wfec
western farmers
electric cooperative
A Touchstone Energy® Cooperative

INTERCONNECTION FACILITY STUDY

for

Generation Interconnection Request GEN 2023-088

117MW Wind Interconnection
in Okfuskee County, OK.

January 2026

SUMMARY

Pursuant to Attachment V of the tariff and at the request of the Southwest Power Pool (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 Interconnection request GEN-2023-088. The request for interconnection was placed with SPP in accordance with SPP's Open Access Transmission Tariff, which covers new generation interconnections on SPP's transmission system. The requirements for interconnection consist of equipping a new 138kV terminal at the WFEC Pharoah Switch Station. The total interconnection cost for WFEC to accommodate the interconnection request at the 138kV POI is $1,717,000.

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Introduction

The Southwest Power Pool has requested a facility Study for the purpose of interconnecting 117 MW of wind generation within the service territory of WFEC in Okfuskee County, Oklahoma. The proposed 138kV interconnection is to a new terminal at the WFEC Pharoah 138kV Switch Station (35.3574, -96.119969).

The total cost for expanding the switch station and adding a new terminal is $1,717,000.

Network constraints within WFEC may be verified with a transmission service request and associated studies.

Interconnection Facilities

The primary objective of this study is to identify WFEC interconnection facilities. Figure 1 below shows the proposed interconnection of GEN-2025-088.

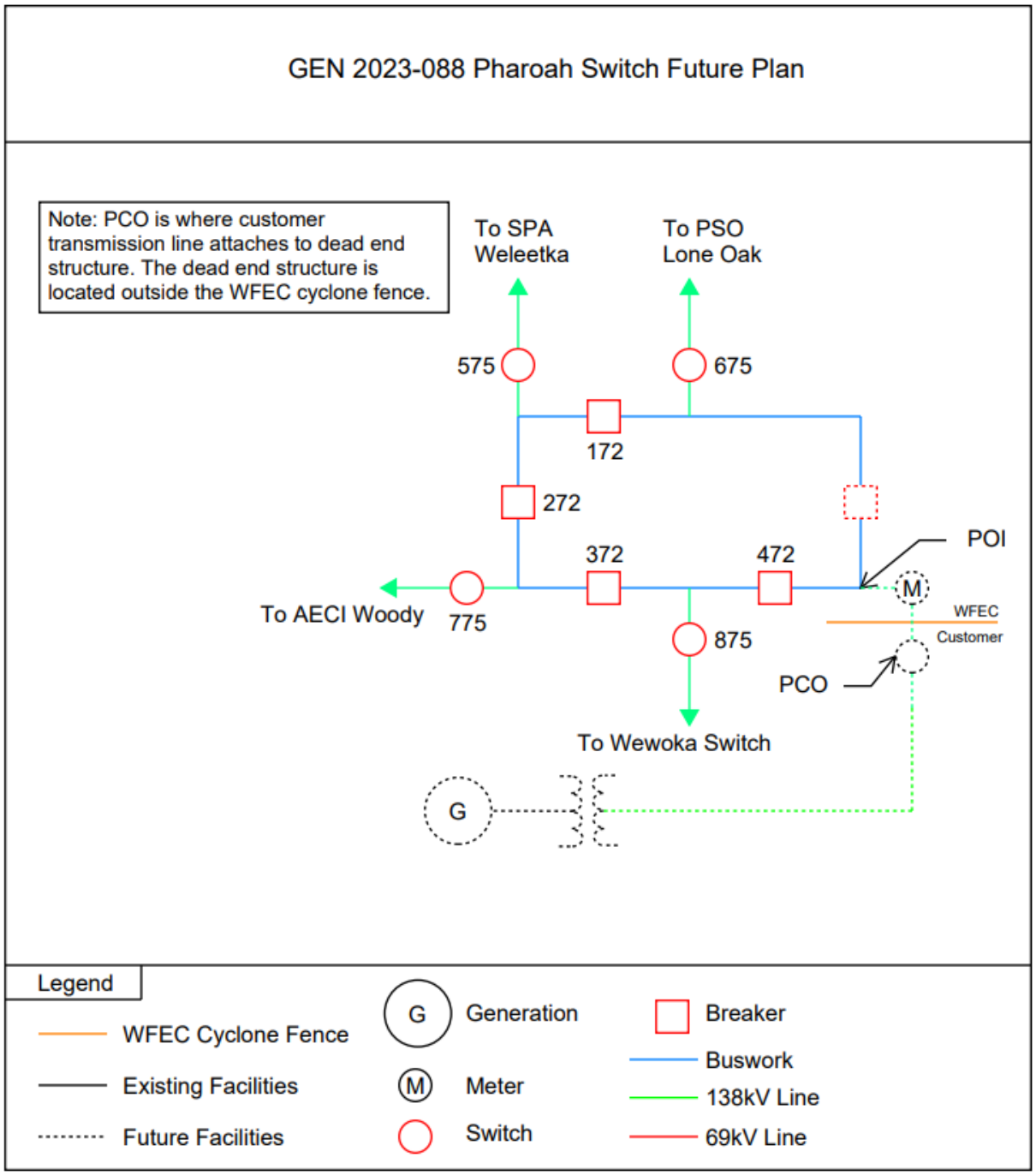

Figure 1: One-line Diagram Facilities for GEN-2023-088

To accommodate an interconnection for GEN 2023-088 WFEC will add breakers and relaying and equip a 5th terminal on the ring bus at Pharoah Switch Station. The customer will construct a new 138kV transmission line from their collector sub to the point of demarcation. WFEC will require the customer to install OPGW for communications from Customer's collector sub to WFEC's switch station.

The total cost for the interconnection facilities at POI is estimated at $1,717,000. This cost does not include the construction of the 138kV line from the customer substation to the point of demarcation at the edge of WFEC's property. The customer is responsible for this 138kV line up to the point of interconnection.

This facility study does not guarantee the availability of transmission service necessary to deliver additional generation to any specific point inside or outside of the SPP transmission system. The transmission network facilities may not be adequate to deliver any additional generation output to the system. If the customer requests firm transmission service under the SPP open access transmission tariff at a future date, Network Upgrades or other new construction may be required to provide the service requested under the SPP OATT.

Short Circuit Fault Duty Evaluation:

It is standard practice for WFEC to recommend replacing a circuit breaker when the current through the breaker for a potential fault exceeds 100% of its interrupting rating, as determined by the ANSI/IEEE standard C37-010-2016 breaker rating methods. Existing levels of available fault current at the Pharoah 138kV station is shown below. A Type 3 (DFIG) Wind Turbine's maximum fault current contribution is estimated at 1.5 times rated current during the subtransient period. This equates to an increase in available fault current of approximately 735A at the POI, so no existing breakers are expected to exceed capacity with the proposed interconnection.

WFEC has evaluated the potential maximum fault current in this area and no issues with short circuit duty ratings are expected on existing WFEC breakers with the proposed interconnection of 117MW of wind generation at Pharoah Switch Station.

Table 1: Canadian Switch Station 138kV Breaker Capacity

BUS	BREAKER	DUTY %	DUTY (A)	BKR CAPACITY (A)
Pharoah Switch Station 138kV	138kV Breakers (x4)	40%	15800 (3LG)	40000

Interconnection Cost

Table 2: Transmission Owner Interconnection Facilities

Transmission Owner Interconnection Facilities (TOIF) **UID: 158822**	**Cost Estimate ($)**	**Estimated Lead Time**
WFEC Pharoah Switch Interconnection Substation: Construct dead end structure, line switches, line relaying, communications, revenue metering, line arrestors, and all associated equipment and facilities necessary to accept transmission line from Interconnection Customer's Generating Facility.	Engineering: $ 42,000 ROW: $ 15,000 Material: $ 230,000 Construction: $ 230,000 **TOTAL: $ 517,000**	**36 Months**

Table 3: Non-Shared Network Upgrades

Non-Shared Network Upgrades Description **UID: 158823**	**Cost Estimate ($)**	**Estimated Lead Time**
WFEC Pharoah Switch Interconnection Substation: Construct breakers, bus rung, switches, foundations, overhead static, ground grid, gravel, grading, line relaying and communications.	Engineering: $ 200,000 ROW: $ 0 Material: $ 500,000 Construction: $ 500,000 **TOTAL: $ 1,200,000**	**36 Months**