



Facility Study
for GEN-2023-064

200 MW Solar Generation Facility
New Interconnection Near
R.S. Kerr Switchyard

January 10, 2024

Summary

At the request of Southwest Power Pool (SPP), Southwestern Power Administration (SWPA) performed the following Facility Study. This Facility Study is regarding SPP GEN-2023-064, 161kV, 200MW Solar/Battery Addition. From SPP’s Generator Interconnection Study Agreement, Appendix 3 submission from Clenera DevCo, LLC, the generation interconnection request consists of a 200MW solar and a 200MW BESS facility interconnecting SWPA’s line 3016, R.S. Kerr-Stigler-Eufaula, near structure 250 (90.7% of the line length from bus 301550 towards bus 505582).

1. Introduction

The SPP requested a Facility Study for the purpose of interconnecting a 200MW solar and 200MW BESS facility with a point of interconnection on SWPA’s line 3016, R.S. Kerr-Stigler-Eufaula, near structure 250 (90.7% of the line length from bus 301550 towards bus 505582). The total estimated cost of necessary upgrades, non-shared NU, is \$8,600,000 and \$800,000 for the Transmission Owner Interconnection Facilities (TOIF) costs.

2. Existing Interconnection Facilities Review

The existing facility thermal ratings and circuit breaker interrupting capabilities will establish the necessary facility upgrades to accommodate the interconnection request as described in Sections 2.1 and 2.2 below.

2.1. Power Flow Constraints

SWPA’s Line 3016, R.S. Kerr-Stigler, has the following seasonal thermal ratings. The transmission line is limited by the transmission line conductor for all seasons.

Season	Summer Normal	Summer Emergency	Spring/Fall Normal	Spring/Fall Emergency	Winter Normal	Winter Emergency
Line Rating (Amps)	851	851	979	979	1163	1163
Line Rating (MVA)	237	237	273	273	324	324

For this study, it is assumed that the BESS and Solar generation will not exceed 200MW total generation. The addition of 200MW generation injection at SWPA’s Van Buren Switching Station does not cause nearby P1 thermal issues on SWPA’s Lines.

Coordination and costs may be necessary with AECl and GRDA for upgrades near Sallisaw caused by P1 contingency causing thermal violations.

2.2. Short-Circuit Constraints

The circuit breakers protecting SWPA’s Lines at R.S. Kerr, Stigler, and Eufuala have interrupting capability of 40kA. The highest fault current at R.S. Kerr and Stigler is approximately 10kA. The increase in fault current capability due to the BESS interconnection request is expected to be approximately 5 times the full generation current, which is approximately 3.6kA. The increase in fault current capability due to the solar interconnection request is expected to be less than 1kA for a 200MW solar generating facility interconnection. The maximum expected fault current capability at R.S. Kerr and Stigler is less than 14.6kA, which is less than the interrupting devices at R.S. Kerr and the remote locations, therefore no need for upgrade of circuit breakers due to interrupting capability.

3. Required Interconnection Facility Upgrades

In accordance with SWPA’s Minimum Interconnection Requirements, the interconnection request would require at a minimum a 161kV, three-terminal ring bus substation. The circuit breakers will be 40kA interrupting, 2,000 amp continuous rated. Instrument transformers, disconnect switches, bus, and jumpers will be at least 1,200 amp continuous rated.

GEN-2023-064 Solstice 138kV (Non-Shared NU)	\$8,600,000	48 months
GEN-2017-064 Solstice 138kV (TOIF)	\$800,000	48 months

Interconnection requests with Southwestern shall be in accordance with SPP’s Tariff Attachment AD, Article I, Section 14, (c) and (d), as shown below. In addition, Southwestern’s deadline of 36 months does not begin with SPP’s approval, but upon the interconnecting party’s signed construction agreement with Southwestern. As stated in Southwestern’s Interconnection Request Procedures, Southwestern’s Interconnection Request Procedures is a two-step process. First, a Facility Study Agreement between the interconnecting party and Southwestern begins the process. Second, a Construction Agreement between the interconnecting party and Southwestern starts the second phase of the project. The anticipated lead time/deadline will be established in the construction agreement and will not start until all construction funds are received by Southwestern.

“(c) Southwestern agrees to coordinate transmission planning and construction activities with SPP, but reserves the right to plan and construct modifications or additions to Southwestern’s transmission facilities without the approval of SPP, and to approve or disapprove the requests by others to plan and construct such modifications or additions.

(d) No interconnections to Southwestern’s transmission facilities shall be made without written contractual agreements between Southwestern and the interconnecting party which satisfy Southwestern’s NEPA requirements and which establish the terms and conditions of the interconnection. Such agreements shall be made pursuant to Southwestern’s then-current Interconnection Request Procedure as posted on Southwestern’s web site.”

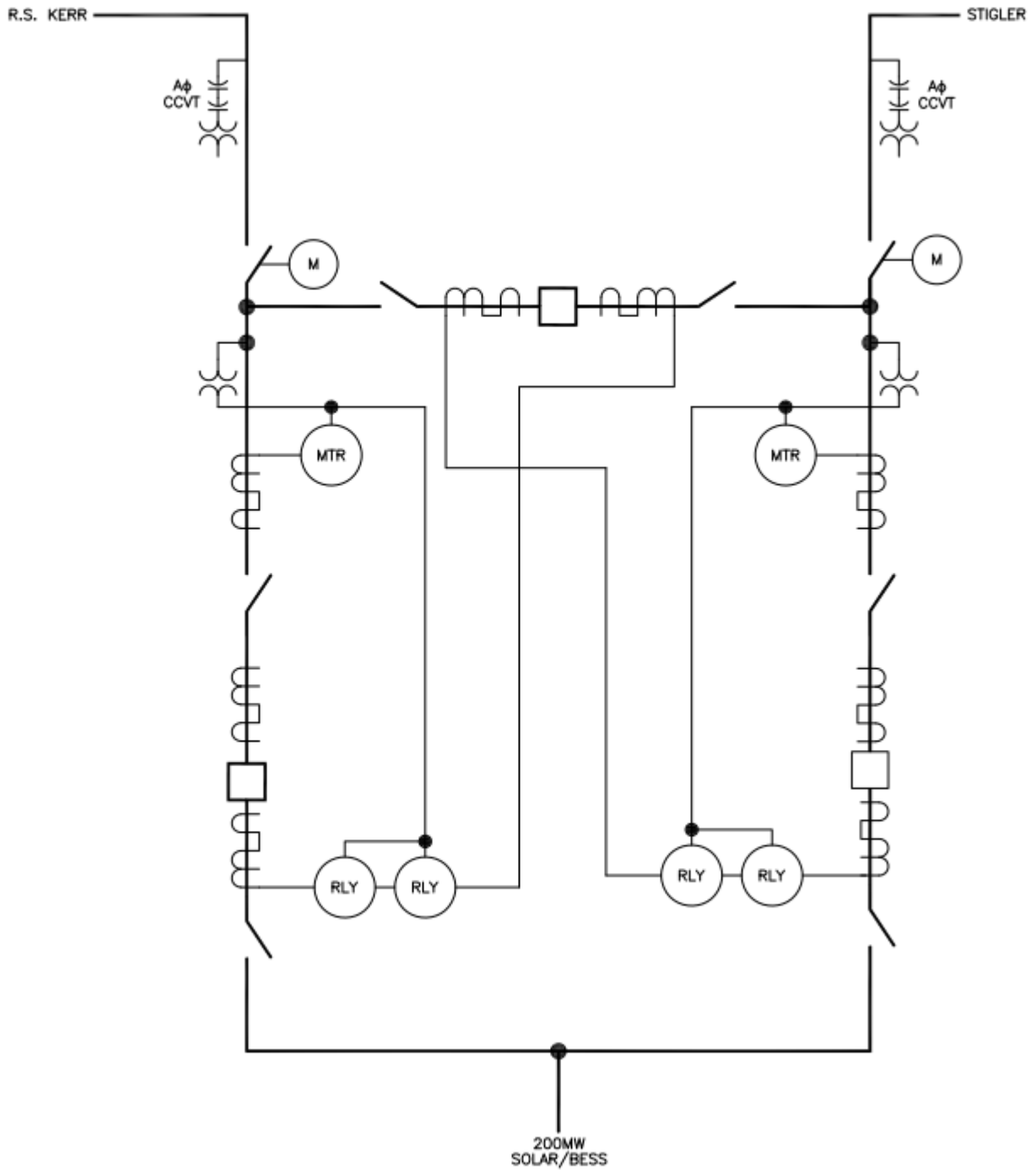


Figure 1 – Three-Position Ring Bus Interconnection
200MW Solar/BESS Interconnection at SWPA Line 3016
Near Structure 250