INTERCONNECTION FACILITIES STUDY REPORT

GEN-2020-014

Published November 2021

By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION
10/27/2021	SPP	Initial draft report issued.
11/02/2021	SPP	Updated report posted as final.

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SUMMARY

INTRODUCTION

This Interconnection Facilities Study (IFS) for Interconnection Request GEN-2020-014 is for a 45 MW generating facility located in Alexander, North Dakota. The Interconnection Request was studied in the 2020 Interim and Limited Operation Impact Study for ERIS and NRIS interim service. The Interconnection Customer's requested in-service date is June 17th, 2021. The interconnecting Transmission Owner, Basin Electric Power Cooperative (BEPC), performed a detailed IFS at the request of SPP. The full report is included in Appendix A. SPP has determined that 28 MW of ERIS interim service and 0 MW of NRIS interim service is available. There are no interconnection costs, since Lonesome Creek Station Unit 6 will be connected to an existing 115kV bus shared by Unit 4 and 5. This connection is already funded and in-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 a thermal generation plant for a total generating nameplate capacity of 45 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:

- One (1) step-up transformer to be owned and maintained by the Interconnection Customer at the Interconnection Customer's substation;
- A 115kV line to connect the Interconnection Customer's substation to the Point of Interconnection ("POI") at the 115 kV bus at existing Transmission Owner substation ("Lonesome Creek 115kV") 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
Lonesome Creek 115kV GEN-2020-014 Interconnection (TOIF) (BEPC) (144258): None	$0	N/A	$0	N/A
Total	**$0**		**$0**	

Table 2: Non-Shared Network Upgrade(s)

Non-Shared Network Upgrades Description	ILTCR	Total Cost Estimate ($)	Allocated Percent (%)	Allocated Cost Estimate ($)	Estimated Lead Time
Lonesome Creek 115kV GEN-2020-014 Interconnection (Non-Shared NU) (BEPC) (144259): None	Ineligible	$0	N/A	$0	N/A
Total		**$0**		**$0**	

*There are no interconnection costs, since Lonesome Creek Station Unit 6 will be connected to an existing 115kV bus shared by Unit 4 and 5. This connection is already funded and in-service.

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	N/A	$0	N/A	$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 MISO 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	N/A	$0
Total	$0		$0

CONCLUSION

After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 28 MW of ERIS service can be granted. The Interconnection Customer's estimated cost responsibility that is required for full interconnection service is summarized in the table below.

Table 6: Cost Summary

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

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).

Basin Electric Power Cooperative
Facility Study Report
UID-144258/144259

1. Background:

1.1 Per the recently completed Southwest Power Pool (SPP) 2020 Impact Group 16 Limited and Interim Operation Study, SPP requests that Basin Electric Power Cooperative (BEPC) perform a facilities study for the following Interconnection and/or Network Upgrade(s):

Interconnection Upgrade	144258	Lonesome Creek 115kV GEN-2020-014 Interconnection (TOIF) (BEPC)	Interconnection upgrades and cost estimates needed to interconnect the following Interconnection Customer facility, GEN-2020-014 (45 MW/Gas), into the Point of Interconnection (POI) at Lonesome Creek 115kV	TBD	TBD
Interconnection Upgrade	144259	Lonesome Creek 115kV GEN-2020-014 Interconnection (Non-Shared NU) (BEPC)	Interconnection upgrades and cost estimates needed to interconnect the following Interconnection Customer facility, GEN-2020-014 (45 MW/Gas), into the Point of Interconnection (POI) at Lonesome Creek 115kV	TBD	TBD

2. Study Requirements:

BEPC has completed this Facility Study report for the Interconnection and/or Network Upgrade(s) as described in Section 1.

2.1. The Facility Study report includes an evaluation of the following:

2.1.1. Perform/develop a substation layout, perform a preliminary design, determine all electrical equipment requirements, and if required determine a suitable site location to accommodate the Interconnection and/or Network Upgrade(s). Develop/compile cost estimates for all BEPC labor, overheads, equipment additions, modifications, etc. to accommodate the Interconnection and/or Network Upgrade(s).

2.1.2. Develop an overall construction schedule for completion of the necessary additions and/or modifications.

3. Study Results for UID-144258/144259:

3.1. The following results document the analysis of the required facilities for this Upgrade Request as outlined in Section 1 for interconnection of Lonesome Creek Station Unit 6 to Lonesome Creek Switchyard.

3.2 Substation/Switchyard

There will be no upgrades required at Lonesome Creek Switchyard as Lonesome Creek Station Unit 6 will be connected to an existing 115 kV bus shared by Unit 4 and 5. Reference Figures A1 and A2.

3.3 Environmental Requirements

Compliance with all applicable federal, state and local regulations will be strictly adhered to. Additionally, all applicable and required permits and approvals will be obtained prior to construction.

3.4 Cost Estimate

UID-144258/144259 Estimated Costs Non Shared Network Upgrades	Current Year $
Line Costs	
Engineering Labor	$0
Construction Labor	$0
Reactive Compensation (Labor & Materials)	$0
Material	$0
Right of Way	$0
Line Sub Total	**$0**
Station Costs	
Engineering Labor	$0
Construction Labor	$0
Site Property Rights	$0
Reactive Compensation	$0
Material	$0
Right of Way	$0
Station Sub Total	**$0**
AFUDC	$0
Contingency	$0
Network Upgrades total	**$0**

3.5 Construction Schedule

The preliminary project schedule provided is for planning level purposes only and will be adjusted with additional project definition.

This interconnection has been completed as part of the construction of the plant facility, Therefore there is no schedule listed.

Activity	Duration	Estimated Start	Estimated Finish
Executed GIA-Notice To Proceed Letter	--	Month 0	--
Project Planning	0 Month	Month 0	Month 0
Engineering Design	0 Months	Month 0	Month 0
Equipment Procurement	0 Months	Month 0	Month 0
Advertise and Award Construction Contracts	0 Months	Month 0	Month 0
Construction	0 Months	Month 0	Month 0
Energize and In-Service Date	0 Month	Month 0	Month 0

Figure A1: Proposed Switching Diagram

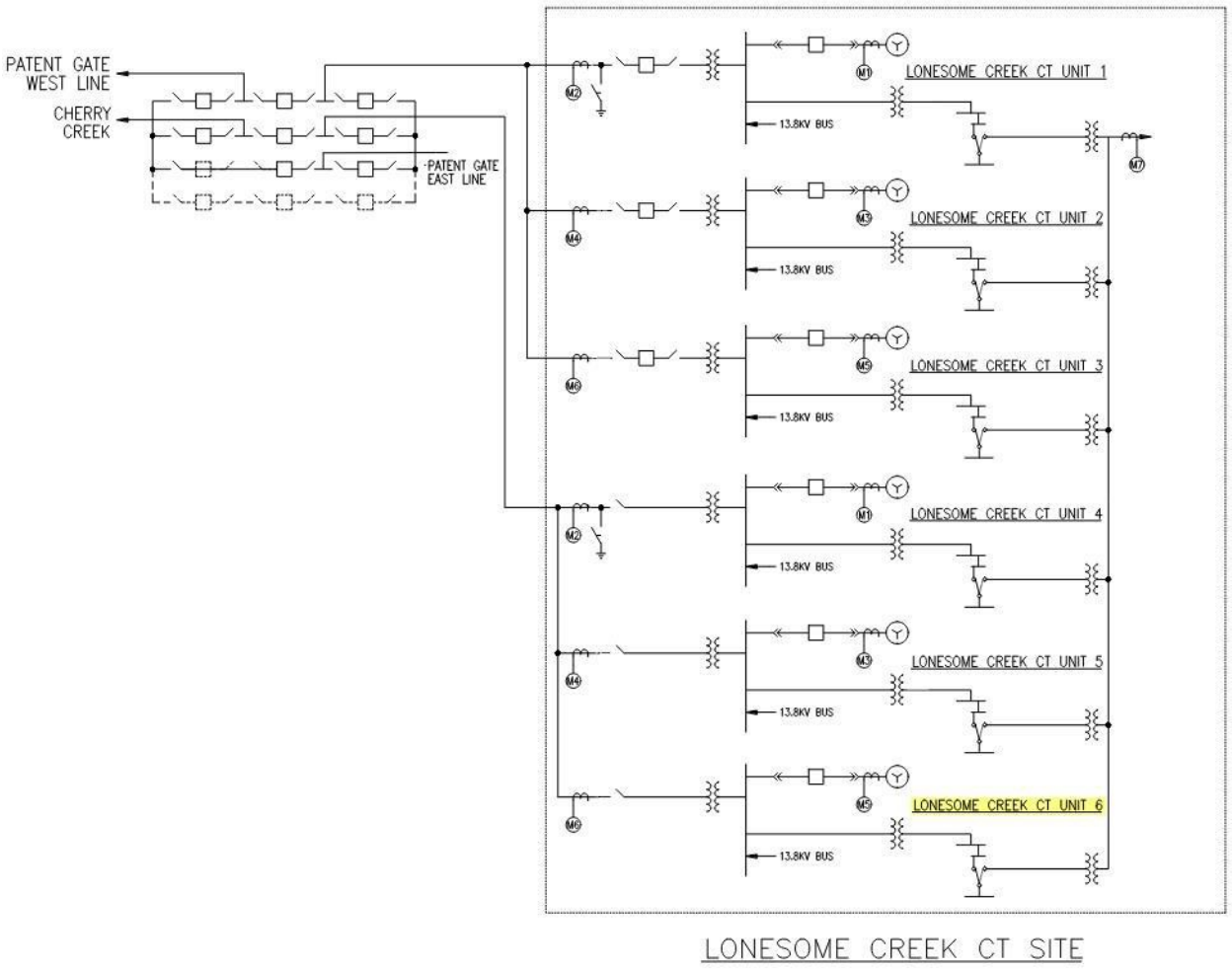
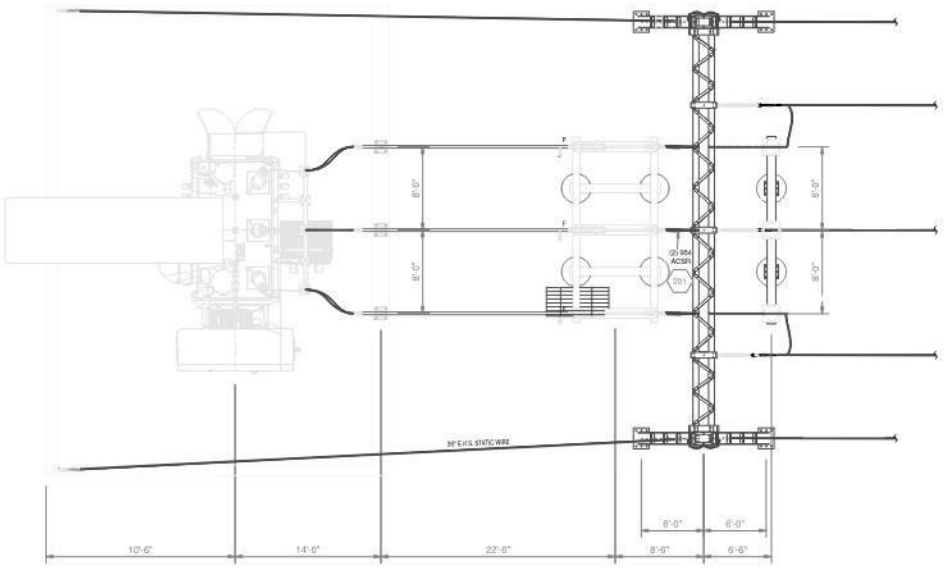
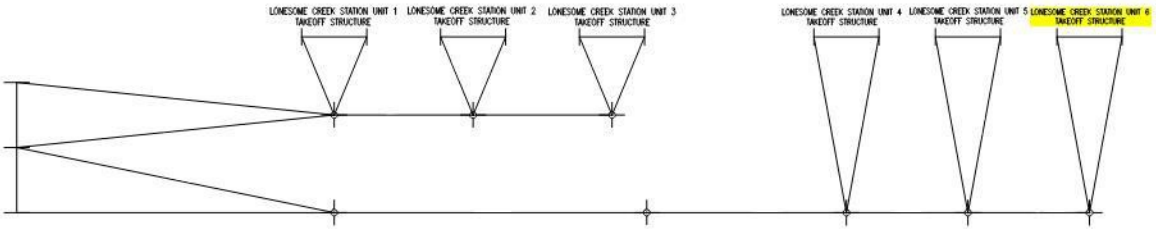


Figure A2: Proposed General Arrangement





ATTACHMENT A

SPP INTERCONNECTION FACILITIES STUDY REQUEST LETTER

SPP Southwest Power Pool

HELPING OUR MEMBERS WORK TOGETHER TO KEEP THE LIGHTS ON... TODAY AND IN THE FUTURE

October 8, 2021

Subject: Facilities Study Request for 2020 Impact Group 16 Limited and Interim Operation

Dear Mr. Severson:

Southwest Power Pool (SPP) has completed the 2020 Impact Group 16 Limited and Interim Operation study. Based on the results of this study, SPP requests that Basin Electric Power Cooperative (BEPC) perform facility studies for the following Interconnection Upgrades:

Upgrade Type	UID	Upgrade Name	Cost Estimate	Lead Time
Interconnection Upgrade	144258	Lonesome Creek 115kV GEN-2020-014 Interconnection (TOIF) (BEPC)	TBD	TBD
Interconnection Upgrade	144259	Lonesome Creek 115kV GEN-2020-014 Interconnection (Non-Shared NU) (BEPC)	TBD	TBD

The scope of the Facilities Study is to determine the cost estimates of equipment, engineering, procurement, and construction as well as the associated lead times.

For the completion of this Facilities Study request, please provide a Facilities Study report to SPP within ninety (90) calendar days to include all of their Interconnection and Network Upgrade(s) listed in the table above. Additionally, please provide an updated and completed Standardized Cost Estimate Report (SCERT) via the Transmission Reporting and Communication (TRAC) tool.

Sincerely,
SPP Generator Interconnection Department
201 Worthen Drive
Little Rock, AR 72223-4936