

GEN-2019-018

Interim Availability Interconnection System Impact Study

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By Generator Interconnection

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	
3/10/2021	Generator Interconnection	Initial Posting	

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EXECUTIVE SUMMARY

The GEN-2019-018 Interconnection Customer has requested an Interim Availability Interconnection System Impact Study (IAISIS) under Section 11A of Attachment V (Generator Interconnection Procedures - GIP) to the Southwest Power Pool Open Access Transmission Tariff (OATT). GEN-2019-018 has requested a modification to their existing facility for the addition of a gas turbine generator with a maximum capacity of 15.6 MW with a summer capacity rating of 12 MW to be interconnected with the point of interconnection at the Saxman 115 kV substation with Energy Resource Interconnection Service (ERIS) and Network Resource Interconnection Service (NRIS) into the transmission system of Midwest Energy (MIDW) in Rice County, Kansas. GEN-2019-018 has requested this IAISIS to determine the impacts of interconnecting to the transmission system before the DISIS-2019-001 is completed. Power flow, transient stability, and short circuit analyses were conducted for this IAISIS in accordance with GIA Section 11A.

This IAISIS addresses the effects of interconnecting the generator to the rest of the transmission system for the system topology and conditions as expected on March 1, 2020. The customer facility is comprised of an approximate 5 MW & 1.8 MVAR facility load, existing 1 MW and future 2 MW behind-the-meter generators, 20 MVA transformer, and the GEN-2019-018 modification addition of a gas turbine generator. Power flow and stability analysis were evaluated with a conservative study maximum capacity of the GEN-2019-018 request at 15.9 MW.



Figure 1: GEN-2019-018 Facility Interconnection One-line

The power flow, stability, and short circuit study reports are attached to this document in .xlsx format.

The analysis performed indicates that the GEN-2019-018 generating facility may reliably interconnect on an interim basis the requested maximum capacity of 15.6 MW with a summer capacity rating of 12 MW under ERIS or NRIS. Interim Interconnection Service is feasible.

Under system conditions where either the Rice to Circle 230 kV circuit or any segment of the Rice to Lyons to Wheatland to West McPherson 115kV circuit are opened, this study identified voltage instability when the combined flow on the Rice to Circle 230 kV, Lyons to Wheatland 115 kV and Rolling Hills to Ellsworth Tap 115 kV circuits that remain electrically connected to Rice 115 kV exceeded 137 MW.

CUMULATIVE MW LIMIT OF CIRCUITS THAT REMAIN ELECTRICALLY CONNECTED TO RICE 115 KV	RICE TO CIRCLE 230 KV CIRCUIT	RICE TO LYONS TO WHEATLAND TO WEST MCPHERSON 115 KV CIRCUIT	RICE TO BUSHTON TO ELLSWORTH TO EAST HALL TO ROLLING HILLS TO ELLSWORTH TAP 115 KV CIRCUIT
None identified	In-service	All segments In- service	All segments In- service
130 MW	Out-of-service	In-service	In-service
130 MW	In-service	Any segment Out-of- service	In-service
None identified	In-service	In-service	Any segment Out-of- service

Table 1: Summary of results

The values in Table 1 represent a reduction from the identified system limits determined in the study in accordance with SPP Operating Criteria Appendix OP-1 section 2.c.

It should be noted that while this IAISIS analyzed many of the most probable contingencies, it is not an all-inclusive list that can account for every operational situation. Additionally, the generator may not be able to inject any power onto the Transmission System due to constraints that fall below the threshold of mitigation for a Generator Interconnection request. Because of this, it is likely that the Customers may be required to reduce their generation output to **0 MW** under certain system conditions to allow system operators to maintain the reliability of the transmission network.

In accordance with FERC Order 827 GEN-2019-018 will be required to provide dynamic reactive power within the power factor range of 0.95 leading (absorbing Vars from the network) to 0.95 lagging (providing Vars to the network) at continuous rated power output at the high side of the generator substation.

Nothing in this study should be construed as a guarantee of transmission service or delivery rights. If the customer wishes to obtain deliverability to final customers, a separate request for transmission service must be requested on Southwest Power Pool's OASIS by the customer.