334 MATTERS3 115 1	532865 NMANHT6 230 3WXFMR NMAN TX-1 1	337.6	337.6	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	WR_WR	4	24SP0	533326 EMANHAT3 115 533327 LEVEE 3 115 1	532865 NMANHT6 230 3WXFMR NMAN TX-1 1	536.8	536.8	0
GEN-2017-018	143263	Finney 345kV Reactive Support (DISIS-2017-001)	GEN-2017-018	WR_WR	5	23LP0	539668 HARPER 4 138 539675 MILANTP4 138 1	P52:345:WERE:BUFFALO7:::EHV:	851.6	851.6	0