DISIS 2016

Incremental Long-Term Congestion Rights Study Report

GEN-2016-139

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By SPP Generation Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
05/06/2021	SPP	Initial report issued.	
08/06/2021	SPP	Update cost allocation resulting from Restudy	

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1 INTRODUCTION

Incremental Long-Term Congestion Rights (ILTCRs) were made available by FERC 681 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-2016-139 (the Customer) that has Directly Assigned Upgrade Costs (DAUC) for the following network upgrades from DISIS 2016-002 Studies.

- Viola 345/138 kV Transformer Ckt2

2 STUDY INPUTS

MODEL BASIS

The 2020 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 2022, 2025, 2030
    - Summer Peak (2025SP, 2030SP)
    - Winter Peak (2022WP, 2025WP, 2030WP)
    - Light Load (2025LP, 2030LP)

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:
        - 515 – 546, 640 – 659, 661, 998, 999
- 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:
        - 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, 672, 680
- NERC, SPP, and Tier 1 Permanent Contingent Flowgates
- SPP T.O. Specific P1, P2, P4, and P5 TPL-004-1 Contingencies

SPONSORED UPGRADES

For each Cluster Group with participating Customers, their 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

Group	Upgrade ID	Upgrade Name	Estimated Lead-Time (months)
8	122792	Viola 345/138 kV Transformer Ckt2	24

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

Group	Upgrade ID	Upgrade Name	Estimated Lead-Time (months)
8	-	Clearwater – Viola 138kV CKT1	6
8	-	Gill – Viola 138kV CKT1	6
8	50582	Viola 345/138 kV Transformer CKT1	6
8	-	WolfCreek – Blackberry 345kV CKT1	72
9	-	NTC 200220 (R-Plan)	48

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 are 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.

3 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.

4 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 Upgrade.

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

Table 4-1: GEN-2016-139 Candidate ILTCRs

NU #	NU	Source	Sink	Min Delta (MW)	Cost Allocation (%)	cILTCR (MW)
122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	OKGE_OKGE	2.2	0.99%	0.0
122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	AEPM_CSWS	2.3	0.99%	0.0
122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	WR_WR	0.0	0.99%	0.0

5 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.

APENDIX A

Group	IC	NU	Network Upgrade Name	Source	Sink	Limit	Case	Monitored Facility	Contingency Name	Base FCITC	Upgrade FCITC	ATC Increase
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	OKGE_OKGE	1	30SP0	998135 CIMARON1 138 514898 CIMARON4 138 1	91056	121.0	123.2	2.2
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	OKGE_OKGE	2	25SP0	998135 CIMARON1 138 514898 CIMARON4 138 1	91056	156.0	158.5	2.5
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	OKGE_OKGE	3	30SP0	514908 ARCADIA7 345 998128 ARCADIA4 138 1	91058	327.5	326.5	0.0
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	OKGE_OKGE	4	30SP0	998128 ARCADIA4 138 514907 ARCADIA4 138 1	91058	504.8	503.8	0.0
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	OKGE_OKGE	5	25SP0	514909 REDBUD 7 345 514908 ARCADIA7 345 2	105007	751.8	749.6	0.0
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	AEPM_CSWS	1	2030SP	509800 36LEWIS4 138 509776 52DELTP4 138 1	5976	175.9	178.2	2.3
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	AEPM_CSWS	2	2025WP	998275 DIANA 3 138 508831 DIANA 4 138 3	87284	184.6	184.8	0.2
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	AEPM_CSWS	3	2030SP	509858 WARNTAP4 138 509847 96YALE-4 138 1	6014	399.2	400.6	1.4
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	AEPM_CSWS	4	2025SP	509858 WARNTAP4 138 509847 96YALE-4 138 1	6014	679.7	680.9	1.2
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	AEPM_CSWS	5	2025SP	509800 36LEWIS4 138 509776 52DELTP4 138 1	5976	736.0	737.7	1.7
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	WR_WR	1	2025SP	514909 REDBUD 7 345 514908 ARCADIA7 345 2	105007	1044.0	1040.1	0.0
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	WR_WR	2	2030SP	509800 36LEWIS4 138 509776 52DELTP4 138 1	87657	1089.5	1093.9	4.4
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	WR_WR	3	2030SP	509783 R.S.S.-4 138 509753 116JENK4 138 1	87629	1100.5	1100.0	0.0
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	WR_WR	4	2030SP	509871 SAPLPRD4 138 509896 DENV_WTAP4 138 1	87640	1065.1	1164.9	0.0
G08	GEN-2016-139	122792	Viola 345/138 kV Transformer Ckt2	GEN-2016-139 POI	WR_WR	5	2025SP	509871 SAPLPRD4 138 509896 DENV_WTAP4 138 1	87641	1274.1	1273.9	0.0