INTERCONNECTION FACILITIES STUDY REPORT

GEN-2017-021

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By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION
02/18/2022	SPP	Initial draft report issued.
02/28/2022	SPP	Updated draft report issued. Updated Network Upgrade Facility Study
03/15/2022	SPP	Final report issued.
03/17/2022	SPP	Updated final report issued. Updated Tables 3 and 6 based on DISIS-2017-001-2
04/20/2022	SPP	Updated Final Report issued based on Facility Study estimates from MIDW and SUNC.

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SUMMARY

INTRODUCTION

This Interconnection Facilities Study (IFS) for Interconnection Request GEN-2017-021 is for a 200 MW generating facility located in Edwards County, KS. The Interconnection Request was studied in the DISIS-2017-001 Impact Study, the DISIS-2017-001-1 Impact Restudy, and the DISIS-2017-001-2 Impact Restudy for Network Resource Interconnection Service (NRIS).The Interconnection Customer's requested in-service date is November 1, 2023.

The interconnecting Transmission Owner, ITC Great Plains (ITCGP), 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 forty-two (42) 4.8 MW Nordex WTG for a total generating nameplate capacity of 200 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 cablecollectioncircuits;
- 34.5 kV to 345 kV transformation substation with associated 34.5 kVand 345 kV switchgear;
- One 345/34.5 kV 135/180/225 MVA (ONAN/ONAF/ONAF) step-up transformer to be owned and maintained by the Interconnection Customer at the Interconnection Customer's substation;
- An approximately 2 mile overhead mile overhead kV line to connect the Interconnection Customer's substation to the Point of Interconnection ("POI") at the 345 kV bus at existing Transmission Owner substation ("Post Rock - Spearville 345 kV") that is owned and maintained by TransmissionOwner;
- 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 anddesign specificationsdemonstrating how the requirementsare 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
Post Rock – Spearville 345kV GEN-2017-021 and GEN-2017-099 Interconnection (TOIF) (ITCGP) (132962): Construct one (1) set of 345kV CCVTs, two (2) paths of OPGW fiber optic cable, one (1) 345kV line relaying panel, and all associated equipment and facilities necessary to accept transmission line from Interconnection Customer's Generating Facility.	$868,455	50%	$434,227.50	24 Months
Total	**$868,455**		**$434,227.50**	

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	N/A	$0	N/A	$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
Post Rock – Spearville 345kV GEN-2017-021 and GEN-2017- 099 Interconnection (NU) (ITCGP) (132963): Construct new 345kV 3-breaker ring bus, three (3) gas circuit breakers, eight (8) disconnect switches, six (6) CCVTs, sixty (60) insulators, four (4) wave traps, six (6) surge arrestors, and all other associated work and materials.	Not Eligible	$13,924,542	50%	$6,962,271	24 Months
Finney 345kV Reactive Support (DISIS-2017-001) (143263): Expand Finney 345kV Substation from existing 4-breaker ring bus arrangement to a breaker and one-half arrangement. A new rung will be added for four (4) new 50 MVAR capacitor banks. Install a new control house due to existing space limitations.	Eligible	$16,122,303	22.44%	$3,617,845	23 Months
Smokey Hills to Summit 230kV Rebuild (DISIS-2017-001) (MIDW) (143240): Rebuild 16.1 of the 38.6 miles miles of 230kV circuit with new bundled 795 MCM ASCR Drake phase conductor. At Smokey Hills 230kV, remove the wave trap and install OPGW.	Eligible	$30,041,995	42.71%	$12,830,936	36 Months
Smokey Hills to Summit 230kV Rebuild (DISIS-2017-001) (WERE) (143242): Rebuild 16.4 of the 38.6 miles of 230kV circuit with new bundled 1192 Bunting ASCR line conductor with OPGW static wire. At Summit 230kV, upgrade terminal equipment consisting of two (2) control panels, remove the wavetrap, and add fiber.	Eligible	$27,314,395	42.71%	$11,665,978	48 Months

South Hayes to Great Bend 230kV Clearance Increase (DISIS-2017-001) (MIDW) (144330): Increase clearance for one (1) span on South Hays to Great Bend 230kV to achieve a minimum summer/emergency rating of 393 MVA and winter/emergency rating of 354 MVA	Eligible	$65,040	57.14%	$37,164	9 Months
Great Bend 230kV Terminal Upgrades (DISIS-2017-001) (SUNC) (144331): Replace three (3) stand-alone metering CTs to increase the facility rating to a minimum summer/emergency rating of 393 MVA and winter/emergency rating of 354 MVA	Eligible	$109,700	57.14%	$62,683	18 Months
Total		**$87,577,975**		**$35,176,877**	

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	N/A	$0
Total	$0		$0

CONCLUSION

After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 200 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 Facility Upgrade(s)	$434,227.50
Non-Shared Network Upgrade(s)	$0
Shared Network Upgrade(s)	$35,176,877
Affected System Upgrade(s)	$0
Total	**$35,611,104.50**

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).

Generation Interconnection Facilities Study Report
For GEN 2017-021 and GEN 2017-099 – 400MW Wind Generating Facility
In Edwards County, Kansas.
Revised September 6, 2021

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1.0 Overview

ITC Great Plains ("ITCGP") has performed a facility study at the request of Southwest Power Pool ("SPP") for Generation Interconnection request GEN-2017-021 and GEN-2017-099 under the SPP Open Access Transmission Tariff. The subject request entails interconnecting two 200MW wind powered generation facilities in Edwards County, Kansas. The project will interconnect at the new substation that will be built on the Spearville to Post Rock 345 kV line at approximately 23 miles from the Post Rock Substation. It is scheduled for completion by December 31, 2024. This date will be revised further into the process.

The ITCGP scope of this Facility Study is to provide a cost estimate for the Customer's interconnection facilities. This study does not directly address any of the Network Upgrades that may be identified in the DISIS 2017-001, the facilities that are being constructed by the interconnection customer, or any potential sub-transmission facilities (if any) that may be required.

1.1 Facility StudySummary

ITCGP estimates the total project cost of the customer's interconnection facilities will be **$14,792,997** (+/ - 20 % accuracy) including applicable company overheads in 2021 dollars. It includes **$13,924,542** for Network Upgrades and **$868,455** for Transmission Owner Interconnection Facilities. It is further estimated that the required legal/real estate acquisition and construction activities will require approximately 24 months after the GIA is executed. The attached report contains additional details regarding the estimate as well as results of short circuit studies, review of reactive compensation, and information on Interconnection & Operatingrequirements.

ITCGP intends to self-fund the network upgrades for this project and will require a Facility Service Agreement to be negotiated in parallel with the GIA for this project.

The GEN 2017-099 AND GEN 2017-021 interconnection facilities will require Network Upgrades on the ITCGP system to connect the new generation. Network Upgrades consist of the following:

- A new 3-breaker 345 kV ITCGP GEN 2017-099 AND GEN 2017-021 interconnection station at the POI on the Post Rock to SpearvilleLine.
- Looping the Post Rock to Spearville Line into the newSubstation.

In addition to the identified Network Upgrades, there are specific Interconnection Facilities which ITCGP will construct, own, operate, and maintain. These facilities include the new line entrance structure and 345kV disconnect switch on the end of the radial line from GEN 2017-099 AND GEN 2017-021 at the ITCGP switching station as well as any ITCGP relaying, and control equipment required for the protection of the developer's radialline.

The Interconnection Customer is responsible for constructing all sole-use facilities such as the wind farm collector station and the radial 345kV line from the collector station to the new ITCGP switching station. While this report does define Interconnection Customer owned Interconnection Facilities in enough detail to explain basic requirements, it does not define or contain all of the detailed requirements. Additional metering, communications, and operational requirements may be identified as the Interconnection and Operating Agreements are developed and further communications between the Transmission Owner and Interconnection Customer take place. The Interconnection Customer's low voltage system is not defined in this report.

2.0 Voltage Guidelines:
Reactive power, voltage regulation and operating requirements will be as per Transmission Operator (TOP) and Transmission Provider directives. Interconnection Customer will operate the Generating Facility to a voltage schedule of 350 kV (1.014 pu) with a bandwidth of +/- 6 kV (0.017 pu) at the Point of Interconnection (POI) utilizing the Generating Facility's required power factor design capability as indicated in SPP DISIS 2017-001. As per SPP DISIS 2017-001, the Interconnection Customer's required power factor capability is 0.95 lagging to 0.95 leading (atthePOI).

For further clarification, the Interconnection Customer may meet the +/- 0.95 power factor requirement by utilizing reactive capability from the wind generators or by adding external reactive compensation. Note that any reactive compensation installed by the Interconnection Customer shall not cause voltage distortion in accordance with Article 9.7.6 Power Quality of the Generation InterconnectionAgreement.

The Interconnection Customer will regulate the Generating Facility's voltage to the specified voltage set-point within the defined bandwidth stated above using an automatic voltage controller utilizing the inherent reactive power capability in the wind turbines and if applicable external reactive compensation.

The above voltage schedule is subject to change. If the need for a change is identified, it will be done within the limits of the GIA provisions stated in Section 9.6 and the Generating Facility's power factor design criteria as stated above. If a schedule change is needed, appropriate written documentation of the change will be provided to the Interconnection Customer.

The Interconnection Customer is required to have a generator operator available for 24/7 communication with the TOP. The TOP may, at any time request a variance from the schedule in response to system operating/security requirements.

3.0 Network Upgrades

3.1 New ITCGP GEN 2017-099 AND GEN 2017-021interconnectionsubstation

3.1.1 ProjectLocation:
The new substation that will be built on the Spearville to Post Rock 345 kV line at approximately 23 miles from the Post RockSubstation.

3.1.2 ProjectOverview:
The purpose of this project is to build a 345kV Substation to provide a transmission system interconnection for the GEN 2017-099 AND GEN 2017-021 Wind Farms. The switchyard will consist of three 345kV circuit breakers arranged in a breaker and a half configuration.

The new 345kV switchyard will have a new control house with adequate AC and DC station service supplies, new control and protection panels and a new RTU for communication with the Transmission Owner's master control station.

The new switchyard will cut into the 345kV Post Rock to Spearville Line.

3.1.3 DesignCriteria:
The Transmission Owner's standards will be applicable. Where no applicable standards are available, the Transmission Owner will substitute industry standards and other good utility practices.

3.1.4 One-Line Diagrams:
See Figure 1 for Transmission Owner One-Line.

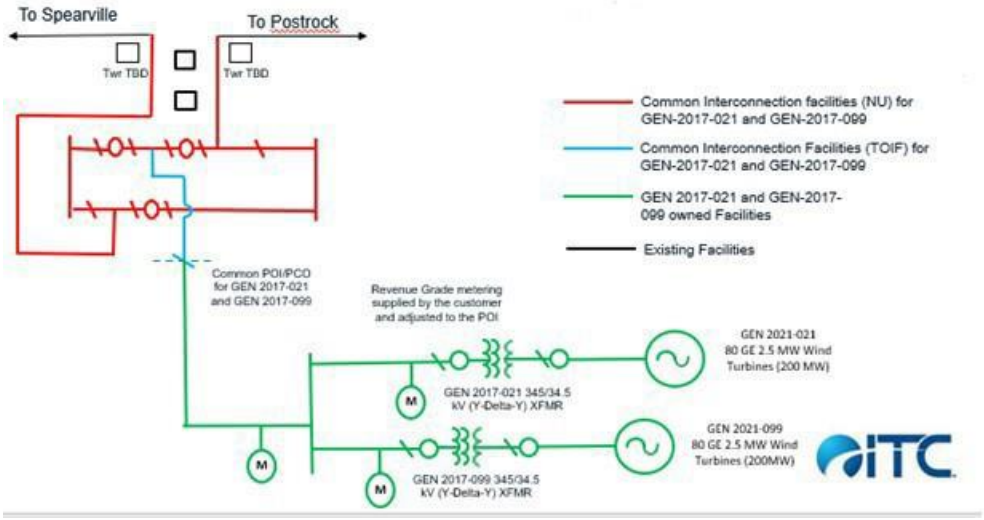


Figure 1 GEN 2017-099 AND GEN 2017-021 Interconnection Substation One Line

3.1.5 Route Information: N/A

3.1.6 Right-of-Way Information:
It is assumed that the interconnection customer will be responsible for building the 345 kV line required to connect the ITCGP Switching Station at the POI with the customer's substation. As such, the interconnection costs contained herein do not include any costs for extending the ITCGP transmission line. Please see section 6 for generalguidelines.

3.1.7 Permitting:
The Interconnection Customer will be responsible for satisfying all community or governmental site plan or zoning approval requirements which may include wetland or flood plain permits. The Transmission Owner will be responsible for the control center building permit and the KDHE storm water construction permits associated with the Transmission Owner portions of the construction.

3.1.8 Metering & Ownership Demarcation:
Covered in section 4.1.9

3.1.9 Protection & ControlOverview:
Two sets of 345kV CCVTs will be installed, one set for each line.

Two 345kV wave traps will be installed for each line.

Three 345kV breaker control panels with microprocessor based relays will be installed. Breaker failure protection, automatic reclosing supervised by synchronism check will be provided.

Two 345kV line relaying panels with microprocessor based relays will be installed.

3.1.10 Insulation Coordination:
345kV, 1050kV BIL

3.1.11 Short Circuit Study Results - Bus FaultLevels:
ITCGP calculated bus fault levels for the interconnection substation and adjacent substations to determine if the added generation will cause fault currents to exceed interrupting ratings for existing equipment and for use in sizing future equipment. Calculations are based on data for the interconnection transformer and installed wind turbines supplied by the Interconnection Customer. Variance from supplied data could materially change calculated short circuit values. Results are displayed in Table 1.

Table 1 – Short Circuit Results

Fault Location	Maximum Fault Current (Amps)	
	Phase	Ground
Post Rock Substation	7802	6068
Spearville345 kV Bus	11964	15478

GEN 2017-099, GEN 2017-021 345 kV Bus	7385	490

Fault currents shown in Table 1 are within the circuit breaker interrupting capabilities with the addition of 400 MW contributed by GEN 2017-099 AND GEN 2017-021.

3.1.12 Reactive Compensation:
ITCGP evaluated the impact of the proposed interconnection on the reactive compensation equipment presently planned or in service at the Post Rock and Spearville Substation facilities. ITCGP studies concluded that no additional reactive compensation of 55 MVAR is required for interconnection of GEN 2017-099 AND GEN 2017-021 at this time. ITCGP may review the need for reactive compensation at a future time during which the size of a reactor would be further refined with additional studies after the GIA is signed.

3.1.13 Other Equipments & Materials:

- Gas Circuit Breakers (GCB): three (3) 345 kV, 3000Arated,63kAIC.
- Disconnect Switch: eight (8) 345 kV, 3000A rated, 1050kVBIL.
- CCVTs: six (6) 345kV, 3-winding, 1550kVBIL.
- Insulators: sixty (60) 345 kV, 1050 kV BIL station post,porcelain.
- Wave traps: four (4) 345kV, 3000A, doublefrequency.
- Surge Arresters: six (6) 345kV, vertical mount, 209MCOV,polymer.
- Control Cable: Control cables per Transmission Owner standards will be installed in direct buried PVC conduits, above grade LFMC conduits and in pre-cast cable trench. All control cables from the yard will be terminated at the relaying control panels. The control building will have overhead cable trays for necessary cable runs andinter-panelconnections.

3.1.14 Relaying, Control, & SCADA:
Panel Requirements

- 3 – RD3024 – Tie Breaker Control(SEL-351S)
- 2 – RD3070 – "A" Line Relaying, Carrier (SEL-421 &UPLC)
- 2 – RD3076 – "B" Line Relaying, Carrier (SEL-311C&UPLC)

3.1.15 GroundingSystem:
The grounding system will be designed and installed per TransmissionOwner's standards. These standards follow the IEEE 80standards.

3.1.16 Lightning ShieldingDesign:
Lightning shielding will be provided per Transmission Owner's standards. Multiple H-frame structures along with shield wire will be used for lightning protection.

3.1.17 Yard Lighting:

Yard lighting will be installed to be sufficient for visual indication of the disconnect switch positions or egress of personnel, and will not serve as task lighting.

3.1.18 Structures:
The required new outdoor steel structures listed below will be hot-dipped galvanized wide flange structures or tubular steel:

- Eight (8) 345 kV disconnect switchstands
- Nineteen (19) 345 kV bussupport
- Four (4) 345kV wave trap stands
- Three (3) H-frame line entrancestructures
- Six (6) 345kV CCVTstands
- Six (6) 345kV surge arresterstands

3.1.19 Foundations:
Foundations and slabs will be designed and installed in accordance with the owner's standards and specifications. The minimum design depth to firm bearing is contingent upon soil borings at the site.

3.1.21 Scheduling Requirements:
Legal/Real Estate Procurement 9 weeks
Material Procurement / Design 52 weeks
Substation Construction 32 weeks
Closeout Activities 4 weeks

3.1.20 Site Work:
Site grading will be required for the new 345kV switchyard.

3.1.21 Total Cost: $11,737,547
Total Cost Estimate Accuracy: +/- 20%

Note that the cost estimate provided is expressed in 2021 terms and includes applicable company overheads.

3.2 Loop Post Rock to Spearville line into GEN 2017-099 AND GEN 2017-021 interconnection substation

3.2.1 Project Location:
The new substation that will be built on the Spearville to Post Rock 345 kV line at approximately 23 miles from the Post Rock Substation.

3.2.2 Project Overview:
The project involves opening the existing Spearville to Post Rock 345 kV line and looping it into the new GEN 2017-099 AND GEN 2017-021 Interconnection Substation.

3.2.3 Design Criteria:
Design Standards will be Transmission Owner Standards. Where no applicable standards are available, the Transmission Owner will utilize industry standards and good Utilitypractices.

3.2.4 One-Line Diagrams:N/A

3.2.5 Site Plan: N/A

3.2.6 Route Information**:**
The routing associated with looping the Spearville to Post Rock circuit into the GEN 2017-099 AND GEN 2017-021 Sub is minimal and will be contained to the property surrounding the GEN 2017-099 AND GEN 2017-021 Substation.

3.2.7 Right-of-Way Information:
The new transmission line structures will be located on existing easement or on the new substation property. Please see section 6 for general guidelines

3.2.8 Permitting:
Same as that covering section 3.1.8.

3.2.9 Metering & Ownership Demarcation:N/A

3.2.10 Protection & Control Overview:N/A

3.2.11 Insulation Coordination: N/A

3.2.12 Short Circuit Study Results - Bus Fault Levels:N/A

3.2.12 Other Equipments & Materials: **N**/A

3.2.13 Relaying, Control, & SCADA:N/A

3.2.14 Grounding System:N/A

3.2.15 Lightning ShieldingDesign:
Lightning shielding design will be in accordance with the Transmission Owner's standards and specifications.

3.2.16 Yard Lighting: N/A

3.2.17 Structures:
The new transmission line structures will be 345 kV galvanized steel monopoles or lattice towers, pending the most feasible and appropriate design. Two structure(s) will be required to loop the line into the new station.

3.2.18 Foundations:
Foundations will be designed and installed in accordance with the Transmission Owner's standards and specifications. The transmission structure foundations will be drilled piers.

3.2.19 Conductors, Shield Wires, &OPGW:
The conductor will be a bundled T2-477 kcmil (26/7) ACSR "Hawk" per phase. The shield wire will be 159 kcmil (12/7) ACSR "Guinea."

3.2.20 Insulators:
Insulators will be 345 kV polymer insulators.

3.2.21 Removal of ExistingFacilities:
TBD – tentatively no existing facilities will be removed.

3.2.22 Site Work: N/A

3.2.23 Total Cost: $2,186,995

Total Cost of Network Upgrades: $11,737,547 + $2,186,995 = **$13,924,542**
Total Cost Estimate Accuracy: +/- 20%

Note that the cost estimate provided is expressed in 2021 terms and includes applicable company overheads.

4.0 Transmission Owner Interconnection Facilities

4.1 GEN 2017-099 AND GEN 2017-021 – Interconnection Facilities

4.1.1 Project Location:
The new substation that will be built on the Spearville to Post Rock 345 kV line at approximately 23 miles from the Post Rock Substation

4.1.2 Project Overview:
A new line entrance structure will be added at the ITCGP GEN 2017-099 AND GEN 2017-021 interconnection switchyard for termination of the line from the collector substation. A disconnect switch will be installed beneath this structure for isolation of the developer's line. Line relaying will be added to protect the line. A set of CCVT's and surge arresters will be added to the line terminal.

4.1.3 Design Criteria:
The Transmission Owner's standards will be applicable. Where no applicable standards are available, the Transmission Owner will substitute industry standards and other good utility practices.

4.1.4 One-Line Diagrams: See Figure 1

4.1.5 Site Plan: See Figure 2.

4.1.6 Route Information: N/A

4.1.7 Right-of-Way Information: N/A

4.1.8 Permitting: Same as that covering section 3.1.8

4.1.9 Metering & Ownership Demarcation:
The Interconnection Customer or others will provide, own, operate and maintain revenue metering. The specifics of the revenue metering will be defined during the detailed engineering phase of the project. The customer must cooperate with the Transmission Provider and Local Transmission Owner requirements in the metering design. Revenue metering equipment will be required at customer's project substation with loss compensation to the Point of Interchange in the Transmission Owner's substation.

The ownership demarcation will be at first substation steel H-frame within the security fence of the Transmission Owner substation.

The Interconnection Customer will be required to provide enough conductor to terminate on the H-frame and extend down to reach grade level.

4.1.10 Protection & ControlOverview:

- One set of 345kV CCVTs will be installed on the GEN 2017-099 AND GEN 2017-021line.
- Two paths of fiber optic cable (OPGW) will be required for line protection. They will be supplied by the InterconnectionCustomer.
- One 345kV line relaying panel with microprocessor-based relays willbeinstalled.

4.1.11 Insulation Coordination:
345kV, 1050kV BIL

4.1.12 Short Circuit Study Results - Bus Fault Levels: See Section3aabove

4.1.13 Other Equipments &Materials:

- Disconnect Switch: One (1) 345 kV, 3000A rated, 1050 kVBIL.
- CCVTs: Three (3) 345 kV, 3-winding, 1550kVBIL.
- Surge Arresters: Three (3) 345 kV, vertical mount, 209 kVMCOV,polymer.
- Control Cables: Control cables per Transmission Owner standards will be installed in direct buried PVC conduits, above grade LFMC conduits and in pre-cast cable trench. All control cables from the yard will be terminated at the relaying control panels. The control building will have overhead cable trays for necessary cable runs andinter-panelconnections.

4.1.14 Relaying, Control, & SCADA:
Panel Requirements: One RD3048 Panel – Fiber optic current differential (SEL 311L Relays)

4.1.15 GroundingSystem:
The grounding system will be designed and installed per TransmissionOwner's standards. These standards follow the IEEE 80standards.

4.1.16 Lightning ShieldingDesign:
The attachment of the OPGW shield wire from the developer's line to the H-frame will provide lightning protection for the Interconnection Facility equipment at GEN 2017-099 AND GEN 2017-021 interconnection substation.

4.1.17 Yard Lighting:
Yard lighting will be installed to be sufficient for visual indication of the disconnect switch position or egress of personnel and will not serve as task lighting.

4.1.18 Structures:
The required new outdoor steel structures listed below will be hot-dipped galvanized wide flange structures or tubular steel:

- One (1) 345 kV disconnect switch stand
- Two (2) H-frame line entrancestructures
- Three (3) 345 kV CCVTstands
- Three (3) 345 kV surge arresterstands

4.1.19 Foundations:
Foundations will be designed and installed in accordance with the owner's standards and specifications. The minimum design depth to firm bearing is contingent upon soil borings at the site.

4.1.20 Conductors, Shield Wires, & OPGW:N/A

4.1.21 Insulators: N/A

4.1.22 Removal of Existing Facilities:N/A

4.1.23 Site Work: N/A

4.1.24 Total Cost: $**868,455**
Total Cost Estimate Accuracy: +/- 20%
Total Project cost (Network Upgrades and Interconnection facilities): $14,792,997

Note that the cost estimate provided is expressed in 2021 terms and includes applicable company overheads and potential tax gross ups.

5.0 Interconnection CustomerInterconnectionFacilities

5.1 GEN 2017-099 AND GEN 2017-021 Interconnectionfacilities

All facilities within the Interconnection Customer's collector substation and between the Interconnection Customer's substation and ITCGP's new GEN 2017-099 AND GEN 2017-021 interconnection substation are not included in this report and are the sole responsibility of the Interconnection Customer. Some of the key facilities are briefly mentioned below. The Point of Interconnection (POI) and the Point of Change of Ownership (PCO) are shown inFigure.

The Interconnection Customer shall construct the 345 kV radial line from the wind farm collector station to ITCGP's new GEN 2017-099 AND GEN 2017-021 interconnection substation. Installation of OPGW shield wire on the radial line from GEN 2017-099 AND GEN 2017-021 containing at least 12 single mode fibers will be required for ITCGP relaying andcommunicationpurposes.

The customer's step-up transformer between the wind farm's 34.5 kV collector network and the 345 kV facilities will require a high side breaker capable of interrupting a transformer high side winding fault.

All Interconnection Customer owned 345 kV apparatus as well as the revenue metering equipment located in the Interconnection Customer's substation shall comply with ITCGP standards and will be subject to ITCGP approval. ITCGP will provide the Interconnection Customer with standards during detailed design or upon request. The Interconnection Customer is solely responsible for the SCADA and telecommunications facilities necessary to operate and monitor itsfacility.

Necessary trip and close signal interlocks will be provided by ITCGP to the Interconnection Customer's generation facility for the safe operation of the system. Interconnection Customer will provide breaker status and current transformer signals to ITCGP for system operation and protection.

Total Project Cost: N/A
Total Cost Estimate Accuracy: N/A

6.0 Right Of Way Requirements

The Interconnection Customer shall obtain easements from the Transmission Owner to work in or drive through the Transmission Owner's transmission line right-of-way. The Transmission Owner and

Interconnection Customer will also cooperatively negotiate any easements required for the Interconnection Customer's transmission lines and structures. The Transmission Owner agrees to not unreasonably withhold easements.

For the Network Upgrades and any Transmission Owner Interconnection facilities identified in this report, the Transmission Owner agrees to obtain all necessary easements/right-of-way as required to construct those facilities that will be owned and operatedbyITCGP.

Facility Study for Network Upgrades as Requested by Southwest Power Pool (SPP)

DISIS 2017-001

Xcel Energy Services, Inc.
Transmission Planning South
Updated 2/2/2022

Executive Summary

The Southwest Power Pool (SPP or Transmission Provider) evaluated the generation facilities requesting to interconnect to the Southwestern Public Service Company (SPS or Transmission Owner) transmission system in the Definitive Interconnection System Impact Study (DISIS-2017-001-1), which was completed in December 2021. The requests for interconnection were placed with SPP in accordance with the Scope of Interconnection Facilities Study GIP Section 8.10 and the Interconnection Facilities Study Procedures in accordance with GIP Section 8.11.

To accommodate the Interconnection Customer's (IC) requests, SPP identified multiple network upgrades required as part of the DISIS study results. SPS performed this Facility Study for the Network Upgrades. The table below identifies the specific transmission elements impacted and addressed in this Facility Study along with the projected project duration for completing the specific upgrade.

Table 1: TO Estimate Costs

Upgrade Name	SCERT UID	TO Estimated Cost	Project Time Estimate
Finney 345kV Reactive Support (DISIS-2017-001-1)	143263	$16,122,303	23
Finney to G17-032 Tap 345kV Rating Increase (DISIS-2017-001-1)	143228	$58,652,255	30

General Description of Network Upgrades

The Objective of this study is to identify the network upgrades and the costs associated with them. Below is a description of the different projects and the scoping level costs[1] associated with each. All costs identified below are without escalation. All projects, routes, and costs are subject to change.

Finney 345kV Reactive Support
New 200MVAR capacitor bank at Finney 345kV.

Transmission Line Details
No transmission line work identified for this network upgrade.

Substation Details
Expand Finney Substation from existing 4-breaker ring bus arrangement to a breaker and one-half arrangement. A new rung will be added for 4 new 50MVAR capacitor banks. The existing control house lacks the space required for the additional relaying so a new 27X55 house will be installed to contain the new relaying for the cap banks, bus differential relaying, and breaker control relay panels.

Total Cost
The total cost estimate for this Network Upgrade is:

$	0	Transmission Line
$	14,627,961	Substation
$	182,085	AFUDC
$	1,312,257	Contingency
$	16,122,303	Total Cost

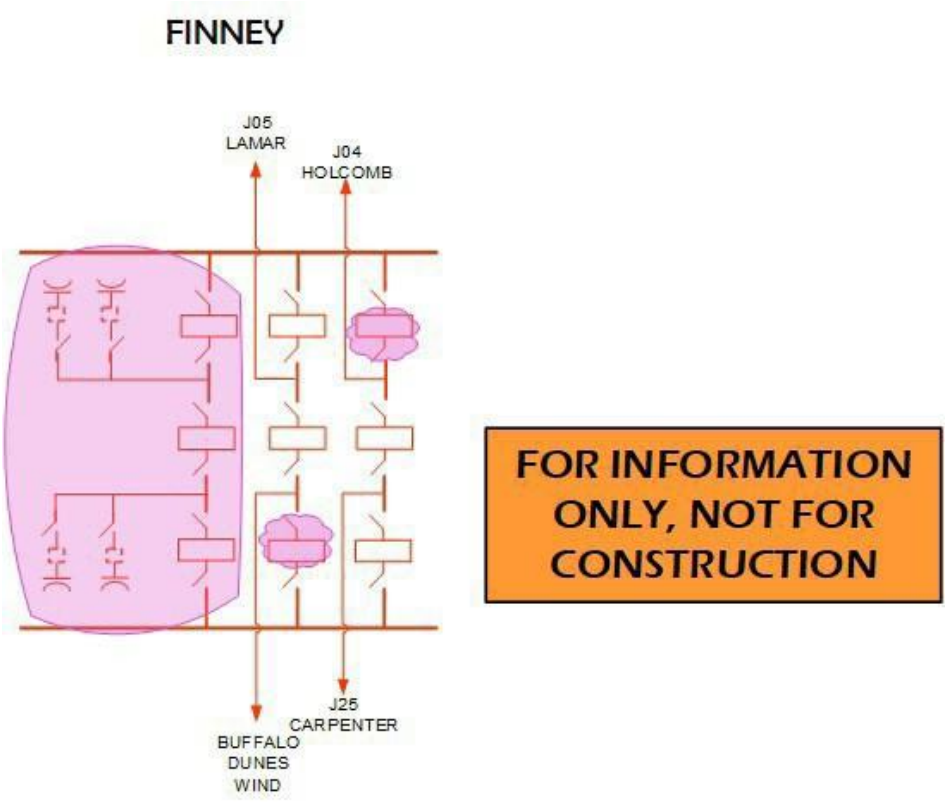
The estimate is accurate to +/- 20%

Project Time Estimate
From date of execution of agreement to project in-service date.

Total Project Duration	23	Months

Figure 1 – Oneline Diagram expanding Finney Substation from 4-breaker ring to breaker-and-a-half

[1] The cost estimates are 2021 dollars with an accuracy level of ±20%.



Finney to G17-032 Tap 345kV Rating Increase (425 MVA)
Increase rating to the existing J05 345 kV line from Finney to the Point of Interconnection of GEN 2017-032 to achieve a minimum Summer/Emergency rating of 425 MVA.

Transmission Line Details
The estimated cost is to remove rating limitations to 79 miles of 345kV circuit. The proposed network upgrade will replace a total of three hundred eighty-seven (387) structures in order to upgrade the capacity of the J05 line to 425 MVA. New bundled 795 ACSS “Drake” will also be installed.

Substation Details
No substation work identified for this network upgrade.

Total Cost
The total cost estimate for this Network Upgrade is:

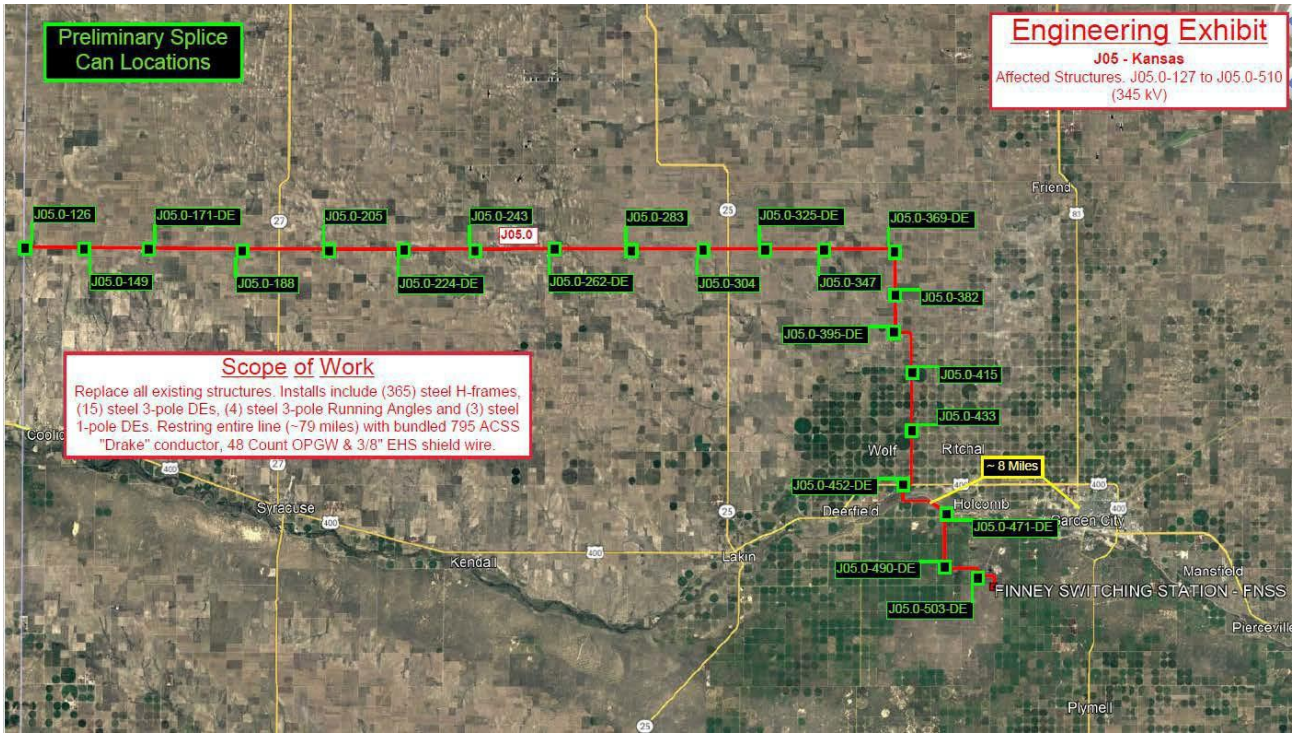
$	52,478,125	Transmission Line
$	0	Substation
$	4,883,369	AFUDC
$	1,290,761	Contingency
$	58,652,255	Total Cost

The estimate is accurate to +/- 20%

Project Time Estimate
From date of execution of agreement to project in-service date.

Total Project Duration	30	Months

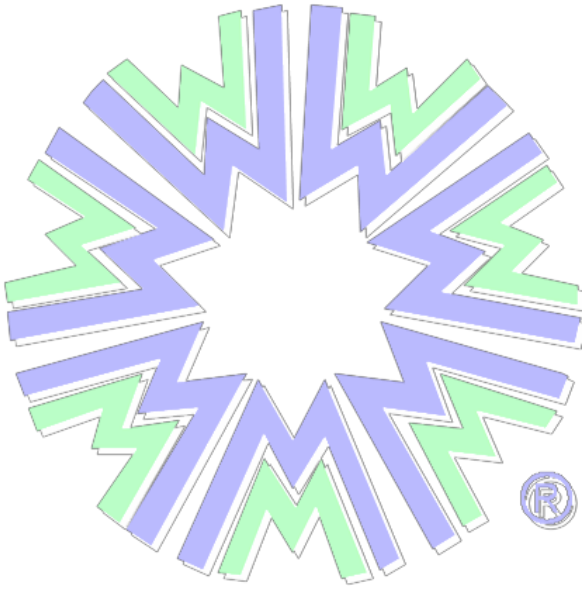
Figure 2 – Aerial image of 345kV line J05 Finney to Lamar



– END OF REPORT –

Midwest Energy Inc.

Network Upgrade Study for DISIS-2017-001-3



February 9, 2022

Contents

Summary

At the request of the Southwest Power Pool (SPP), Midwest Energy (MIDW) performed a facility study for network upgrades identified in the Definitive Interconnection System Impact Study (DISIS-2017-001-3) in accordance with the SPP Generator Interconnection Procedures (GIP) Section 8.11 for the following Network Upgrades:

- Rebuild Smoky Hill – Summit 230 kVLine

Network Upgrade Scope

The study performed by SPP for DISIS-2017-001-3 showed the Smoky Hill – Summit 230 kV facility overloaded in a non-contingency state. MIDW owns 16.1 miles of the 38.6-mile line (shown in Figure 1 below), and the provided estimate only applies to the portion of the line owned by MIDW. The MIDW portion of this line is currently at the full Normal rating of its 927.2 MCM AAC 'Solar' conductor. The current wood structures are inadequate to reconductor this line with a larger conductor therefore it will be necessary to tear down and rebuild the line. The provided estimate includes rebuilding the line with steel monopole structures and bundled 795 MCM ACSR 'Drake' phase conductor to increase the capacity to 656/797 (Summer Normal/Emergency) MVA. The wave trap at Smoky Hill will be removed and OPGW will be installed. Because of the remote locations and rugged terrain this line runs through, these estimated costs include the development of temporary access roads for construction as well as additional consideration for transmission line easement.

Figure 1: Midwest Section of the Smoky Hill-Summit 230 kV line

Upgrade Costs

Network Upgrade	Cost (2022 Dollars)
Rebuild MIDW portion of Smoky Hill - Summit 230 kV line (Estimated Cost includes materials, equipment, labor, engineering, contingency costs, and taxes)	$30,041,995

Project Lead Time

Project in-service date is projected to be 36 months after the issuance of an NTC from SPP.

Interconnection Facilities Study

Network Upgrades associated with DISIS-2017-001

February 2022

Introduction

This report summarizes the scope of the Interconnection Facilities Analysis for Network Upgrade(s) to determine costs related to the addition of the SPP-GI DISIS-2017-001 Interconnection Request(s).

Southwest Power Pool Generation Interconnection Request:

Per the SPP Generator Interconnection Procedures (GIP), SPP has requested that Evergy perform an Interconnection Facilities Study (IFS) for Network Upgrade(s) in accordance with the Scope of Interconnection Facilities Study GIP Section 8.10 and the Interconnection Facilities Study Procedures in accordance with GIP Section 8.11 for the following Interconnection Request(s):

Upgrade Type	UID	Upgrade Name	DISIS Cost	DISIS Lead Time
Network Upgrade	122705	Hoyt - JEC 345kV Rebuild (DISIS-2017-001) (EKC)	$49,962,001	48 Months
Network Upgrade	143242	Smokey Hills to Summit 230kV Rebuild (DISIS-2017-001) (EKC)	$27,314,395	36 Months
Network Upgrade	143699	Mullin Creek-St Joseph 345kV New Line and St Joseph 345kV Breaker and Half (DISIS-2017-001) (EMW)	$108,513,897	48 Months
Network Upgrade	143731	Mullin Creek 345kV Terminal Upgrades (DISIS-2017-001) (TMO)	$7,040,333	36 Months
Network Upgrade	144266	St. Joe to Cooper 345kV Rebuild (DISIS-2017-001) (EMW)	$83,208,129	36 Months
Network Upgrade	144268	St. Joe to Nashua 345kV Line Rebuild (DISIS-2017-001) (EM)	$31,517,643	36 Months
Network Upgrade	144269	St. Joe to Nashua 345kV Line Rebuild (DISIS-2017-001) (EMW)	$50,677,806	36 Months

Hoyt – Jeffrey EC 345kV Rebuild

345kV Transmission Line

The estimated cost is for 24.3 miles of 345kV circuit with new bundled 1590 Lapwing ACSR line conductor with OPGW static wire, steel dead end structures, steel tangent structures, steel running angle structures, and no distribution underbuild.

345kV Substation

At Hoyt 345kV substation, the estimated cost is for two (2) control panels, as well as removal of the wavetrap, replace line arrestors, add fiber, and upgrade groundmat.

At Jeffrey EC 345kV substation, the estimated cost is for two (2) control panels, as well as removal of the wavetrap, replace line arrestors, and add fiber.

Total Cost

The total cost estimate for this Network Upgrade is:

$	49,140,588	345kV Transmission Line
$	675,327	345kV Substation
$	146,086	AFUDC
$	0	Contingency
$	49,962,001	Total

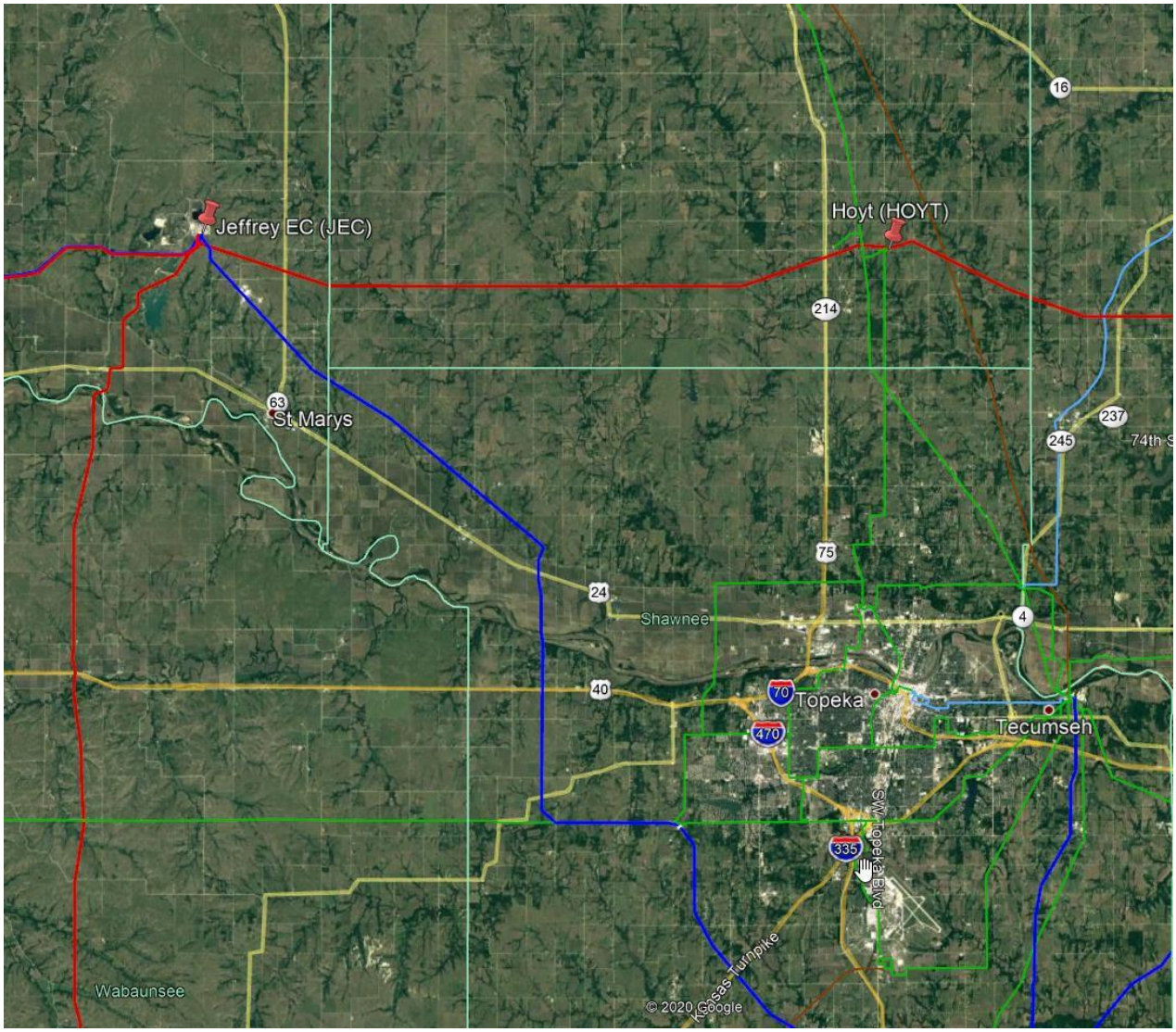
This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	12-18	Months
Procurement Time	12-18	Months
Construction Time	12	Months
Total Project Length	36-48	Months

Figure 1 – Hoyt-Jeffrey EC 345kV Line



Smoky Hills - Summit 230kV Rebuild

230kV Transmission Line

The estimated cost is for 16.4 miles of 230kV circuit with new bundled 1192 Bunting ACSR line conductor with OPGW static wire. There is 6.0 miles of this line with newer construction out of Summit that meets the rating requested, and 16.1 miles is owned by Midwest Energy.

230kV Substation

At Summit 230kV substation, the estimated cost is for upgrading the existing 230kV terminal equipment consisting of two (2) control panels, as well as removal of the wavetrap and add fiber.

Total Cost

The total cost estimate for this Network Upgrade is:

$	27,183,000	230kV Transmission Line
$	49670	230kV Substation
$	81,725	AFUDC
$	0	Contingency
$	27,314,395	Total

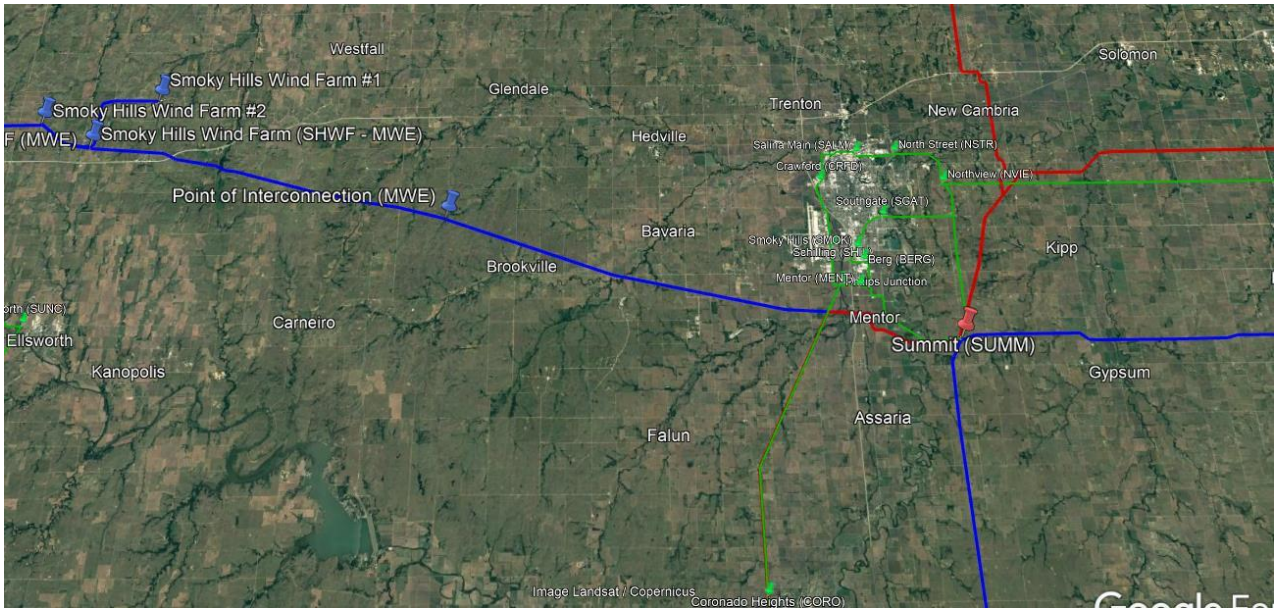
This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	12-18	Months
Procurement Time	12-18	Months
Construction Time	12	Months
Total Project Length	36-48	Months

Figure 2 – Smoky Hills-Summit 230kV Line



Mullin Creek-St Joseph 345kV New Line

345kV Transmission Line

The estimated cost is for 27 miles of 345kV with new bundled 1192.5 Grackle ACSS/TW line conductor with OPGW static wire, steel dead end structures, steel tangent structures, steel running angle structures, and no distribution underbuild.

345kV Substation

At St Joseph 345kV substation, the estimated cost is for a rebuild of the existing 345kV to breaker-and-a-half configuration consisting of eleven (11) breakers, twenty-eight (28) switches, four (4) wavetraps, and twenty-one (21) control panels, as well as dismantling of the existing equipment.

Total Cost

The total cost estimate for this Network Upgrade is:

$	79,026,603	345kV Transmission Line
$	27,133,920	345kV Substation
$	2,353,374	AFUDC
$	0	Contingency
$	108,513,897	Total

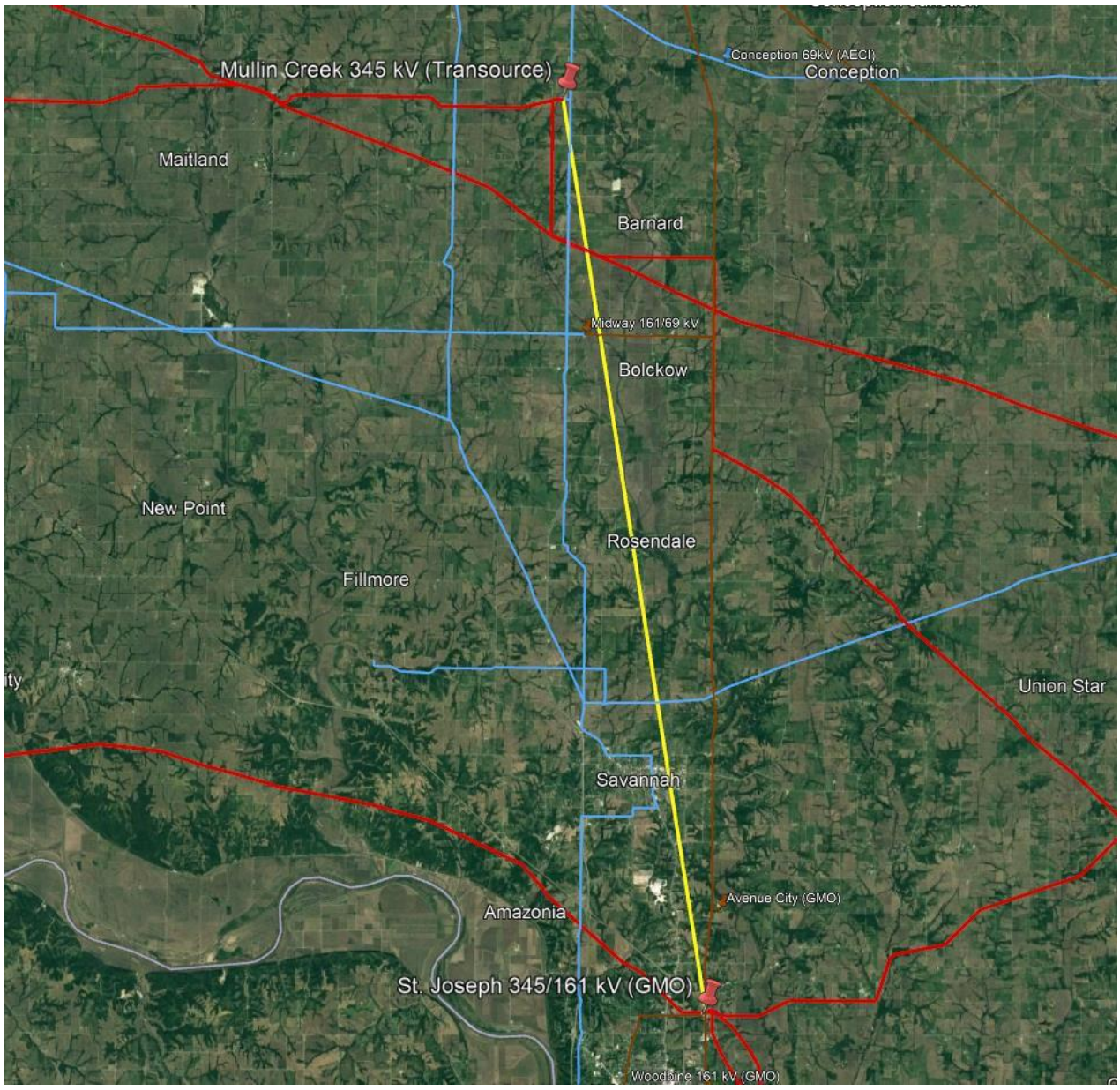
This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	12-18	Months
Procurement Time	12-18	Months
Construction Time	12	Months
Total Project Length	36-48	Months

Figure 3 – Mullin Creek-St Joseph 345kV New Line



Mullin Creek 345kV Terminal Upgrades

345kV Substation

At Mullin Creek 345kV substation, the estimated cost is for a rebuild of the existing 345kV to breaker-and-a-half configuration consisting of two (2) breakers, four (4) switches, and three (3) control panels.

Total Cost

The total cost estimate for this Network Upgrade is:

$	0	345kV Transmission Line
$	7,019,275	345kV Substation
$	21,057	AFUDC
$	0	Contingency
$	7,040,332	Total

This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	6	Months
Procurement Time	12	Months
Construction Time	6	Months
Total Project Length	18-24	Months

St Joseph-Cooper 345kV Line Rebuild

345kV Transmission Line

The estimated cost is for 38.6 miles of 345kV with new bundled 1192.5 Grackle ACSS/TW line conductor with two (2) OPGW static wire, nine (9) steel dead end structures, two-hundred sixteen (216) steel tangent structures, thirteen (13) steel running angle structures, and no distribution underbuild.

345kV Substation

At St Joseph 345kV substation, the estimated cost is for one (1) breaker, five (5) switches, removal of the wavetrap, and one (1) control panel.

Total Cost

The total cost estimate for this Network Upgrade is:

$	79,478,223	345kV Transmission Line
$	1,039,295	345kV Substation
$	2,690,611	AFUDC
$	0	Contingency
$	83,208,129	Total

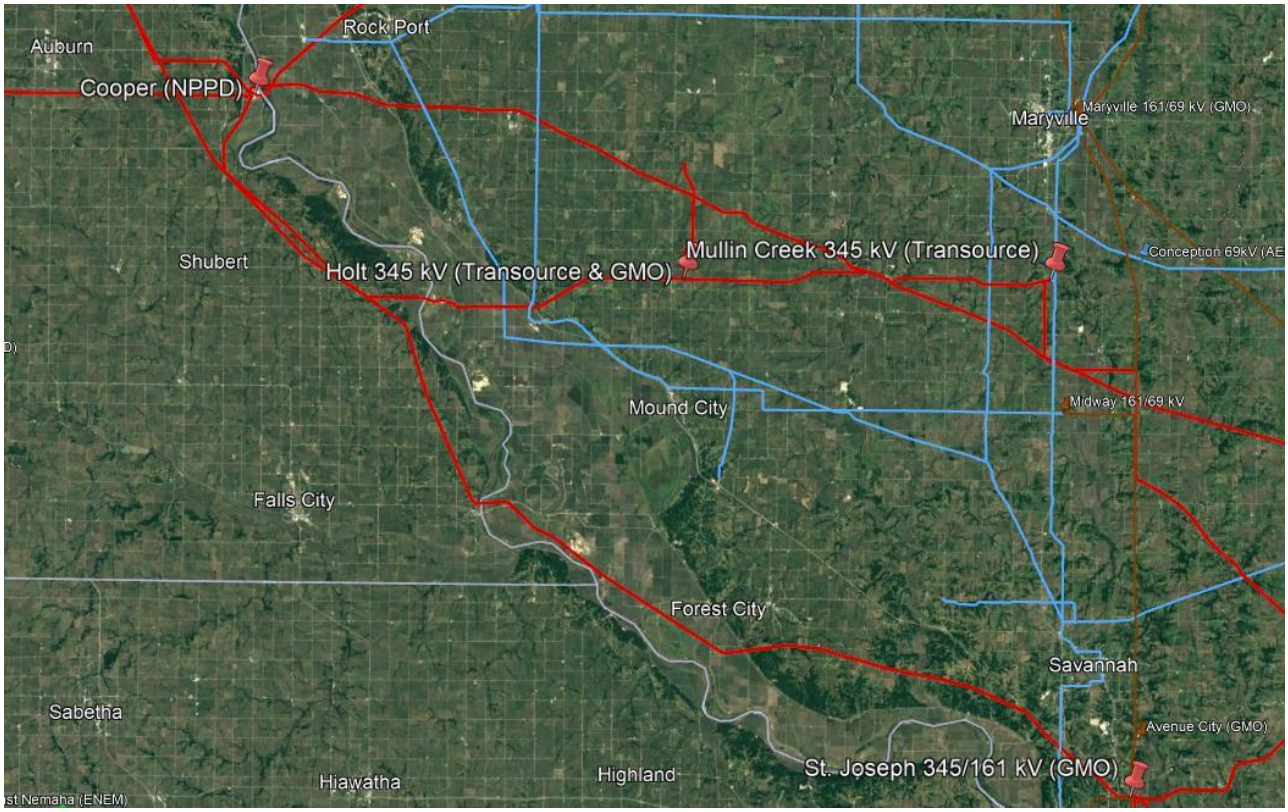
This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	12-18	Months
Procurement Time	12-18	Months
Construction Time	12	Months
Total Project Length	36-48	Months

Figure 4 – St Joseph-Cooper 345kV Line Rebuild



St Joseph-Nashua 345kV Line Rebuild (Evergy Metro)

345kV Transmission Line

The estimated cost is for 14.6 miles of the 38.6 miles of 345kV with new bundled 1192.5 Grackle ACSS/TW line conductor with two (2) OPGW static wire, three (3) steel dead end structures, eighty-seven (87) steel tangent structures, one (1) steel running angle structures, and no distribution underbuild.

345kV Substation

At Nashua 345kV substation, the estimated cost is consists of one (1) control panel, as well as removal of the wavetrap.

Total Cost

The total cost estimate for this Network Upgrade is:

$	29,354,123	345kV Transmission Line
$	215,541	345kV Substation
$	1,947,979	AFUDC
$	0	Contingency
$	31,517,643	Total

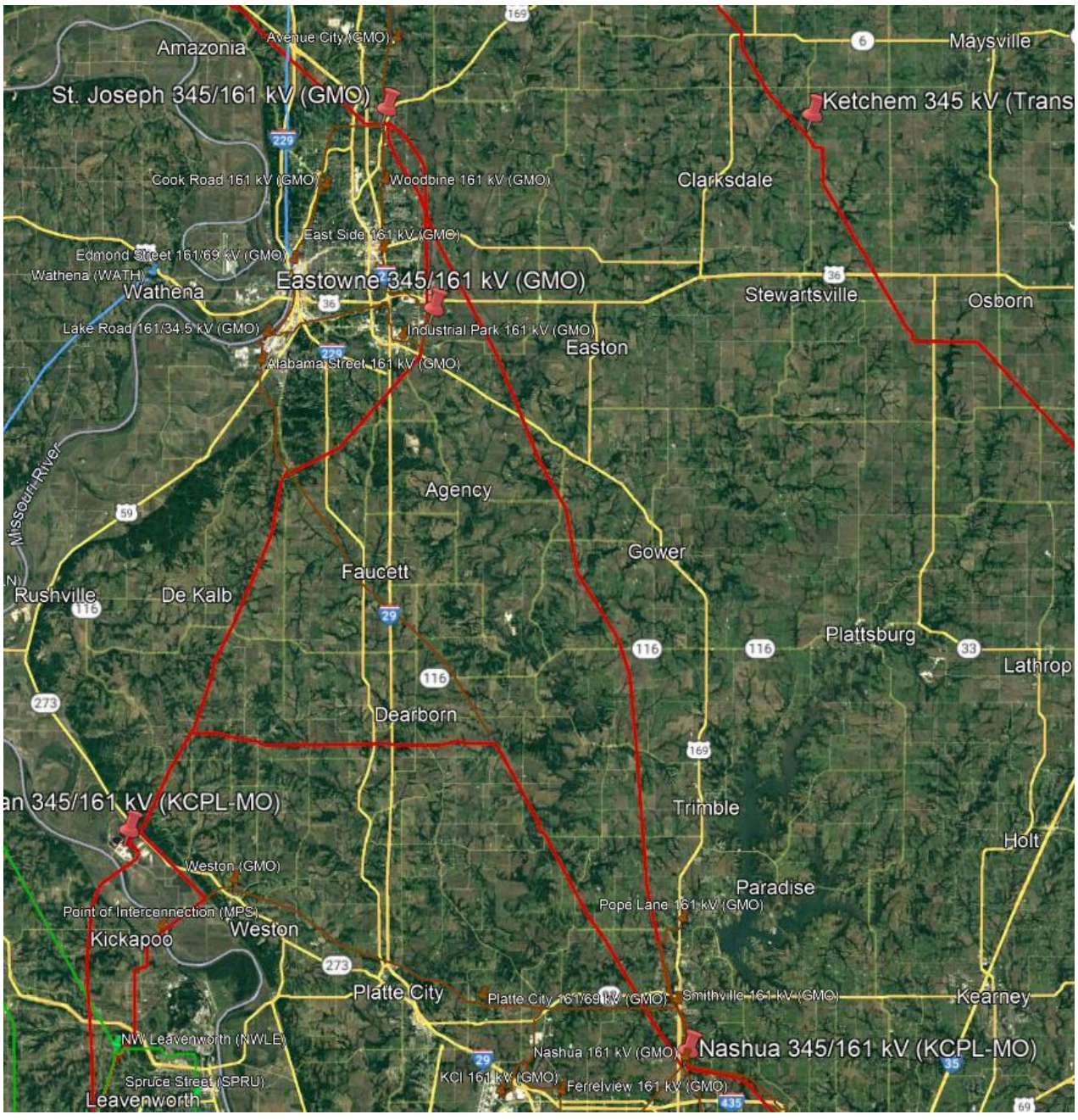
This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	12-18	Months
Procurement Time	12-18	Months
Construction Time	12	Months
Total Project Length	36-48	Months

Figure 5 – St Joseph-Nashua 345kV Line Rebuild



St Joseph-Nashua 345kV Line Rebuild (Evergy Missouri West)

345kV Transmission Line

The estimated cost is for 24.0 miles of the 38.6 miles of 345kV with new bundled 1192.5 Grackle ACSS/TW line conductor with two (2) OPGW static wire, eight (8) steel dead end structures, one hundred twenty-eight (128) steel tangent structures, thirteen (13) steel running angle structures, and no distribution underbuild.

345kV Substation

At St Joseph 345kV substation, the estimated cost is for five (5) switches and removal of the wavetrap.

Total Cost

The total cost estimate for this Network Upgrade is:

$	48,462,701	345kV Transmission Line
$	583,578	345kV Substation
$	1,631,527	AFUDC
$	0	Contingency
$	50,677,806	Total

This estimate is accurate to +/- twenty (20) percent, based on current prices, in accordance with Attachment A of Appendix 4 of the Interconnection Facilities Study Agreement. However, recent cost fluctuations in materials are very significant and the accuracy of this estimate at the time of actual settings cannot be assured.

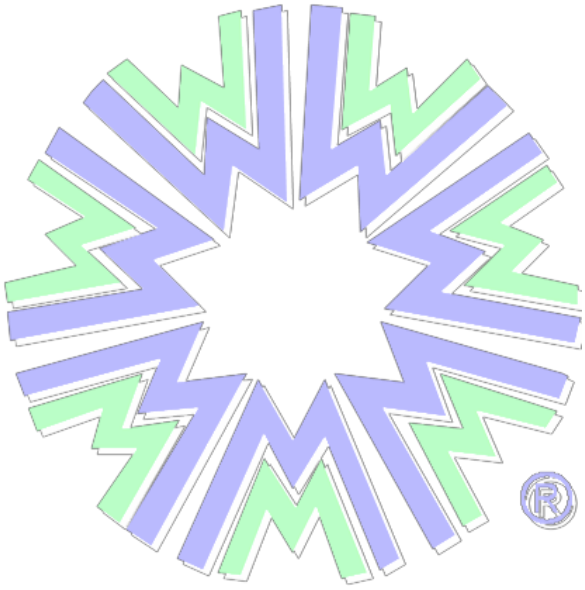
Time Estimate

Time estimates are based on current version of the project schedule and some processes of each category run concurrently.

Engineering Time	12-18	Months
Procurement Time	12-18	Months
Construction Time	12	Months
Total Project Length	36-48	Months

Midwest Energy Inc.

Network Upgrade Study for DISIS-2017-001-2



April 18, 2022

Summary

At the request of the Southwest Power Pool (SPP), Midwest Energy (MIDW) performed a facility study for network upgrades identified in the Definitive Interconnection System Impact Study (DISIS-2017-001-2) in accordance with the SPP Generator Interconnection Procedures (GIP) Section 8.11 for the following Network Upgrades:

- Increase line clearances for South Hays – Great Bend 230 kV Line (UID 144330)

Network Upgrade Scope

The study performed by SPP for DISIS-2017-001-2 showed the South Hays – Great Bend 230 kV facility would require a minimum summer emergency rating of 393 MVA and a winter emergency rating of 354 MVA. The Midwest owned line is sag limited to 175°F (297 MVA summer emergency) by one structure and is currently conductored with 795 ACSR Drake. The winter emergency rating is currently limited to 318.7 MVA by terminal equipment at the Sunflower owned Great Bend terminal. The provided estimate is for replacing the one limiting structure and bringing the summer emergency rating of the Midwest portion of this facility up to the full conductor rating of 398 MVA. The Midwest portion of the facility would then have a Winter emergency rating of 478 MVA (limited at the South Hays terminal by a 1200 A wave trap). It should be noted that terminal equipment upgrades are required at Sunflower's Great Bend facility to meet the winter emergency rating requirements and are not included in this estimate. Sunflower shall provide scope and cost of any upgrades necessary at the Great Bend terminal.

Upgrade Costs

Network Upgrade	Cost (2022 Dollars)
Increase clearance of single structure on South Hays – Great Bend 230 kV line	$65,040

Project Lead Time

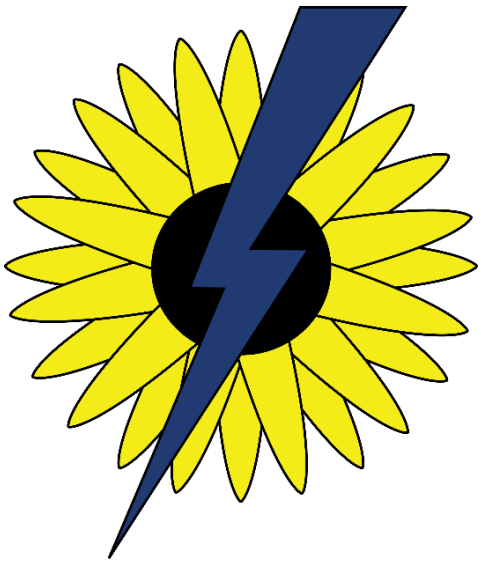
Project in-service date is projected to be 9 months after the issuance of an NTC from SPP.

SUNFLOWER ELECTRIC POWER CORPORATION

A Touchstone Energy® Cooperative

Interconnection Facilities Study for DISIS-2017-001-2 Network Upgrade:

Great Bend 230 kV Terminal Upgrade



April 18, 2022

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STUDY OVERVIEW:

The Southwest Power Pool has requested a Facility Study for a Network Upgrade within portions of the service territory of Sunflower Electric Power Corporation (Sunflower). The Network Upgraded identified is Terminal Upgrades at Sunflower's Great Bend 230 kV substation. All equipment modified, added, or replaced by this Terminal Upgrade at Great Bend 230 kV will be owned by Sunflower.

The cost for the Terminal Upgrades required by this Facility Study is estimated at $109,700.

SPP's DISIS-2017-001-2 identified Network Upgrades required on Terminal Equipment at Great Bend 230 kV substation are associated with GEN-2017-021 and GEN-2017-099, per DISIS-2017-001-2 Power Flow Results (posted 03/17/2022).

INTERCONNECTION FACILITIES AND NETWORK UPGRADES:

There are no Transmission Owner Interconnection Facility (TOIF) upgrades or additions required by Sunflower currently identified.

Network Upgrades included in this study consist of replacing three (3) stand-alone metering CTs to increase the facility rating to a minimum summer emergency rating of 393 MVA and winter emergency rating of 354 MVA.

See Figure 1 for a Conceptual One-line or required modifications.

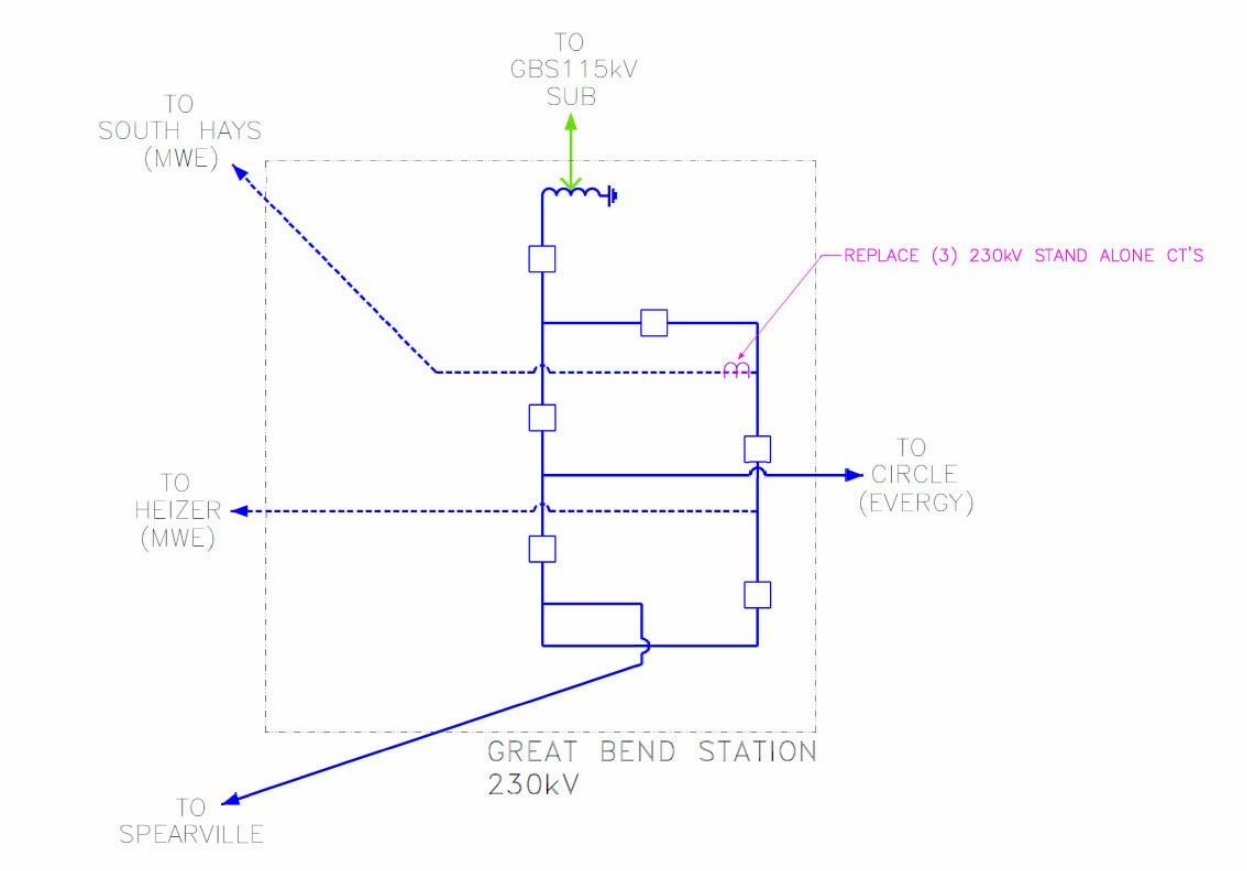

Figure 1: Conceptual Terminal Upgrades at Great Bend 230 kV

INTERCONNECTION COST:

Facilities	Estimated Cost (2022 Dollars)
Transmission Owner Interconnection Facilities (TOIF) None	$0.00
Network Upgrades Replace three (3) stand-alone metering CTs to increase the facility rating to a minimum summer/emergency rating of 393 MVA and winter/emergency rating of 354 MVA. This estimate includes the Engineering, Procurement, and Construction to replace Sunflower owned Terminal Equipment only.	$109,700

PROJECT TIMELINE:

Specific construction schedule and milestones will be determined during the Generator Interconnection Agreement negotiations. Sunflower is estimating an engineering, procurement, and construction schedule of approximately 18 months. Other factors associated with clearances, equipment procurement delays and work schedules could cause additional delays. This is applicable after all required agreements are signed and internal approvals are granted.