



**INTERCONNECTION
FACILITIES STUDY
REPORT**

GEN-2025-GR2

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By SPP Generator Interconnections Special Studies Dept.

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SUMMARY

INTRODUCTION

This Interconnection Facilities Study (IFS) for Interconnection Request GEN-2025-GR2 is for a 120 MW generating facility located in Chaves County, NM. The Interconnection Request was studied in the Replacement Impact Study for ERIS. The Interconnection Customer's requested in-service date is 11/30/2027.

The interconnecting Transmission Owner, Southwestern Public Service Company (SPS), performed a detailed IFS at the request of SPP. The full report is included in Appendix A. SPP has determined that full Interconnection Service will be available after the assigned Transmission Owner Interconnection Facilities (TOIF), and Non-Shared Network Upgrades that are required for full interconnection service are completed.

The primary objective of the IFS is to identify necessary Transmission Owner Interconnection Facilities, other direct assigned upgrades, cost estimates, and associated upgrade lead times needed to grant the requested Interconnection Service.

PHASE(S) OF INTERCONNECTION SERVICE

It is not expected that Interconnection Service will occur in phases. However, full Interconnection Service will not be available until all Interconnection Facilities and Network Upgrade(s) can be placed in service.

COMPENSATION FOR AMOUNTS ADVANCED FOR NETWORK UPGRADE(S)

FERC Order ER20-1687-000 eliminated the use of Attachment Z2 revenue crediting as an option for compensation. The Incremental Long Term Congestion Right (ILTCR) process will be the sole process to compensate upgrade sponsors as of July 1st, 2020.

INTERCONNECTION CUSTOMER INTERCONNECTION FACILITIES

The Generating Facility is proposed to consist of thirty (30) Vestas V163 4.5 MW Wind turbines for a total generating nameplate capacity of 135 MW which exceeds the requested Replacement Interconnection Service of 120 MW. The sum of the output is limited at the Point of Interconnection to 120 MW.

The Interconnection Customer's Interconnection Facilities to be designed, procured, constructed, installed, maintained, and owned by the Interconnection Customer at its sole expense include:

- 34.5 kV underground cable collection circuits;
- 34.5 kV to 230 kV transformation substation with associated 34.5 kV and 230 kV switchgear;
- One 230 / 34.5 kV 166/222/227 MVA (ONAN/ONAF/ONAF) step-up transformer to be owned and maintained by the Interconnection Customer at the Interconnection Customer's substation;
- Approximately 2.83 miles overhead 230 kV line to connect the Interconnection Customer's substation to the Point of Interconnection (POI) at the 230 kV bus at the existing Transmission Owner substation (San Juan Mesa Station 230 kV) that is owned and maintained by Transmission Owner;
- All transmission facilities required to connect the Interconnection Customer's substation to the POI;
- Equipment at the Interconnection Customer's substation necessary to maintain a composite power delivery at continuous rated power output at the high-side of the generator substation at a power factor within the range of 95% lagging and 95% leading in accordance with Federal Energy Regulatory Commission (FERC) Order 827. Additionally, needed approximately 10.8 Mvars¹ of reactors to compensate for injection of reactive power into the transmission system under no/reduced generating conditions. The Interconnection Customer may use inverter manufacturing options for providing reactive power under no/reduced generation conditions. The Interconnection Customer will be required to provide documentation and design specifications demonstrating how the requirements are met; and,
- All necessary relay, protection, control and communication systems required to protect Interconnection Customer's Interconnection Facilities and Generating Facilities and coordinate with Transmission Owner's relay, protection, control and communication systems.

¹ This approximate minimum reactor amount is needed for the current configuration of GEN-2025-GR2 as studied in the Replacement Impact Study.

TRANSMISSION OWNER INTERCONNECTION FACILITIES AND NON-SHARED NETWORK UPGRADE(S)

To facilitate interconnection, the interconnecting Transmission Owner will perform work as shown below necessary for the acceptance of the Interconnection Customer’s Interconnection Facilities.

Table 1 and **Table 2** list the Interconnection Customer’s estimated cost responsibility for Transmission Owner Interconnection Facilities (TOIF) and Non-Shared Network Upgrade(s) and provides an estimated lead time for completion of construction. The estimated lead time begins when the Generator Interconnection Agreement has been fully executed.

Table 1: Transmission Owner Interconnection Facilities (TOIF)

Transmission Owner Interconnection Facilities (TOIF)	Total Cost Estimate (\$)	Allocated Percent (%)	Allocated Cost Estimate (\$)
<u>Transmission Owner’s Interconnection (TOIF):</u> Protection Relay Replacement	\$947,809	100%	\$947.809
<u>Estimated Lead Time: 18 - 24 Months</u>			
Total	\$947.809		\$947.809

Table 2: Non-Shared Network Upgrade(s)

Non-Shared Network Upgrades Description	ILTCR	Total Cost Estimate (\$)	Allocated Percent (%)	Allocated Cost Estimate (\$)
<u>None</u>		\$0	100.00%	\$0
Total		\$ 0		\$ 0

CONCLUSION

After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 120 MW can be granted. Full Interconnection Service will be delayed until the TOIF, and Non-Shared NU that are required for full interconnection service are completed. The Interconnection Customer’s estimated cost responsibility for full interconnection service is summarized in the table below.

Table 3: Cost Summary

Description	Allocated Cost Estimate
Transmission Owner Interconnection Facilities Upgrade(s)	\$947.809
Non-Shared Network Upgrade(s)	\$ 0
Total	\$947.809

Use the following link for Quarterly Updates on upgrades from this report: <https://spp.org/spp-documents-filings/?id=18641>

A draft Generator Interconnection Agreement will be provided to the Interconnection Customer consistent with the results of this IFS report. The Transmission Owner and Interconnection Customer will have 30 days to negotiate the terms of the GIA consistent with the SPP Open Access Transmission Tariff (OATT).

APPENDICES

A: TRANSMISSION OWNER'S INTERCONNECTION FACILITIES STUDY REPORT AND NETWORK UPGRADES REPORT(S)

See next page for the Transmission Owner's Interconnection Facilities Study Report and Network Upgrades Report(s).



Facilities Study For Southwest Power Pool (SPP)

Group 5
GEN-2025-GR2

Xcel Energy Services, Inc.
Southwestern Public Service Co.
Transmission Planning South
Updated 2/6/2026

Executive Summary

The Southwest Power Pool (SPP or Transmission Provider [TP]) requested a Generation Facility Replacement Evaluation for GEN-2025-GR2. The results were posted in September 2025.

The customer has an existing wind generation facility located in Chaves County, New Mexico, connected to the Southwestern Public Service Company (SPS or Transmission Owner [TO]) San Juan Mesa substation. The customer replaced thirty (30) wind turbines that had reached end-of-life and also replaced the main power transformer at their collector site with a larger rated transformer. Because of the changes, this caused changes in the impedance values of the generation tie-line values, and SPS will have to replace the some of the existing protection relays at the San Juan Mesa substation with new relays that meet SPS Substation Standards.

The IC is responsible for all the costs of the relay upgrades called for by this generation replacement project at SPS' San Juan Mesa Substation.

It is anticipated that the entire process of this project will require approximately 18 - 24 months to complete after an agreement is signed and an authorization to proceed is received. The IC's costs for the protection relay replacements are shown below in Table 1.

Table 1: Cost Summary¹

Non-shared Network Upgrades:	\$ 947,809
Total:	\$ 947,809

¹ The cost estimates are 2026 dollars with an accuracy level of ±20%.

General Description of SPS² Facilities

1. **SPS San Juan Substation:** See Appendix A, Figure A-1 for general vicinity location map of the SPS facility.
2. Coordination with Xcel Energy is required during the under-frequency relay-setting phase for the project. The IC is required to report their generation off-nominal frequency tripping relay settings to SPP and SPS. SPS specifies that generators shall not trip at frequencies above 58.5 Hz unless exceptions in the Transmission Provider Criteria are met. The IC agrees that the energy generating units installed at this interconnection will not be tripped for under-frequency conditions above 58.5 Hz in compliance with Transmission Provider criteria. This means that the generation subject to this Interconnection Agreement may not trip for under-frequency conditions on the transmission system until all under-frequency load shedding relays have operated. SPS will also require that the IC follow all applicable criteria, guidelines, standards, requirements, regulations, and procedures issued by the North American Electric Reliability Corporation (NERC), SPP, and the Federal Energy Regulatory Commission (FERC) or their successor organizations.
3. **Project and Operating Concerns:**
 - a. **Collaboration:** Close work between the Transmission group, the IC's personnel and local operating groups will be imperative in order to meet any in-service date that has been established.
 - b. **Reactive Power Requirements:** The IC will be required to maintain a power factor between 0.95 lagging and 0.95 leading at the Point of Interconnection (POI). All capacitors required will be installed on the lower voltage bus at IC's substation. This is required to maintain acceptable dynamic voltage rise as per latest revision of the Xcel Energy Interconnection Guidelines for Transmission Interconnection Producer-Owned Generation Greater than 20 MW [refer to the following link for additional information: [Salesforce \(Xcel Energy Interconnection Guidelines For Transmission Interconnected Producer-Owned Generation Greater Than 20 MW\)](#)]. If switched reactive devices are used on the IC's system, they need to be switched in stages.
4. **Estimated Construction Costs and Schedule**
 - a. **Schedule:** An engineering and construction schedule for this project is estimated at approximately 18 - 24 months. Other factors associated with clearances, equipment delays, and work schedules could cause additional delays. This is applicable after all required agreements are signed and internal approvals are granted.
 - b. All additional costs for work not identified in this study are the sole responsibility of the IC unless other arrangements are made.

² All modifications to SPS facilities will be owned, maintained, and operated by SPS.

Appendix A

Figure A-1: General vicinity location map of the POI Substation



SPS 230 kV transmission lines shown in blue, Customer's gen-tie line shown in white.

– END OF REPORT –