INTERCONNECTION FACILITIES STUDY REPORT

GEN-2023-GR1

Published June 2024

By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION
06/25/2024	SPP	Initial draft report issued.

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SUMMARY

INTRODUCTION

This Interconnection Facilities Study (IFS) for Interconnection Request GEN-2023-GR1 is for a 97.488 MW Summer and 95.644 MW Winter generating facility located in Anadarko, Oklahoma. The Interconnection Request was studied in the GEN-2023-GR1 Replacement Impact Study for Energy Resource Interconnection Service (ERIS). The Interconnection Customer's requested in-service date is December 1, 2025.

The interconnecting Transmission Owner, Western Farmers Electric Cooperative (WFEC), 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), Non-Shared Network Upgrades, Shared Network Upgrades, Contingent Network Upgrades, and Affected System Upgrades that are required for full interconnection service are completed.

The primary objective of the IFS is to identify necessary Transmission Owner Interconnection Facilities, Network Upgrades, 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 two (2) GE LM6000 51.309 MVA synchronous gas-fired units with a total assumed dispatch of 98.972 MW Summer and 97.1 MW Winter. This generating capability for the RGF exceeds its requested Interconnection Service amount of a summer capacity of 97.488 MW and winter capacity of 95.644 MW at the POI. The injection amount of the Replacement Generating Facility (RGF) must be limited to 97.488 MW summer capacity and 95.644 MW Winter at the Point of Interconnection (POI). As a result, the customer must install monitoring and control equipment as needed to ensure that the amount of power injected at the POI does not exceed the Interconnection Service amount.

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

- 13.8 kV underground cable collection circuits;
- 13.8 kV to 69 kV transformation substation with associated 13.8 kV and 69 kV switchgear;
- Two (2) 13.8/69 kV 138/69/13.8 MVA (ONAN/ONAF/ONAF) step-up transformer to be owned and maintained by the Interconnection Customer at the Interconnection Customer's substation;
- Less than a mile overhead 69 kV line to connect the Interconnection Customer's substation to the Point of Interconnection ("POI") at the 69 kV bus at existing Transmission Owner substation ("Anadarko 69 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. 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.

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** lists 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 ($)	Allocated Percent (%)	Allocated Cost Estimate ($)	Estimated Lead Time
WFEC Anadarko 69 kV GEN-2023-GR1 Interconnection (TOIF): Upgrade existing terminal with new breaker and relays, and all associated equipment and facilities necessary to accept transmission line from Interconnection Customer's Generating Facility.	$200,000	100%	$200,000	17 Months
Total	**$200,000**		**$200,000**	

Table 2: Non-Shared Network Upgrade(s)

Non-Shared Network Upgrades Description	ILTCR	Total Cost Estimate ($)	Allocated Percent (%)	Allocated Cost Estimate ($)	Estimated Lead Time
None	Eligible	$0	%	$0	N/A
Total		**$0**		**$0**	

SHARED NETWORK UPGRADE(S)

The Interconnection Customer's share of costs for Shared Network Upgrades is estimated in **Table 3** below.

Table 3: Interconnection Customer Shared Network Upgrade(s)

Shared Network Upgrades Description	ILTCR	Total Cost Estimate ($)	Allocated Percent (%)	Allocated Cost Estimate ($)	Estimated Lead Time
None	Eligible	$0	%	$0	N/A
Total		**$0**		**$0**	

All studies have been conducted assuming that higher-queued Interconnection Request(s) and the associated Network Upgrade(s) will be placed into service. If higher-queued Interconnection Request(s) withdraw from the queue, suspend, or terminate service, the Interconnection Customer's share of costs may be revised. Restudies, conducted at the customer's expense, will determine the Interconnection Customer's revised allocation of Shared Network Upgrades.

CONTINGENT NETWORK UPGRADE(S)

Certain Contingent Network Upgrades are **currently not the cost responsibility** of the Interconnection Customer but will be required for full Interconnection Service.

Table 4: Interconnection Customer Contingent Network Upgrade(s)

Contingent Network Upgrade(s) Description	Current Cost Assignment	Estimated In-Service Date
None	$0	N/A

Depending upon the status of higher- or equally-queued customers, the Interconnection Request's in-service date is at risk of being delayed or Interconnection Service is at risk of being reduced until the in-service date of these Contingent Network Upgrades.

AFFECTED SYSTEM UPGRADE(S)

To facilitate interconnection, the Affected System Transmission Owner will be required to perform the facilities study work as shown below necessary for the acceptance of the Interconnection Customer's Interconnection Facilities. **Table 5** displays the current impact study costs provided by either MISO or AECI as part of the Affected System Impact review. The Affected System facilities study could provide revised costs and will provide each Interconnection Customer's allocation responsibilities for the upgrades.

Table 5: Interconnection Customer Affected System Upgrade(s)

Affected System Upgrades Description	Total Cost Estimate ($)	Allocated Percent (%)	Allocated Cost Estimate ($)
None	$0	%	$0
Total	$0		$0

CONCLUSION

After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 150 MW can be granted. Full Interconnection Service will be delayed until the TOIF, Non-Shared NU, Shared NU, Contingent NU, Affected System Upgrades 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 6: Cost Summary

Description	Allocated Cost Estimate
Transmission Owner Interconnection Facilities Upgrade(s)	$200,000
Non-Shared Network Upgrade(s)	$0
Shared Network Upgrade(s)	$0
Affected System Upgrade(s)	$0
Total	**$200,000**

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 final 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).

INTERCONNECTION FACILITY STUDY

for

Generation Replacement Study GEN-2023-GR1

97.488MW synchronous gas-fired generation interconnection at Anadarko 69kV

June 2024

Introduction

Pursuant to the Southwest Power Pool (SPP) Open Access Transmission Tariff and at the request of the SPP, Western Farmers Electric Cooperative (WFEC) performed the following facility Study to satisfy the Facility Study agreement executed by the requesting customer for SPP Generation Replacement request GEN-2023-GR1.

The Interconnection Customer has an Existing Generating Facility (EGF) with a Point of Interconnection (POI) at the Anadarko 69 kV Substation. GEN-2023-GR1, the Replacement Generating Facility (RGF), will connect to the existing POI in the WFEC area.

The EGF has 98.822 MW of available replacement capacity, based on the nameplate of the generating facility provided by the Interconnection Customer. The RGF consist of 2 x GE LM6000 51.309 MVA synchronous gas-fired units with a total assumed dispatch of 98.972/97.1 MW Summer/Winter. The Interconnection Service amount is limited to a summer capacity of 97.488 MW and winter capacity of 95.644 MW at the POI.

Interconnection Facilities

The primary objective of this study is to identify WFEC interconnection facilities. Figure 1 below shows the proposed interconnection facilities for GEN-2023-GR1.

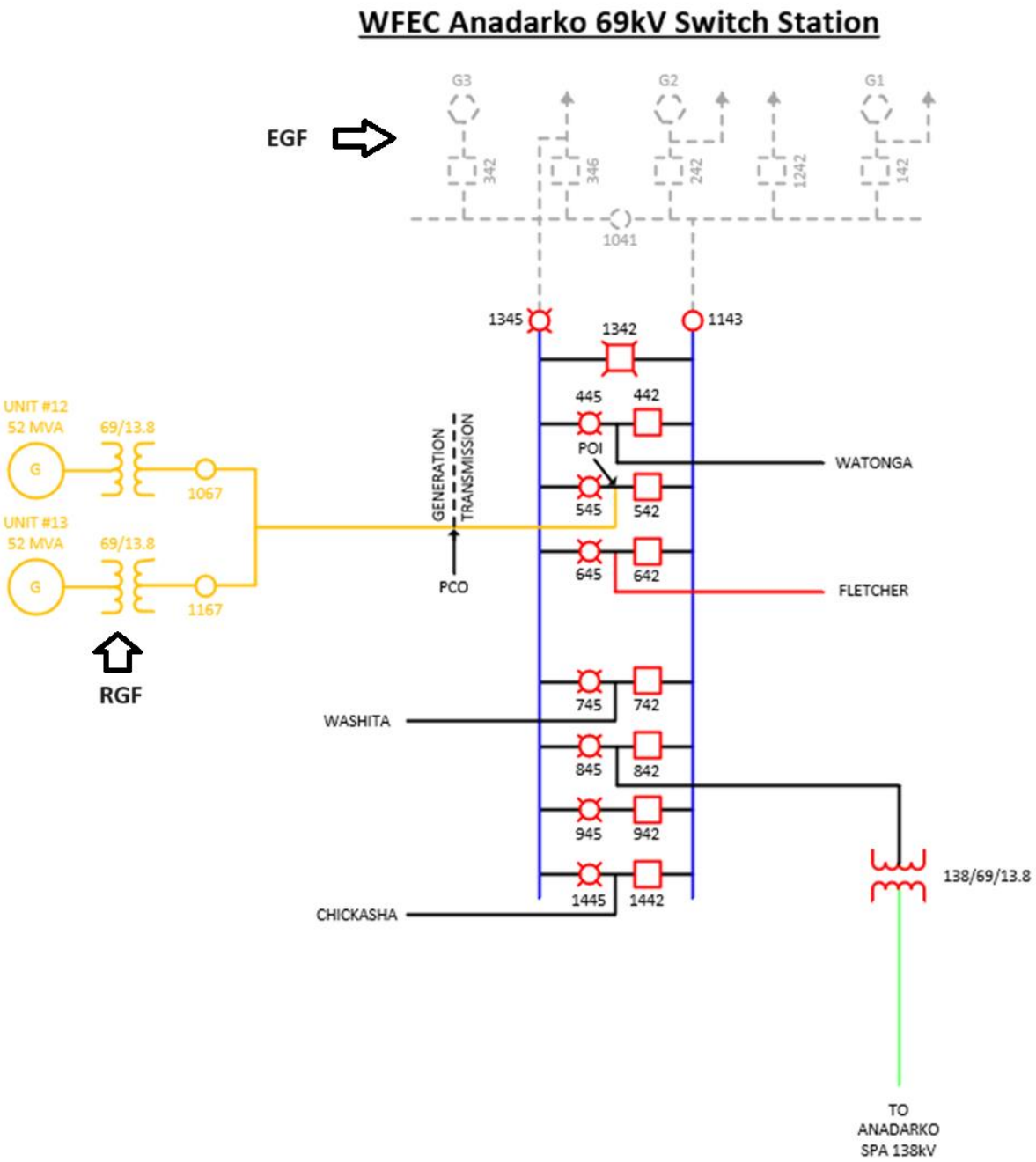

Figure 1: One-line Diagram for GEN-2023-GR1

Interconnection Cost

Table 1: Transmission Owner Interconnection Facilities

Transmission Owner Interconnection Facilities (TOIF)	Cost Estimate ($)	Estimated Lead Time
WFEC Anadarko 69kV Interconnection Switch Station: Upgrade existing terminal with new breaker and relays, and all associated equipment and facilities necessary to accept transmission line from Interconnection Customer's Generating Facility.	**$200,000**	**17 Months**

Table 2: Non-Shared Network Upgrades

Non-Shared Network Upgrades Description	Cost Estimate ($)	Estimated Lead Time
WFEC Anadarko 69kV Interconnection Switch Station: N/A	**$0**	**N/A**