



GEN-2016-128

Impact Restudy for Generator Modification (POI Change)

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By Generator Interconnection

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
2/7/2019	Generator Interconnection		Initial Posting

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EXECUTIVE SUMMARY

The GEN-2016-128 Interconnection Customer has requested a modification to its Interconnection Request. This system impact restudy was performed to determine the effects of changing the project Point of Interconnection (POI) from the Oklahoma Gas & Electric (OKGE) Woodring 345kV substation to sharing the GEN-2016-068 generator interconnection tie line to the Oklahoma Gas & Electric (OKGE) Woodring 345kV substation. The previously studied 88 GE 2.0 MW wind turbine generators (for a total capacity of 176 MW) remains unchanged. All other technical specifications for the project, including collector system layout and impedances, remain unchanged.

GEN-2016-128 was initially studied in the DISIS-2016-002 Group 8 impact study. The results of that study can be found on the SPP OASIS study posting page¹. The results of the initial impact study are based on the assumption that the project POI is an independent interconnection tie line to the OKGE Woodring 345kV substation.

In order to verify that the change in POI from the Woodring 345kV substation to the GEN-2016-068 interconnection tie line to Woodring 345kV substation does not constitute a material modification, the POI for GEN-2016-128 was revised in the models and the local real and reactive power flows observed at the Woodring 345kV substation. The power flows from the DISIS-2016-002 Group 8 21SP Transfer Case are shown in Figure 1. Once the modification was made in the models, the power flows from the DISIS-2016-002 Group 8 21SP Transfer Case were observed and are shown in Figure 2.

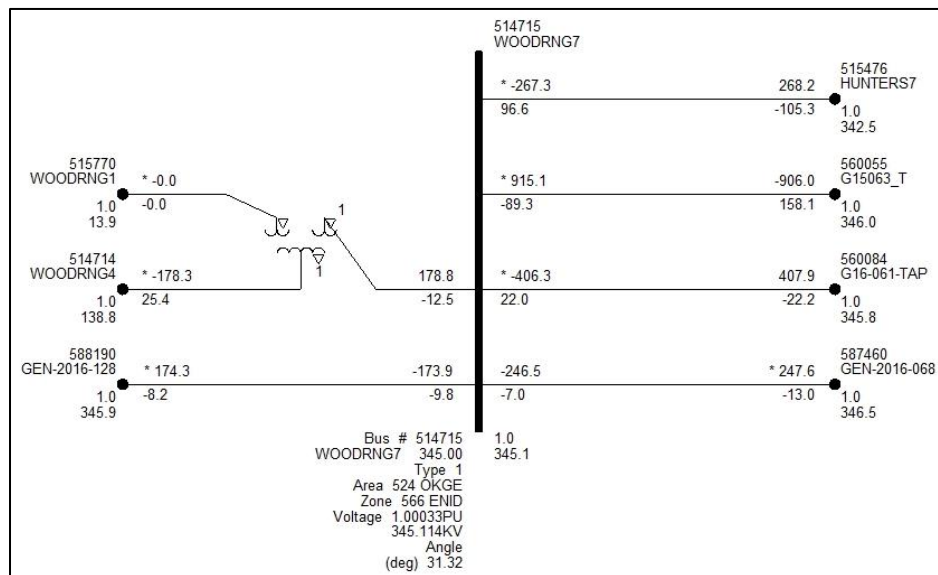


Figure 1 - Woodring 345kV Substation Before POI Modification

¹[http://opsportal.spp.org/documents/studies/files/2016 Generation Studies/DISIS%202016-002 SixthPosting Final.pdf](http://opsportal.spp.org/documents/studies/files/2016%20Generation%20Studies/DISIS%202016-002%20SixthPosting%20Final.pdf)

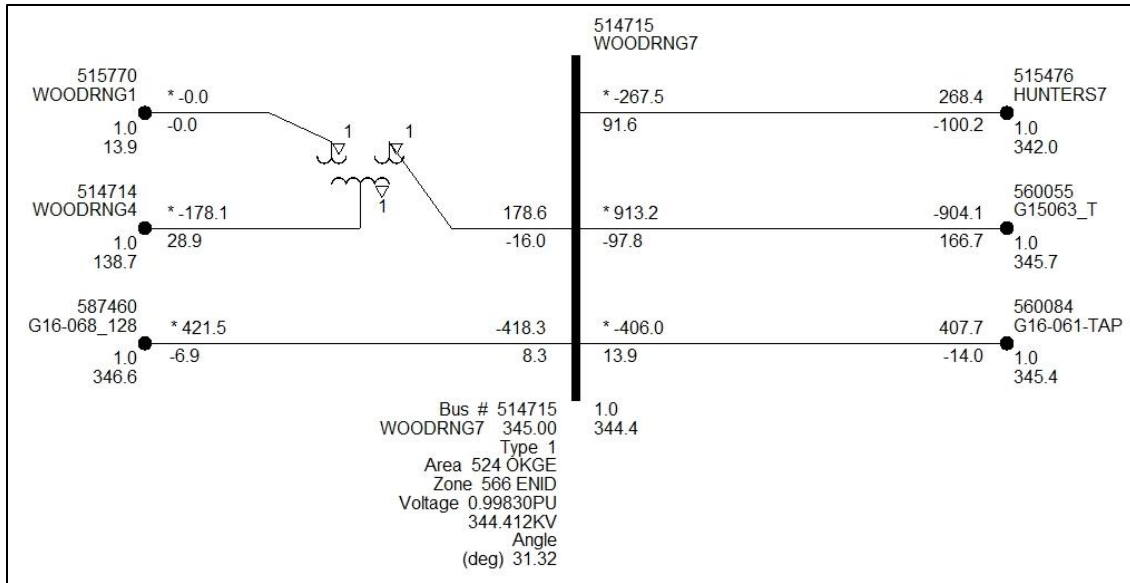


Figure 2 - Woodring 345kV Substation After POI Modification

As shown in Figures 1 and 2, the total real power export from the Woodring 345kV substation before the GEN-2016-128 POI change is 1,093.9 MW. The total real power export from the Woodring 345kV substation after the GEN-2016-128 POI change is 1,091.8 MW. Due to the fact that the total MW change is less than 0.2% of the total MW export from the Woodring 345kV substation, a steady-state thermal and voltage analysis was not conducted for this POI modification. The previous steady-state analysis results of the DISIS-2016-002 Group 8 impact study are still valid. Likewise, since there was no change in the collector system impedances, wind turbine generators, and very small changes to the interconnection tie line impedance and reactive power flow, a dynamic stability analysis was not conducted for this POI modification. The previous dynamic stability analysis results of the DISIS-2016-002 Group 8 impact study are still valid.

To prevent reactive power injection into the transmission system during low/no wind operation on the shared interconnection tie line for GEN-2016-068 and GEN-2016-128, approximately 40.9 Mvar of total shunt reactors to be located on the shared 345 kV bus(es) of the Interconnection Customer’s facilities. GEN-2016-128 only requires 6.2 Mvar of shunt reactor on the 345 kV bus(es), while GEN-2016-068 requires 34.7 Mvar of shunt reactor on the 345 kV bus(es). The Interconnection Customer may also install and utilize an equivalent means of compensating for the injection of reactive power into the transmission system at the Point of Interconnection.

With the assumptions outlined in this report and with all the required network upgrades in place, GEN-2016-128 with 88 GE 2.0 MW wind turbine generators should be able to interconnect reliably to the SPP transmission grid. This restudy confirms that the requested modification to change the GEN-2016-128 POI from the Woodring 345kV substation to the GEN-2016-068 interconnection tie line is not considered Material.

The Interconnection Customer for GEN-2016-128 will be required to attain a Shared Facilities Agreement and provide a copy of the Shared Facilities Agreement to the Transmission Provider and Transmission Owner prior to the Interconnection Customer energizing its facilities in order to accommodate the “shared usage” of the interconnection tie line facilities.

It should be noted that this study analyzed many of the most probable contingencies, but it is not an all-inclusive list and cannot account for every operational situation. It is likely that the customer may be required to reduce its generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

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.