INTERCONNECTION FACILITIES STUDY REPORT

GEN-2018-039

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By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION
February 5, 2024	SPP	Initial draft report issued.

CONTENTS

SUMMARY

INTRODUCTION

This Interconnection Facilities Study (IFS) for Interconnection Request GEN-2018-039 is for a 72 MW generating facility located in LaMoure, ND. The Interconnection Request was studied in the DISIS-2018-001 Impact Study for ER/NR. The Interconnection Customer's requested in-service date is December 31, 2028.

The interconnecting Transmission Owner, Western Area Power Administration (WAPA), 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 Twenty (20) 3.6 MW TMEIC Ninja 5 PCS Inverters for a total generating nameplate capacity of 72 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 115 kV transformation substation with associated 34.5 kV and 115 kV switchgear;
- One 115/34.5 kV 48/68/80 MVA (ONAN/ONAF/ONAF) step-up transformer to be owned and maintained by the Interconnection Customer at the Interconnection Customer's substation;
- An Approximately 5.5 miles overhead kV line to connect the Interconnection Customer's substation to the Point of Interconnection ("POI") at the 115 kV bus at existing Transmission Owner substation ("Edgeley 115kV substation") 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 ($)	Allocated Percent (%)	Allocated Cost Estimate ($)
Transmission Owner's Edgeley 115kV Substation GEN-2018-039 Interconnection (TOIF) (WAPA) (UID155905): Facilitate the interconnection of GEN-2018-039 Estimated Lead Time: 55 Months	$3,170,000	100.00%	$3,170,000
Total	**$3,170,000**		**$3,170,000**

Table 2: Non-Shared Network Upgrade(s)

Non-Shared Network Upgrades Description	ILTCR	Total Cost Estimate ($)	Allocated Percent (%)	Allocated Cost Estimate ($)
Transmission Owner's Edgeley 115/69 kV Transformer Replacement (UID158552): Replace the existing 115/69 kV transformer at Edgeley to a minimum rating of 42 MVA Estimated Lead Time: 36 Months	Eligible	$4,390,000	100.00%	$4,390,000
Transmission Owner's Edgeley 115kV Substation Interconnection Expansion (DISIS-2018-001) (UID155906): Facilitate the interconnection of GEN-2018-039 Estimated Lead Time: 55 Months ***Per TO feedback, all costs will be assigned as TOIF**	Ineligible	$0	0%	$0
Total		**$4,390,000**		**$4,390,000**

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 ($)	Allocated Percent (%)	Allocated Cost Estimate ($)
Transmission Owner's Groton to Bristol 115 kV Rebuild (UID158559): Rebuild the existing Groton to Bristol 115 kV 21.3 mile line with a minimum summer emergency rating of 128 MVA Estimated Lead Time: 48 Months	Eligible	$14,565,000	12.53%	$1,825,126
Transmission Owner's Summit to Bristol 115 kV Rebuild (UID158560): Rebuild the existing Summit to Bristol 115 kV 32.56 mile line with a minimum summer emergency rating of 124 MVA Estimated Lead Time: 68 Months	Eligible	$28,559,000	12.53%	$3,578,701
WAPA's Summit to Watertown 115 kV Rebuild (UID158554): Rebuild the existing Summit to Watertown 115 kV 30.7 mile line with a minimum summer emergency rating of 116 MVA Estimated Lead Time: 36 Months ***Per TO feedback, this upgrade is no longer necessary as the current line rating meets the minimum requirement.**	Ineligible	$0	0%	$0
Total		**$43,124,000**		**$5,403,827**

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
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 ($)	Allocated Percent (%)	Allocated Cost Estimate ($)
MPC's Wilton-Winger 230 kV Structure Raises, Maximum conductor rating is 444 MVA	$1,000,000	19.25%	$192,587
MPC's Prairie-Walle 230 kV Structure Raises, Maximum conductor rating is 444 MVA	$500,000	15.56%	$77,819
MPC's Prairie-Lake Ardoch 230 kV Structure Raises, Maximum conductor rating is 444 MVA	$1,000,000	18.15%	$181,512
MPC/OTP's MPC03637POI-Wahpeton 230 kV Structure Raises, Maximum conductor rating is 444 MVA	$1,000,000	100%	$1,000,000
MPC's Winger-Walle 230 kV Structure Raises, Maximum conductor rating is 444 MVA	$1,000,000	15.87%	$158,754
MPC's Drayton-Lake Ardoch 230 kV Structure Raises, Maximum conductor rating is 444 MVA	$1,000,000	18.62%	$186,202
OTP's State-State Non-Convergence Audubon MSC: 1x50230 MVAR	$1,000,000	21.28%	$212,860
XEL's Steady-State Voltage Bison 345 kV MSC: Additional 1x75 MVAR	$1,500,000	21.28%	$319,290
OTP's Steady-State Voltage Audubon 230 kV MSC: 2x50 MVAR	$2,000,000	21.28%	$425,721
Total	**$10,000,000**		**$2,754,745**

CONCLUSION

After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 72 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)	$3,170,000
Non-Shared Network Upgrade(s)	$4,390,000
Shared Network Upgrade(s)	$5,403,827
Affected System Upgrade(s)	$2,754,745
Total	**$15,718,572**

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 60 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 Facilities Study Report

Southwest Power Pool, Inc. (SPP) Generator Interconnection Request GEN-2018-039

(DISIS-2018-001)

Western Area Power Administration

Upper Great Plains Region (WAPA-UGP)

December 2023

1.0 Background:

The Western Area Power Administration Upper Great Plains Region (WAPA-UGP[1]) received a request for an Interconnection Facilities Study in accordance with the Southwest Power Pool Inc. (SPP) Open Access Transmission Tariff (Tariff) for interconnection of a Generating Facility in LaMoure County, North Dakota to WAPA-UGP's Edgeley Substation. SPP generator interconnection request GEN-2018-039 represents a 72 MW nameplate solar generation facility with the Point of Interconnection (POI) at the 115-kV bus of WAPA-UGP's Edgeley Substation.

The Generating Facility's collector substation will be located in close proximity to the proposed POI at WAPA-UGP'S Edgeley Substation. The collector station will consist of a 115/34.5-kV transformer and multiple 34.5-kV feeders. The Interconnection Customer (IC) will construct, own, and maintain a 5.5 mile long 115-kV tie-line between the collector substation and WAPA-UGP's Edgeley Substation. The POI will be at the 115-kV bus at WAPA-UGP 's Edgeley Substation. The Point of Change of Ownership between IC and WAPA-UGP will be at the points where IC's 115-kV conductors, jumpers, and insulators connect to WAPA-UGP's 115-kV take-off structure and the rigid bus underhung from the 115-kV take-off structure, as illustrated in Attachment B.

This Facilities Study does not address transmission service or any delivery component of transmission service; only the interconnection requirements and operating impacts of the interconnection service component of the Generating Facility.

2.0 Study Requirements:

This Facilities Study includes an evaluation of the following:

2.1 Prepare/develop a substation layout, perform a preliminary bus design, and determine all electrical equipment requirements to accommodate the request. Develop/compile cost estimates for all WAPA-UGP labor, overheads, equipment additions, modifications, etc. to accommodate the generator interconnection.

2.2 Review and document any other interconnection/control area requirements. Document these additional requirements (such as indication/metering, monitoring, control, relaying) and include these in the cost estimate.

2.3 Determination of need to develop an Operating Guide for WAPA-UGP's Dispatch to document the conditions under which the new Generating Facility must be operated to protect against unacceptable pre- or post-contingent transient voltage and loading conditions.

2.4 Develop an overall time schedule for completion of the necessary addition/modifications.

3.0 Study Results:

[1] WAPA-UGP is also referred to as "Western-UGP" in the SPP Tariff.

The following results document the analysis of the addition of the Generating Facility to WAPA-UGP's transmission system and fulfill the tasks outlined in Section 2.0 above:

3.1 Required Facility Upgrades by WAPA-UGP: WAPA-UGP has determined that following additions are required to maintain a safe and reliable interconnection to WAPA-UGP's transmission system:

- A new 115-kV main and transfer line bay at WAPA-UGP's Edgeley Substation which will require one (1) 115-kV power circuit breaker, three (3) 115-kV disconnect switches, instrument transformers, associated control and protection equipment, high voltage bus, one (1) transmission line take-off-structure, conductor, communication equipment, and a yard expansion.

WAPA-UGP's estimated cost for labor, overhead, equipment, construction, and other miscellaneous costs for the additions to WAPA-UGP's Edgeley Substation are outlined in Attachment A. The total cost is estimated at $3,170,000.

3.1.1 Transmission Owner's Interconnection Facilities (TOIF): All the **Required Facility Upgrades by WAPA-UGP** listed above in 3.1 are for the sole purpose of this interconnection, and considered TOIF. TOIF is considered direct assigned costs to the IC and not subject to inclusion as Network Upgrades. The direct assigned costs for TOIF are estimated at $3,170,000 and are included in the total cost estimate provided in Attachment A.

3.1.2 Non-Shared Network Upgrades constructed by Transmission Owner (TO): n/a

3.2 Contractual Agreements:

Pursuant to the SPP Tariff, SPP and WAPA-UGP, as TO, will need to execute a GIA (or initially an Interim GIA, if applicable, with a subsequent execution of a GIA) with the IC for the interconnection of the Generating Facility. The GIA will address specific funding requirements and provide an advanced payment schedule for facility additions and upgrades to address WAPA-UGP's requirements. The GIA, which discusses the construction and interconnection aspects of this project, will need to be developed and offered by SPP, pursuant to their obligations and procedures under the SPP Tariff, and forwarded to the IC and WAPA-UGP for review and signature. A payment schedule based on design, procurement, and construction activities will be included in the GIA consistent with the SPP Tariff provisions. Upon completion of the work WAPA-UGP will own, operate, and maintain the modifications and improvements to WAPA-UGP's Edgeley Substation

3.3 Other Interconnection, Metering Requirements:

Basic indication, monitoring, control, and relaying requirements due to a generator interconnection are included in the cost estimate. A list of specific needs will be provided by WAPA-UGP's Operations Office and WAPA-UGP's North Dakota Maintenance Office once design has progressed.

IC shall install metering at their 115/34.5-kV collector substation in accordance with SPP and WAPA-UGP metering requirements. WAPA-UGP's generation metering requirements, as the TO, must be also met, unless specific SPP metering requirements are more restrictive, in accordance with the most current ***Western Area Power Administration Meter Policy*** posted at the "WAPA Meter Policy" link at the following page:
http://www.oasis.oati.com/WAPA/WAPAdocs/Western-Common-Business-Practices.html

Any WAPA-UGP specific implementation of more restrictive SPP metering requirements are also posted on WAPA-UGP's OASIS home page under the "Effective Business Practices" folder at the "UGP Meter Policy Modifications" link at the following URL:
http://www.oasis.oati.com/wapa/index.html

WAPA-UGP's ***General Requirements for Interconnection*** must also be met in accordance with the *General Requirements for Interconnection* document posted at the "General Requirements for Interconnection (GRI)" link at the following page:
http://www.oasis.oati.com/WAPA/WAPAdocs/Western-Common-Business-Practices.html

3.4 Operating Guide/Operating Agreement:

Prior to energization, an Operating Guide will need to be developed by WAPA-UGP in coordination with SPP, if necessary, to outline any required operating restrictions under which the generation interconnection must be energized (or de-energized) to protect against unacceptable system stability limits and/or pre-contingent and post-contingent voltage and loading conditions. The Operating Guide will be developed by WAPA-UGP's Transmission System Planning Division in coordination with SPP Staff. In addition, an Operating Agreement will be developed by WAPA-UGP's Operations Office, jointly with the IC and SPP, if necessary, as will be set forth in the GIA to outline the necessary operations coordination and requirements not otherwise set forth in the GIA.

3.5 Schedule:

Attachment A outlines WAPA-UGP's estimated schedule for planning, design and construction of the facilities required to accommodate the IC's Request. WAPA-UGP anticipates the new 115-kV line bay at Edgeley Substation would be completed by September 30, 2028. This schedule is based on the GIA (or Interim GIA) being executed prior to March 15, 2024, and issuance of the NEPA Finding of No Significant Impact or Record of Decision by February 28, 2026. The schedule is also dependent on outage availability.

3.6 Environmental Review:

WAPA-UGP is a federal agency under the U.S. Department of Energy and is subject to the National Environmental Policy Act (NEPA), 42 U.S.C §4321, et seq., as amended. The Environmental Review for this project, as described in Attachment V, Sections 3.3.5, and 8.6.1, and any other applicable sections of the SPP Tariff, will be coordinated between WAPA-UGP and the IC. WAPA-UGP anticipates an Environmental Assessment level of NEPA review. The Environmental Review is performed at the IC's expense, and those costs are considered direct assigned costs and are ineligible for credits under the SPP Tariff. Until the appropriate NEPA review is completed (issuance of a FONSI, ROD, or other), no construction activities relating to the TO's Network Upgrades may commence.

4.0 <u>Facilities Study Cost:</u>

WAPA-UGP will audit the Interconnection Facilities Study costs and provide a summary of costs once the study is completed or the interconnection request is withdrawn.

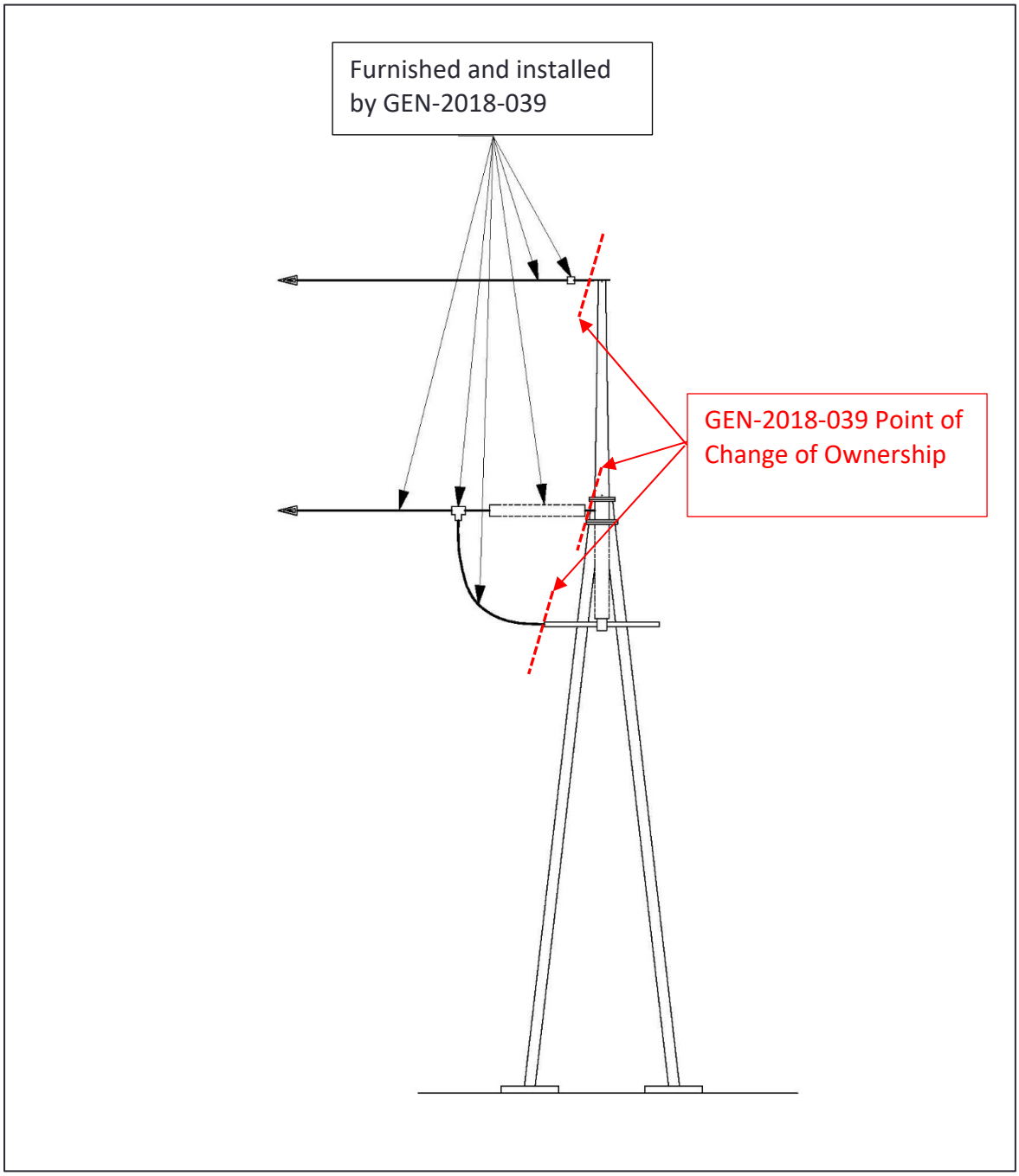
ATTACHMENT A

115-KV LINE BAY ADDITION
AT WAPA-UGP'S EDGELEY SUBSTATION

PROJECT ACTIVITY	ESTIMATED START DATE	ESTIMATED COST, MILESTONE PAYMENT DUE
Preconstruction activities – planning, project management, etc.	30 Calendar Days Following GIA Execution*	$140,000
Provide staff and other resources to engineer, design, and plan construction	30 Calendar Days Following GIA Execution*	$280,000
Procure equipment, parts, and control equipment necessary to construct	January 15, 2025**	$480,000
Development, Solicitation, and Award of Construction Contract(s)	March 1, 2026	$2,000,000
WAPA-UGP Construction Administration	October 1, 2026	$50,000
Commissioning, Energization, and construction supervision	May 1, 2027	$220,000
In-Service (Estimated Completion Date)	Sept 30, 2028	
TOTAL ESTIMATED COSTS		$3,170,000***

*Assumes Execution of GIA NLT March 15, 2024.
**Assumes breaker lead time of 152 weeks after purchase award.
***Includes TOIF costs estimated at $3,170,000 and Non-Shared Network Upgrades constructed by Transmission Owner costs estimated at $0.

ATTACHMENT B



Network Upgrade Facilities Study Report

Southwest Power Pool, Inc. DISIS-2018-001

Edgeley 115/69-kV Transformer Upgrade

(DISIS-2018-001)

Western Area Power Administration

Upper Great Plains Region (WAPA-UGP)

December 2023

1.0 Background:

The Western Area Power Administration Upper Great Plains Region (WAPA-UGP[1]) received a request from for a Network Upgrade Facilities Study in accordance with the Southwest Power Pool Inc. (SPP) Open Access Transmission Tariff (Tariff). The SPP DISIS-2018-001 study identified the need to increase the rating of the 115/69-kV transformer located in WAPA-UGP's Edgeley Substation. WAPA-UGP's understanding is that this Network Upgrade has been 100% allocated to SPP generator interconnection request GEN-2018-039, and that the Point of Interconnection (POI) for GEN-2018-039 will be at WAPA-UGP's Edgeley Substation.

This Network Upgrade Facilities Study does not address transmission service or any delivery component of transmission service.

2.0 Study Requirements:

This Facilities Study includes an evaluation of the following:

2.1 Prepare/develop a substation layout, perform a preliminary bus design, and determine all electrical equipment requirements to accommodate the request. Develop/compile cost estimates for all WAPA-UGP labor, overheads, equipment additions, modifications, etc. to accommodate the generator interconnection.

2.2 Review and document any other interconnection/control area requirements. Document these additional requirements (such as indication/metering, monitoring, control, relaying) and include these in the cost estimate.

2.3 Determination of need to develop an Operating Guide for WAPA-UGP's Dispatch to document the conditions under which the new Generating Facility must be operated to protect against unacceptable pre- or post-contingent transient voltage and loading conditions.

2.4 Develop an overall time schedule for completion of the necessary addition/modifications.

3.0 Study Results:

The following results document the analysis of the addition of the Generating Facility to WAPA-UGP's transmission system and fulfill the tasks outlined in Section 2.0 above:

3.1 Required Facility Upgrades by WAPA-UGP: WAPA-UGP has determined that following additions are required to maintain a safe and reliable interconnection to WAPA-UGP's transmission system:

[1] WAPA-UGP is also referred to as "Western-UGP" in the SPP Tariff.

- Upgrade the existing 30 MVA 115/69-kV transformer to achieve a minimum rating of 42 MVA and associated protection and control modifications.
- Modifications to the 115-kV bus and tertiary bus connections to accommodate a larger transformer.
- Replace foundations and oil containment structure.
- Upgrade 4/0 AWG copper bus located in the 69-kV box structure.

WAPA-UGP's estimated cost for labor, overhead, equipment, construction, and other miscellaneous costs for the upgrades to WAPA-UGP's Edgeley Substation are outlined in Attachment A. The total cost is estimated at $4,390,000.

3.2 Contractual Agreements:

Pursuant to the SPP Tariff, SPP and WAPA-UGP will need to execute a GIA (or initially an Interim GIA, if applicable, with a subsequent execution of a GIA) with the Interconnection Customer(s) (IC) responsible for the interconnection of the Generating Facility(ies) responsible for this Network Upgrade and the associated upgrades outlined in Paragraph 3.1. The GIA will address specific funding requirements and provide a payment schedule for this Network Upgrade and the associated upgrades to address WAPA-UGP's requirements. The GIA, which discusses the construction and interconnection aspects of this project, will need to be developed and offered by SPP, pursuant to their obligations and procedures under the SPP Tariff, and forwarded to the IC and WAPA-UGP for review and signature. A payment schedule based on design, procurement, and construction activities will be included in the GIA consistent with the SPP Tariff provisions. The IC will be responsible for the actual costs for this Network Upgrade and the associated upgrades at WAPA-UGP's Edgeley Substation and WAPA-UGP will require advance funding to proceed with the project. Upon completion of the work WAPA-UGP will own, operate, and maintain the modifications and improvements to WAPA-UGP's Edgeley Substation.

3.3 Interconnection/Control Area Requirements: N/A

3.4 Schedule:

Attachment A outlines WAPA-UGP's estimated schedule for planning, design and construction of the facilities required to accommodate the necessary Network Upgrades. WAPA-UGP anticipates the transformer upgrades at WAPA-UGP's Edgeley Substation would be completed by December 2028. This schedule is based on the GIA (or Interim GIA) being executed prior to March 15, 2024, and issuance of the NEPA Finding of No Significant Impact or Record of Decision by February 28, 2026. The schedule is also dependent on outage availability.

3.5 Environmental Review:

WAPA-UGP is a federal agency under the U.S. Department of Energy and is subject to the National Environmental Policy Act (NEPA), 42 U.S.C §4321, et seq., as amended. The

Environmental Review for this project, as described in Attachment V, Sections 3.3.5, and 8.6.1, and any other applicable sections of the SPP Tariff, will be coordinated between WAPA-UGP and the customer. WAPA-UGP anticipates an Environmental Assessment level of NEPA review. The Environmental Review is performed at the IC's expense, and those costs are considered direct assigned costs and are ineligible for credits under the SPP Tariff. Until the appropriate NEPA review is completed (issuance of a FONSI, ROD, or other), no construction activities relating to this Network Upgrade and the associated upgrades may commence.

4.0 Facilities Study Cost:

WAPA-UGP will audit the Interconnection Facilities Study costs and provide a summary of costs once the study is completed or the interconnection request is withdrawn.

ATTACHMENT A

115-KV TRANSFORMER UPGRADES
AT WAPA-UGP'S EDGELEY SUBSTATION

PROJECT ACTIVITY	ESTIMATED START DATE	ESTIMATED COST, MILESTONE PAYMENT DUE
Preconstruction activities – planning, project management, etc.	30 Calendar Days Following GIA Execution*	$70,000
Provide staff and other resources to engineer, design, and plan construction	30 Calendar Days Following GIA Execution*	$220,000
Procure equipment, parts, and control equipment necessary to construct	Nov 15, 2024**	$2,480,000
Development, Solicitation, and Award of Construction Contract(s)	July 1, 2027	$1,400,000
WAPA-UGP Construction Administration	January 1, 2028	$30,000
Commissioning, Energization, and construction supervision	September 1, 2028	$190,000
In-Service (Estimated Completion Date)	December 1, 2028	
TOTAL ESTIMATED COSTS		$4,390,000***

*Assumes Execution of GIA NLT March 15, 2024.
**Assumes transformer delivery lead time of 180 weeks after purchase award.
***Based on WAPA-UGP's understanding of the SPP Tariff, these Network Upgrades are considered Capacity Network Upgrades and would be evaluated under Attachment Z2 of the SPP Tariff as Capacity Network Upgrades.

Network Upgrade Facilities Study Report

Southwest Power Pool, Inc. DISIS-2018-001

Groton-Bristol 115-kV

Transmission Line Rebuild

(DISIS-2018-001)

Western Area Power Administration

Upper Great Plains Region (WAPA-UGP)

December 2023

1.0 Background:

The Western Area Power Administration Upper Great Plains Region (WAPA-UGP[1]) received a request from for a Network Upgrade Facilities Study in accordance with the Southwest Power Pool Inc. (SPP) Open Access Transmission Tariff (Tariff). The SPP DISIS-2018-001 study identified the need to increase the rating of the WAPA-UGP Groton-Bristol 115-kV Transmission Line. WAPA-UGP's understanding is that this Network Upgrade has been allocated between SPP generator interconnection requests GEN-2018-039 and GEN-2018-008. The Point of Interconnection (POI) for GEN-2018-039 will be at WAPA-UGP's Edgeley Substation. The POI for GEN-2018-008 will at a Basin Electric Power Cooperative owned facility.

This Network Upgrade Facilities Study does not address transmission service or any delivery component of transmission service.

2.0 Study Requirements:

This Facilities Study includes an evaluation of the following:

2.1 Prepare/develop a substation layout, perform a preliminary bus design, and determine all electrical equipment requirements to accommodate the request. Develop/compile cost estimates for all WAPA-UGP labor, overheads, equipment additions, modifications, etc. to accommodate the generator interconnection.

2.2 Review and document any other interconnection/control area requirements. Document these additional requirements (such as indication/metering, monitoring, control, relaying) and include these in the cost estimate.

2.3 Determination of need to develop an Operating Guide for WAPA-UGP's Dispatch to document the conditions under which the new Generating Facility must be operated to protect against unacceptable pre- or post-contingent transient voltage and loading conditions.

2.4 Develop an overall time schedule for completion of the necessary addition/modifications.

3.0 Study Results:

The following results document the analysis of the addition of the Generating Facility to WAPA-UGP's transmission system and fulfill the tasks outlined in Section 2.0 above:

3.1 Required Facility Upgrades by WAPA-UGP: WAPA-UGP has determined that following additions are required to maintain a safe and reliable interconnection to WAPA-UGP's transmission system:

[1] WAPA-UGP is also referred to as "Western-UGP" in the SPP Tariff.

- Rebuild the 21.3-mile Groton-Bristol 115-kV Transmission Line

The line rebuild will require new structures and conductor along the existing right-of-way to achieve the required rating of 139 MVA.

WAPA-UGP is not the Transmission Owner (TO) of the Bristol Substation terminal equipment and bus.

WAPA-UGP's estimated cost for labor, overhead, materials, construction, and other miscellaneous costs to rebuild WAPA-UGP's Groton-Bristol 115-kV Transmission Line is outlined in Attachment A. The total cost is estimated at $14,565,000.

3.2 Contractual Agreements:

Pursuant to the SPP Tariff, SPP and the POI TOs will need to execute Generator Interconnection Agreements (GIAs) (or initially an Interim GIA, if applicable, with a subsequent execution of a GIA) with Interconnection Customer (IC) for the interconnection of the Generating Facilities. WAPA-UGP's understanding is that after execution of the GIAs, SPP will issue a Notice to Construct (NTC) to WAPA-UGP for the portion of this Network Upgrade not allocated within a GIA to the IC. A Facilities Construction Agreement (FCA) will need to be executed between WAPA-UGP, SPP, and the IC. The GIA and FCA, which discuss the construction and interconnection aspects of this project, will need to be developed and offered by SPP, pursuant to their obligations and procedures under the SPP Tariff, and forwarded to the Network Upgrade TO and IC for review and signature. A payment schedule based on design, procurement, and construction activities will be included in the GIA and FCA consistent with the SPP Tariff provisions. The IC(s) will be responsible for the actual costs associated with the upgrades to WAPA-UGP'S Groton-Bristol 115-kV Transmission Line, and WAPA-UGP will require advance funding to proceed with the project. Upon completion of the work WAPA-UGP will own, operate, and maintain the modifications and improvements to WAPA-UGP's transmission line.

3.3 Interconnection/Control Area Requirements: N/A

3.4 Schedule:

Attachment A outlines WAPA-UGP's estimated schedule for planning, design and construction of the facilities required to accommodate the necessary Network Upgrades. WAPA-UGP anticipates the rebuild of the Groton-Bristol 115-kV Transmission Line would be completed by March 2028. This schedule is based on the GIA and FCA being executed prior to March 15, 2024, and issuance of the NEPA Finding of No Significant Impact or Record of Decision by February 28, 2026. The schedule is also dependent on outage availability.

3.5 Environmental Review:

WAPA-UGP is a federal agency under the U.S. Department of Energy and is subject to the National Environmental Policy Act (NEPA), 42 U.S.C §4321, et seq., as amended. The Environmental Review for this project, as described in Attachment V, Sections 3.3.5, and 8.6.1, and any other applicable sections of the SPP Tariff, will be coordinated between WAPA-UGP and the customer. WAPA-UGP anticipates an Environmental Assessment level of NEPA review. The Environmental Review is performed at the IC's expense, and those costs are considered direct assigned costs and are ineligible for credits under the SPP Tariff. Until the appropriate NEPA review is completed (issuance of a FONSI, ROD, or other), no construction activities relating to this Network Upgrade and the associated upgrades may commence.

4.0 <u>Facilities Study Cost:</u>

WAPA-UGP will audit the Interconnection Facilities Study costs and provide a summary of costs once the study is completed or the interconnection request is withdrawn.

ATTACHMENT A

REBUILD WAPA-UGP'S GROTON-BRISTOL
115-KV TRANSMISSION LINE

PROJECT ACTIVITY	ESTIMATED START DATE	ESTIMATED COST, MILESTONE PAYMENT DUE
Preconstruction activities – planning, project management, etc.	30 Calendar Days Following GIA and FCA Execution*	$250,000
Provide staff and other resources to engineer, design, and plan construction	30 Calendar Days Following GIA and FCA Execution*	$455,000
Development, Solicitation, and Award of Construction Contract(s)	November 1, 2026	$13,390,000
WAPA-UGP Construction Administration	June 1, 2026	$150,000
Commissioning, Energization, and construction supervision	March 1, 2027	$320,000
In-Service (Estimated Completion Date)	March 15, 2028	
TOTAL ESTIMATED COSTS		$14,565,000**

*Assumes Execution of GIA and FCA NLT March 15, 2024.

**Based on WAPA-UGP's understanding of the SPP Tariff, these Network Upgrades are considered Capacity Network Upgrades and would be evaluated under Attachment Z2 of the SPP Tariff as Capacity Network Upgrades.

Network Upgrade Facilities Study Report

Southwest Power Pool, Inc. DISIS-2018-001

Summit-Bristol 115-kV

Transmission Line Rebuild

(DISIS-2018-001)

Western Area Power Administration

Upper Great Plains Region (WAPA-UGP)

December 2023

1.0 Background:

The Western Area Power Administration Upper Great Plains Region (WAPA-UGP[1]) received a request from for a Network Upgrade Facilities Study in accordance with the Southwest Power Pool Inc. (SPP) Open Access Transmission Tariff (Tariff). The SPP DISIS-2018-001 study identified the need to increase the rating of the WAPA-UGP Summit-Bristol 115-kV Transmission Line. WAPA-UGP's understanding is that this Network Upgrade has been allocated between SPP generator interconnection requests GEN-2018-039 and GEN-2018-008. The Point of Interconnection (POI) for GEN-2018-039 will be at WAPA-UGP's Edgeley Substation. The POI for GEN-2018-008 will be at a Basin Electric Power Cooperative (BEPC) owned facility.

This Network Upgrade Facilities Study does not address transmission service or any delivery component of transmission service.

2.0 Study Requirements:

This Facilities Study includes an evaluation of the following:

2.1 Prepare/develop a substation layout, perform a preliminary bus design, and determine all electrical equipment requirements to accommodate the request. Develop/compile cost estimates for all WAPA-UGP labor, overheads, equipment additions, modifications, etc. to accommodate the generator interconnection.

2.2 Review and document any other interconnection/control area requirements. Document these additional requirements (such as indication/metering, monitoring, control, relaying) and include these in the cost estimate.

2.3 Determination of need to develop an Operating Guide for WAPA-UGP's Dispatch to document the conditions under which the new Generating Facility must be operated to protect against unacceptable pre- or post-contingent transient voltage and loading conditions.

2.4 Develop an overall time schedule for completion of the necessary addition/modifications.

3.0 Study Results:

The following results document the analysis of the addition of the Generating Facility to WAPA-UGP's transmission system and fulfill the tasks outlined in Section 2.0 above:

3.1 Required Facility Upgrades by WAPA-UGP: WAPA-UGP has determined that following additions are required to maintain a safe and reliable interconnection to WAPA-UGP's transmission system:

[1] WAPA-UGP is also referred to as "Western-UGP" in the SPP Tariff.

- Rebuild the 32.56-mile Summit-Bristol 115-kV Transmission Line

The line rebuild will require new structures and conductor along the existing right-of-way to achieve the required rating of 136 MVA.

WAPA-UGP is not the Transmission Owner (TO) of the Bristol Substation terminal equipment and bus.

WAPA-UGP's estimated cost for labor, overhead, materials, construction, and other miscellaneous costs to rebuild WAPA-UGP's Summit-Bristol 115-kV Transmission is outlined in Attachment A. The total cost is estimated at $28,559,000.

3.2 Contractual Agreements:

Pursuant to the SPP Tariff, SPP and the Point of Interconnection (POI) TOs will need to execute Generator Interconnection Agreements (GIAs) (or initially an Interim GIA, if applicable, with a subsequent execution of a GIA) with Interconnection Customer (IC) for the interconnection of the Generating Facilities. WAPA-UGP's understanding is that after execution of the GIAs, SPP will issue a Notice to Construct (NTC) to WAPA-UGP for the portion of a Network Upgrade not allocated within a GIA to the IC. A Facilities Construction Agreement (FCA) will need to be executed between WAPA-UGP, SPP, and the IC after acceptance of the NTC. The GIA and FCA, which discuss the construction and interconnection aspects of this project, will need to be developed and offered by SPP, pursuant to their obligations and procedures under the SPP Tariff, and forwarded to the Network Upgrade TO and IC(s) for review and signature. A payment schedule based on design, procurement, and construction activities will be included in the GIA and FCA consistent with the SPP Tariff provisions. The IC(s) will be responsible for the actual costs associated with the upgrades to WAPA-UGP'S Summit-Bristol 115-kV Transmission Line, and WAPA-UGP will require advance funding to proceed with the project. Upon completion of the work WAPA-UGP will own, operate, and maintain the modifications and improvements to WAPA-UGP's Summit-Bristol 115-kV Transmission Line.

3.3 Interconnection/Control Area Requirements: N/A

3.4 Schedule:

Attachment A outlines WAPA-UGP's estimated schedule for planning, design and construction of the facilities required to accommodate the necessary Network Upgrades. WAPA-UGP anticipates the rebuild of the Summit-Bristol 115-kV Transmission Line would be completed by August 2028. This schedule is based on the GIA and FCA being executed prior to March 15, 2024, and issuance of the NEPA Finding of No Significant Impact or Record of Decision by February 28, 2026. The schedule is also dependent on outage availability.

3.5 Environmental Review:

WAPA-UGP is a federal agency under the U.S. Department of Energy and is subject to the National Environmental Policy Act (NEPA), 42 U.S.C §4321, et seq., as amended. The Environmental Review for this project, as described in Attachment V, Sections 3.3.5, and 8.6.1, and any other applicable sections of the SPP Tariff, will be coordinated between WAPA-UGP and the customer. WAPA-UGP anticipates an Environmental Assessment level of NEPA review. The Environmental Review is performed at the IC's expense, and those costs are considered direct assigned costs and are ineligible for credits under the SPP Tariff. Until the appropriate NEPA review is completed (issuance of a FONSI, ROD, or other), no construction activities relating to this Network Upgrade and the associated upgrades may commence.

4.0 <u>Facilities Study Cost:</u>

WAPA-UGP will audit the Interconnection Facilities Study costs and provide a summary of costs once the study is completed or the interconnection request is withdrawn.

ATTACHMENT A

REBUILD WAPA-UGP'S SUMMIT-BRISTOL
115-KV TRANSMISSION LINE

PROJECT ACTIVITY	ESTIMATED START DATE	ESTIMATED COST, MILESTONE PAYMENT DUE
Preconstruction activities – planning, project management, etc.	30 Calendar Days Following GIA and FCA Execution*	$237,000
Provide staff and other resources to engineer, design, and plan construction	30 Calendar Days Following GIA and FCA Execution*	$407,000
Procure equipment, parts, and control equipment necessary to construct	Nov 15, 2024	$4,130,000
Development, Solicitation, and Award of Construction Contract(s)	November 1, 2026	$23,198,000
WAPA-UGP Construction Administration	June 1, 2026	$150,000
Commissioning, Energization, and construction supervision	January 1, 2028	$437,000
In-Service (Estimated Completion Date)	December 1, 2029	
TOTAL ESTIMATED COSTS		$28,559,000**

*Assumes Execution of GIA and FCA NLT March 15, 2024.

**Based on WAPA-UGP's understanding of the SPP Tariff, these Network Upgrades are considered Capacity Network Upgrades and would be evaluated under Attachment Z2 of the SPP Tariff as Capacity Network Upgrades.