



## **MISO Project J1619**

**Unbridled Solar Facility  
160 MW in Henderson, KY**

## **Interconnection Facilities Study Final Report**

**Prepared for the Midcontinent Independent System Operator**

**by  
Big Rivers Electric Corporation  
Transmission Engineering & Design**

**March 22, 2023**

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## Exhibits

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# 1. Executive Summary

This study determined the estimated cost and schedule for interconnecting the J1619 160 MW Generating Facility to the existing Big Rivers-owned Reid Substation. The facility is located in Henderson County, Kentucky. The interconnection will consist of: 1) the relocation of Big Rivers-owned Line 15-E such that its termination is moved from Reid Substation to Big Rivers-owned Reid EHV Substation, 2) upgrades to the terminal vacated by Line 15-E at Reid Substation, 3) the addition of a new terminal at Reid EHV Substation for line 15-E, and 4) the interconnection transmission line from the Solar Facility to vacated terminal at Reid Substation.

Interconnection Customer will be responsible for engineering and constructing the interconnection transmission line. Therefore, the interconnecting facilities are not addressed herein.

Transmission Owner's current schedule for completion of substation modifications and additional improvements is one year after MISO approval as well as execution of agreement and receipt of final payment described herein.

The project may also require Network Upgrades on other transmission lines and switching stations that are yet to be determined in a System Impact Study. Such other Network Upgrades will be studied in a separate Facilities Study.

## 1.1 Project Summary

### A. Point of Interconnection

The Point of Interconnection shall be at the point within the existing Reid Substation. The substation is a 3-position breaker-and-a-half configuration where the Transmission Owner's Interconnection Facilities connect to the Transmission Owner's system at the interconnection bus tap of each of the three phases of the Transmission Owner's 161 kV bus.

The Point of Change of Ownership shall be where the Interconnection Customer's Interconnection Facilities connect to the dead-end structure associated with the 161 kV terminal of the Transmission Owner's Interconnection Substation (Reid).

The metering point will be at the 161 kV terminal within the interconnection substation. Transmission Owner will install the necessary potential and current transformers, as well as the meter at the Interconnection Customer's expense.

## **1.2 Election to Transmission Owner Self-Fund of Network Upgrades**

NONE

## **2. Transmission Owner Interconnection Facilities**

### **2.1 Overview**

**2.1.1** The Transmission Owner Interconnection Facilities will consist of an upgraded terminal within the Reid Substation, a new terminal within Reid EHV substation, and the relocation of Line 15-E.

**2.1.2** The new terminal will consist of all necessary terminal equipment to connect the J1619 conductors to the substation. See Exhibit A2.

**2.1.3** This estimate includes only facilities within the Reid substation, Reid EHV substation, and the relocated line 15-E. The Interconnection Customer will own and maintain 161 kV Interconnection Facilities from the Generating Facility to Reid substation. Transmission Owner will provide an acceptable line terminal, to which the line conductor and OPGW will attach.

### **2.2 Assumptions**

Interconnecting facilities will be constructed to BREC standards and all applicable codes.

### **2.3 Civil Site Improvements**

The Reid substation modifications will include the following:

- Concrete foundations modifications for new breakers
- Concrete structures for SF<sub>6</sub> breakers
- Misc. additions to cable trench and conduit system for control cabling

## 2.4 Electrical Major Items

- 0.51 miles of reroute 161 kV transmission line built on steel multiple structures supporting 795 ACSR phase conductors and 3/8" EHS Steel OHGWs
- Modifications to the existing breaker-and-a-half switching station
- Three (3) Capacitor Coupling Voltage Transformers
- Three (2) disconnect switches rated 161 kV, 2000 A continuous, 63 kA momentary, 750 kV BIL
- Three (3) 161 kV Surge Arresters
- Three (3) 161 kV metering accuracy Potential/Voltage Transformers
- Three (3) 161 kV metering accuracy Current Transformers
- Two (2) 161 kV, SF<sub>6</sub> Gas Circuit Breakers rated 2000 A, 40 kA interrupting capability
- Two (2) Line Relay Panels (SEL relays) - One at Reid and one at Reid EHV
- One (1) Fiber Patch Panel Housing, fiber splice box and fiber termination in control house
- Revenue Metering Panel
- Bus and Fittings: five-inch aluminum tube and portions of two (2) 795 AAC wire conductor for flexible jumpers with aluminum bus connectors, fittings, and terminals
- Insulators: High strength porcelain station post insulators
- Modifications to the 4/0 Copper Ground Grid system
- Replacement cabling for new equipment
- Modifications to the SCADA and Communication equipment

## 2.5 Cost

The estimated cost for Transmission Owner Interconnection Facility upgrade is \$3,259,218.77<sup>1</sup>

## 3. Stand-Alone Network Upgrades

NONE REQUIRED

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<sup>1</sup> Estimated cost is in year 2022 dollars, does not include tax gross-up or escalation, and is accurate to ±20%

#### **4. Non-Stand-Alone Network Upgrades**

NONE REQUIRED

#### **5. System Protection Facilities Constructed by Transmission Owner**

NONE

#### **6. Distribution Upgrades**

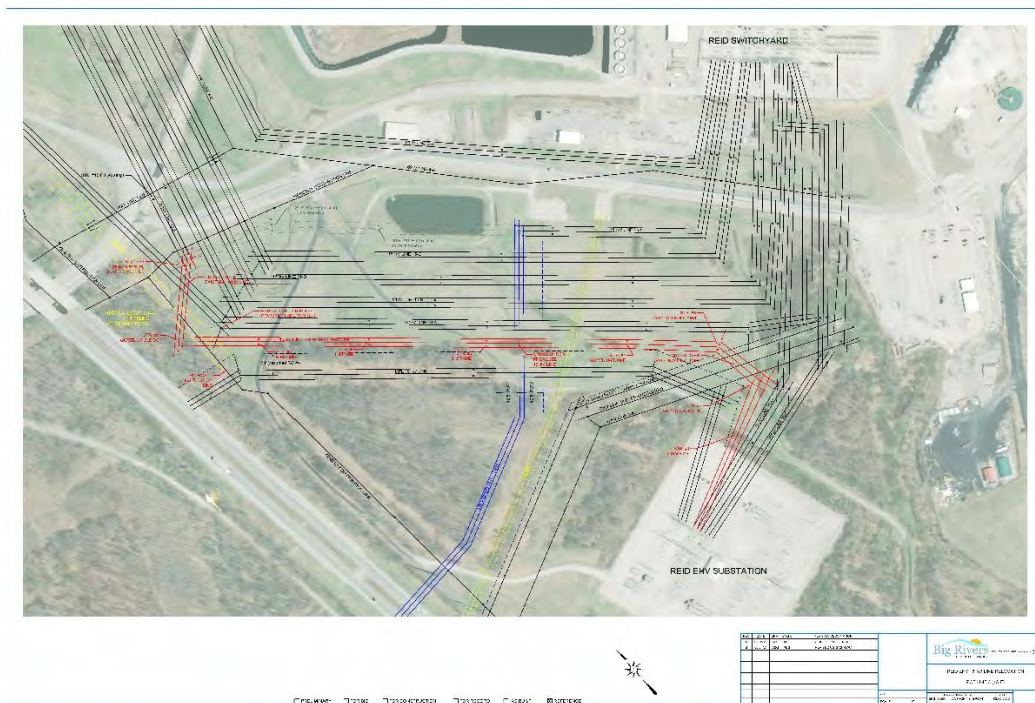
NONE REQUIRED



# 7. Exhibits

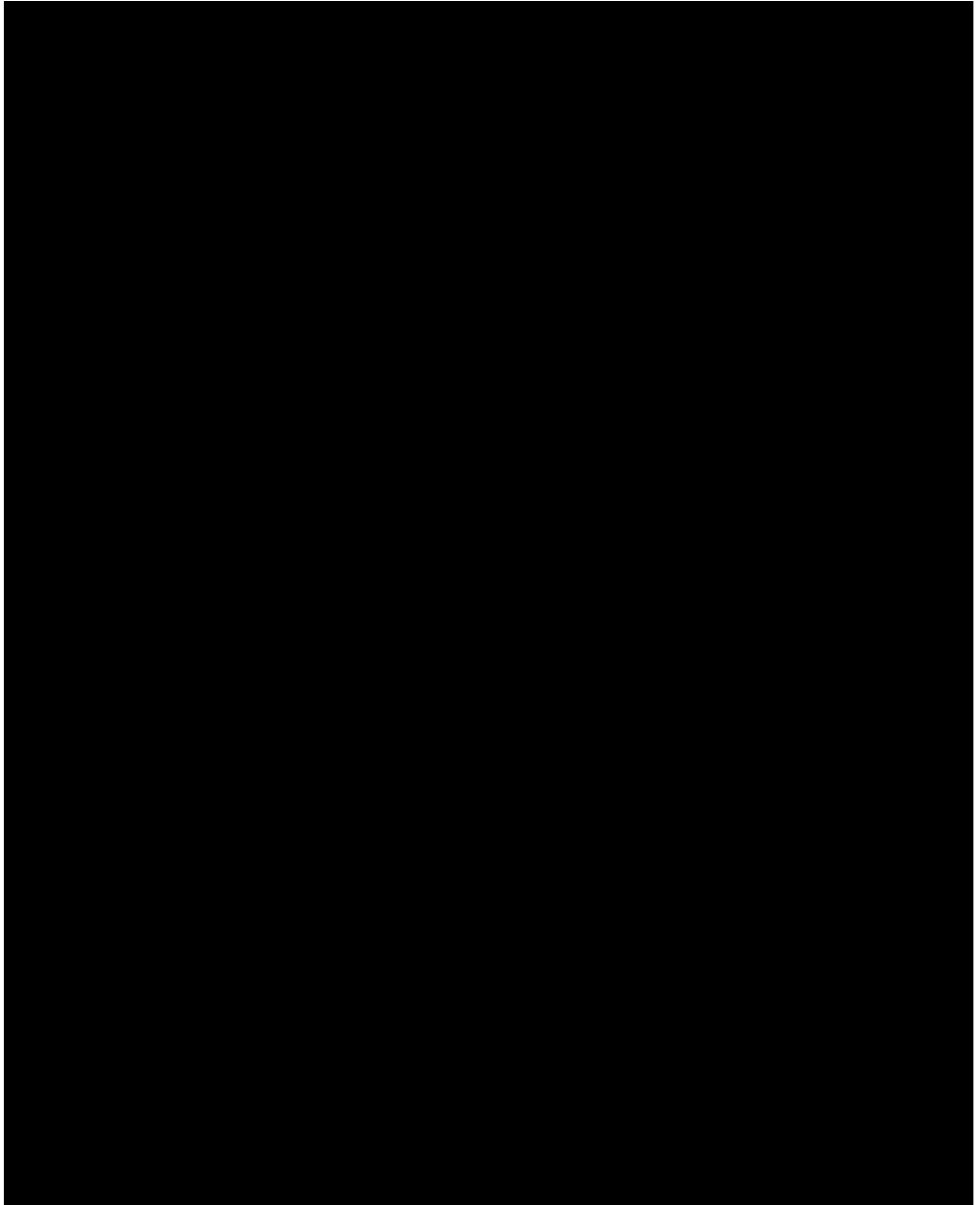
## A1 Interconnection Customer Generating Facility One-Line and Site Map

Site map provided below. Interconnection facility one-line to be provided by Interconnection Customer.



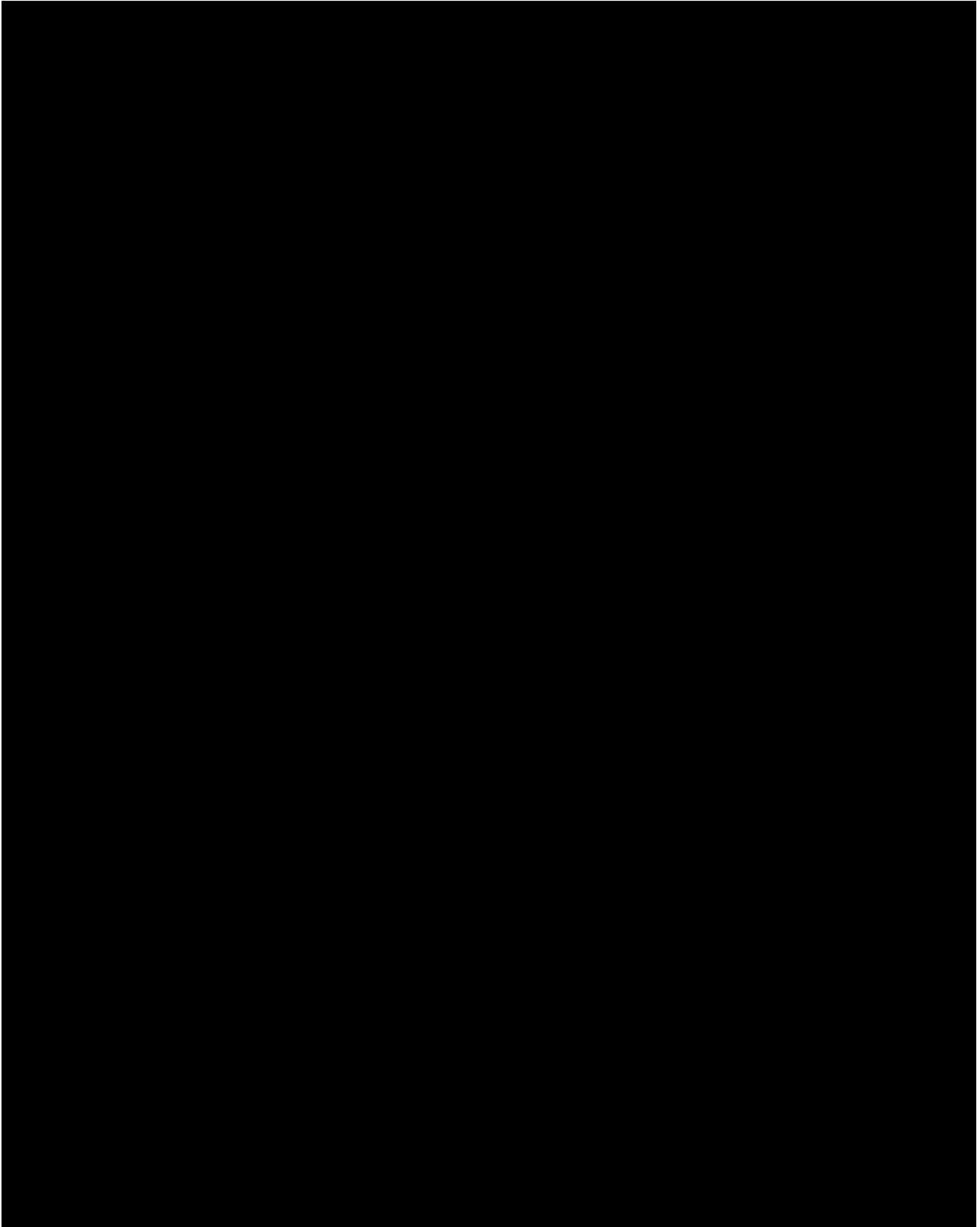
This document contains Critical Energy Infrastructure Information. It should not be posted publicly and should be shared only with people who have executed the Midwest ISO's CEII General Non-Disclosure Agreement.

## A2 Transmission Owner Interconnection Switching Station and System One-Line

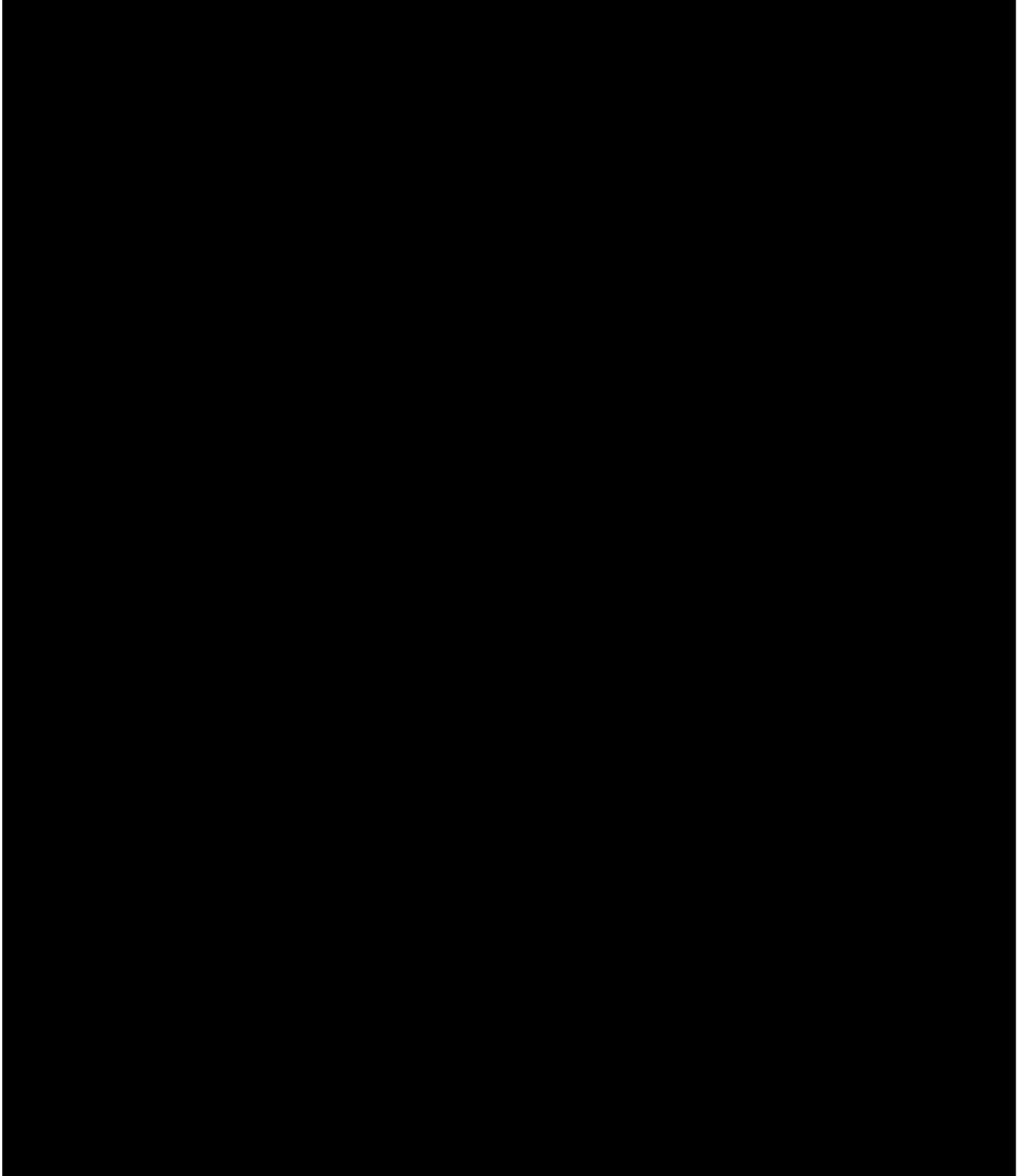


This document contains Critical Energy Infrastructure Information. It should not be posted publicly and should be shared only with people who have executed the Midwest ISO's CEII General Non-Disclosure Agreement.

### A3 Transmission Owner Switching Station Site Plan



## A4 Transmission Owner Interconnection Switching Station Plan and Profile



## A5 Facilities to be Constructed by Transmission Owner

| Type   | Facilities to be Constructed by the Transmission Owner | Cost Estimate          |
|--|--|------------------------|
| Transmission Owner Interconnection Facilities  | Construct Modifications to the Reid EHV Substation     | \$1,306,257.00         |
|  | Construct Modifications to the Reid Substation         | \$495,848              |
|  | Relocation of Line 15-E                                | \$1,457,113.77         |
| <b>TOTAL</b>   |  | <b>\$3,259,218.77*</b> |
| <i>* Estimated cost is in year 2022 dollars, does not include tax gross-up or escalation, and is accurate to ±20%.</i> |  |                        |

## A6 Detailed Cost of Facilities to be Constructed by Transmission Owner

### NGR Unbridled Solar – Reid EHV Substation Modifications

Big Rivers Electric Cooperative

Reid EHV - Add terminal

November 8, 2022

| Line | Item   | Quantity |             | Capital Fund Estimate |                     | Line |
|------|--|----------|-------------|-----------------------|---------------------|------|
|      |  |          |             | Unit Price            | Total Price         |      |
| 1    | 161 kV Circuit Breaker   | 2        | Ea          | \$ 90,000             | \$ 180,000          | 1    |
| 2    | 161kV Structures & Misc. Equipment   | 0        | Ea          | \$ 75,000             | \$ -                | 2    |
| 3    | 161 kV Switch-GOAB   | 3        | Ea          | \$ 15,000             | \$ 45,000           | 3    |
| 4    | Coupling Capacitor Voltage Transformers  | 3        | Ea          | \$ 15,000             | \$ 45,000           | 4    |
| 5    | Metering Equipment   | 3        | Ea          | \$ 20,000             | \$ 60,000           | 5    |
| 6    | Control Building   | 0        | Ea          | \$ 200,000            | \$ -                | 6    |
| 7    | Relay Panels   | 2        | Ea          | \$ 45,000             | \$ 90,000           | 7    |
| 8    | Communication / SCADA Equipment  | 0        | Ea          | \$ 75,000             | \$ -                | 8    |
| 9    | Batteries  | 0        | Ea          | \$ 50,000             | \$ -                | 9    |
| 10   | <b>SUBSTATION SUBTOTAL</b>   |          |             |                       | <b>\$ 420,000</b>   | 10   |
| 11   |  |          |             |                       |                     | 11   |
| 12   | Material taxes   | 6%       |             |                       | \$ 25,200           | 12   |
| 13   | <b>SUBSTATION MATERIAL TOTAL</b>   |          |             |                       | <b>\$ 445,200</b>   | 13   |
| 14   |  |          |             |                       |                     | 14   |
| 15   | Concrete   | 20       | CYD         | \$ 1,000              | \$ 20,000           | 15   |
| 16   | Sitework & Gravel  | 1        |             | \$ 50,000             | \$ 50,000           | 16   |
| 17   | Cable Trench   | 0        | LFT         | \$ 100                | \$ -                | 17   |
| 18   | Conduit  | 500      | LFT         | \$ 20                 | \$ 10,000           | 18   |
| 19   | Grounding  | 1        | LOT         | \$ 10,000             | \$ 10,000           | 19   |
| 20   | Fencing  | 0        | FT          | \$ 35                 | \$ -                | 20   |
| 21   | Cabling  | 1000     | LFT         | \$ 10                 | \$ 10,000           | 21   |
| 22   | Construction: Labor and Material for Grounding, Conduit, Bus Assembly, & Control Cabling | 4        | LOT         | \$ 100,000            | \$ 400,000          | 22   |
| 23   | Wiring Assistance  | 0        | LOT         | \$ 10,000             | \$ -                | 23   |
| 24   | Testing  | 6        | LOT         | \$ 10,000             | \$ 60,000           | 24   |
| 25   | <b>SUBTOTAL EQUIPMENT &amp; CONSTRUCTION</b>   |          |             |                       | <b>\$ 1,005,200</b> | 25   |
| 26   |  |          |             |                       |                     | 26   |
| 27   | Pricing and Construction Allowance   | 15%      |             |                       | \$ 150,780          | 27   |
| 28   | <b>SUBTOTAL EQUIP., CONST., &amp; ALLOWANCE</b>  |          |             |                       | <b>\$ 1,155,980</b> | 28   |
| 29   |  |          |             |                       |                     | 29   |
| 30   | Design and Construction Engineering  | 10%      |             |                       | \$ 115,598          | 30   |
| 31   | Owner's Overhead Expense   | 2%       |             |                       | \$ 23,120           | 31   |
| 32   | Allowance for Funds Used during Const.   | 1%       |             |                       | \$ 11,560           | 32   |
| 33   |  |          |             |                       |                     | 33   |
| 34   | <b>SUBTOTAL ENGINEERING &amp; OTHER FEES</b>   |          |             |                       | <b>\$ 150,277</b>   | 34   |
| 35   |  |          |             |                       |                     | 35   |
| 36   | <b>TOTAL</b>   |          |             |                       | <b>\$ 1,306,257</b> | 36   |
| 37   |  |          |             |                       |                     | 37   |
| 38   |  |          |             |                       |                     | 38   |
| 39   | Prepared by: Anthony Hanson  |          | Checked by: |                       | Updated by:         | 39   |
| 40   | Date: Nov. 8, 2022   |          | Date:       |                       | Date:               | 40   |
| 41   |  |          |             |                       |                     | 41   |
| 42   | <b>Notes:</b>  |          |             |                       |                     | 42   |
| 43   |  |          |             |                       |                     | 43   |

**NGR Unbridled Solar - Reid Substation Modifications**

**Big Rivers Electric Cooperative**

*Reid SWYD - Replace relaying for NGR Solar*

November 8, 2022

| Line | Item   | Quantity    | Capital Fund Estimate |                   | Line |
|------|--|-------------|-----------------------|-------------------|------|
|      |  |             | Unit Price            | Total Price       |      |
| 1    | 161 kV Circuit Breaker   | 0 Ea        | \$ 90,000             | \$ -              | 1    |
| 2    | 161kV Structures & Misc. Equipment   | 0 Ea        | \$ 75,000             | \$ -              | 2    |
| 3    | 161 kV Switch-GOAB   | 0 Ea        | \$ 15,000             | \$ -              | 3    |
| 4    | Coupling Capacitor Voltage Transformers  | 0 Ea        | \$ 15,000             | \$ -              | 4    |
| 5    | Metering Equipment   | 0 Ea        | \$ 20,000             | \$ -              | 5    |
| 6    | Control Building   | 0 Ea        | \$ 200,000            | \$ -              | 6    |
| 7    | Relay Panels   | 2 Ea        | \$ 45,000             | \$ 90,000         | 7    |
| 8    | Communication / SCADA Equipment  | 0 Ea        | \$ 75,000             | \$ -              | 8    |
| 9    | Batteries  | 0 Ea        | \$ 50,000             | \$ -              | 9    |
| 10   | <b>SUBSTATION SUBTOTAL</b>   |             |                       | <b>\$ 90,000</b>  | 10   |
| 11   |  |             |                       |                   | 11   |
| 12   | Material taxes   | 6%          |                       | \$ 5,400          | 12   |
| 13   | <b>SUBSTATION MATERIAL TOTAL</b>   |             |                       | <b>\$ 95,400</b>  | 13   |
| 14   |  |             |                       |                   | 14   |
| 15   | Concrete   | 0 CYD       | \$ 1,000              | \$ -              | 15   |
| 16   | Sitework & Gravel  | 0           | \$ 50,000             | \$ -              | 16   |
| 17   | Cable Trench   | 0 LFT       | \$ 100                | \$ -              | 17   |
| 18   | Conduit  | 500 LFT     | \$ 20                 | \$ 10,000         | 18   |
| 19   | Grounding  | 0 LOT       | \$ 10,000             | \$ -              | 19   |
| 20   | Fencing  | 0 FT        | \$ 35                 | \$ -              | 20   |
| 21   | Cablings   | 1000 LFT    | \$ 10                 | \$ 10,000         | 21   |
| 22   | Construction: Labor and Material for Grounding, Conduit, Bus Assembly, & Control Cabling | 2 LOT       | \$ 100,000            | \$ 200,000        | 22   |
| 23   | Wiring Assistance  | 0 LOT       | \$ 10,000             | \$ -              | 23   |
| 24   | Testing  | 5 LOT       | \$ 10,000             | \$ 50,000         | 24   |
| 25   | <b>SUBTOTAL EQUIPMENT &amp; CONSTRUCTION</b>   |             |                       | <b>\$ 365,400</b> | 25   |
| 26   |  |             |                       |                   | 26   |
| 27   | Pricing and Construction Allowance   | 15%         |                       | \$ 54,810         | 27   |
| 28   | <b>SUBTOTAL EQUIP., CONST., &amp; ALLOWANCE</b>  |             |                       | <b>\$ 420,210</b> | 28   |
| 29   |  |             |                       |                   | 29   |
| 30   | Design and Construction Engineering  | 15%         |                       | \$ 63,032         | 30   |
| 31   | Owner's Overhead Expense   | 2%          |                       | \$ 8,404          | 31   |
| 32   | Allowance for Funds Used during Const.   | 1%          |                       | \$ 4,202          | 32   |
| 33   |  |             |                       |                   | 33   |
| 34   | <b>SUBTOTAL ENGINEERING &amp; OTHER FEES</b>   |             |                       | <b>\$ 75,638</b>  | 34   |
| 35   |  |             |                       |                   | 35   |
| 36   | <b>TOTAL</b>   |             |                       | <b>\$ 495,848</b> | 36   |
| 37   |  |             |                       |                   | 37   |
| 38   |  |             |                       |                   | 38   |
| 39   | Prepared by: Anthony Hanson  | Checked by: | Updated by:           |                   | 39   |
| 40   | Date: Nov. 8, 2022   | Date:       | Date:                 |                   | 40   |
| 41   |  |             |                       |                   | 41   |
| 42   | <b>Notes:</b>  |             |                       |                   | 42   |
| 43   |  |             |                       |                   | 43   |

**ESTIMATE SUMMARY**

| <b>TRANSMISSION LINE CONSTRUCTION</b>             |  |                             |                                 |                       |
|---|--|-----------------------------|---------------------------------|-----------------------|
|   | <b>Line 15-E Reroute</b>                 |                             |                                 |                       |
|   | <b>Owner<br/>Furnished<br/>Materials</b> | <b>Contractor<br/>Labor</b> | <b>Contractor<br/>Materials</b> | <b>Total</b>          |
| Part 1--POLE UNITS                                | \$ 185,850.00                            | \$ 252,000.00               | \$ -                            | \$ 437,850.00         |
| Part 2--POLE TOP CONSTRUCTION ASSEMBLY UNITS      | \$ 86,900.00                             | \$ 100,275.00               | \$ -                            | \$ 187,175.00         |
| Part 3--CONDUCTOR CONSTRUCTION ASSEMBLY UNITS     | \$ 13,665.00                             | \$ 81,150.00                | \$ -                            | \$ 94,815.00          |
| Part 4--GUY CONSTRUCTION ASSEMBLY UNITS           | \$ 21,600.00                             | \$ 34,020.00                | \$ -                            | \$ 55,620.00          |
| Part 5--ANCHOR CONSTRUCTION ASSEMBLY UNITS        | \$ 54,000.00                             | \$ 36,000.00                | \$ -                            | \$ 90,000.00          |
| Part 6--MISCELLANEOUS CONSTRUCTION ASSEMBLY UNITS | \$ 12,000.00                             | \$ 75,120.00                | \$ 66,000.00                    | \$ 153,120.00         |
| Part 7 (not used)                                 |  |                             |                                 | \$ -                  |
| Part 8--REMOVAL CONSTRUCTION ASSEMBLY UNITS       |  | \$ 24,990.00                |                                 | \$ 24,990.00          |
| 6% Tax (Materials Only)                           | \$22,440.90                              |                             | \$3,960.00                      | \$26,400.90           |
| <b>Total Construction</b>                         | <b>\$396,455.90</b>                      | <b>\$603,555.00</b>         | <b>\$69,960.00</b>              | <b>\$1,069,970.90</b> |
| Contingency (20%)                                 |  |                             |                                 | \$213,994.18          |

|                                    |             |
|------------------------------------|-------------|
| Engineering Design                 | \$45,000.00 |
| Survey, Construction Staking       | \$5,000.00  |
| Geotechnical Study                 | \$25,000.00 |
| Eng. Construction Support (1%)     | \$10,699.71 |
| Construction Management (1.5%)     | \$16,049.56 |
| Owner Overhead Cost (2%)           | \$21,399.42 |
| Additional Easement<br>\$30k/ Acre |             |
| ROW Clearing<br>\$10k/ Acre        | \$50,000.00 |
| Permitting                         |             |

Total \$1,457,113.77



**A7 Detailed Cost of Facilities to be Constructed by Interconnection  
Customer**

None

**A8 Detailed Cost of Transmission Owner Facilities to be Constructed by Interconnection Customer**

None

## **A9 Facilities Subject to Transmission Service Credits**

*Not applicable*

## **A10 Contingent Facilities**

*Not applicable*

## **A11 Interconnection Customer and Transmission Owner Milestones**

TBD.

## A12 Construction and Coordination Schedules

| No. | Description   | Date  |
|-----|---|---|
| 1a. | Provide initial payment to Transmission Owner (GIA 11.5)  | Within the later of a) 45 Calendar Days of the execution of the GIA by all Parties, or b) 45 Calendar Days of acceptance by FERC if the GIA is filed unexecuted and the payment is being protested by Interconnection Customer, or c) 45 Calendar Days of the filing if the GIA is filed unexecuted and the initial payment is not being protested by Interconnection Customer. |
| 1b. | Provide security, <i>i.e.</i> , a guarantee, surety bond, letter of credit or other reasonably acceptable form of security to Transmission Owner (GIA 11.6).  | 45 Calendar Days prior to design, procurement, and construction.  |
| 1c. | Enter into a Facilities Service Agreement (“FSA”) with Transmission Owner for the Network Upgrades associated with this GIA.  | Within 90 Calendar Days of the Effective Date of the GIA and prior to in-service date of Network Upgrades associated with this GIA.   |
| 2.  | Provide Certificate of Insurance (GIA 18.4.9).  | The earlier of the construction work commencement date or the milestone date; thereafter, within 90 Calendar Days of end of fiscal year or insurance renewal date.  |
| 3.  | <p>i) Provide to Transmission Provider evidence of continued Site Control after execution of this GIA (GIP 7.2.2).</p> <p>ii) Provide evidence of one or more of the following milestones being achieved: (1) execution of contract for (a) fuel supply or transport; (b) cooling water supply; (c) engineering procurement of major equipment or construction; (d) execution of a contract for the sale of electric energy or capacity from the Generating Facility, or a statement signed by an officer or authorized agent of Interconnection Customer attesting that the Generating Facility is included in an applicable state resource adequacy plan; or other information that Transmission Provider deems to be reasonable evidence that the Generating Facility will qualify as a designated network resource; or (2) documentation of application for state or local air, water, land, or federal nuclear or hydroelectric permits and that the application is proceeding per regulations (GIP 11.3).</p> | <p>As may be agreed to by the Parties.</p> <p>Within 180 Calendar Days of Effective Date.</p>   |
| 4.  | Provide security in the amount of \$ _____ to Transmission Owner to commence design, equipment procurement and construction for Interconnection Facilities (GIA 5.5 and 5.6).   | As may be agreed to by the Parties.   |

| No.  | Description  | Date   |
|------|--|--|
| 5.   | Invoice Transmission Owner for the estimated amount to be expended by the Interconnection Customer to construct any Stand-Alone Network Upgrades for which the Interconnection Customer has exercised its Option to Build if the Transmission Owner has elected to Self-Fund (GIA 5.2.13). | As may be agreed to by the Parties, but in no event later than 45 Calendar Days prior to the date the Interconnection Customer must make any construction payment. |
| 6.   | Pre-construction meeting.  | As may be agreed to by the Parties.  |
| 7.   | Provide initial design and specifications for Interconnection Customer's Interconnection Facilities to Transmission Owner and Transmission Provider for comment (GIA 5.10.1).  | 180 Calendar Days prior to initial synchronization date.   |
| 8.   | Provide final design and specifications for Interconnection Customer's Interconnection Facilities to Transmission Owner and Transmission Provider for comment (GIA 5.10.1).  | 90 Calendar Days prior to initial synchronization date.  |
| 9.   | Deliver to Transmission Owner and Transmission Provider "as-built" drawings, information, and documents regarding Interconnection Customer's Interconnection Facilities (GIA 5.10.3).  | Within 120 Calendar Days of Commercial Operation Date.   |
| 10.  | Provide Transmission Owner final cost invoices to construct Stand Alone Network Upgrades for which the Interconnection Customer has exercised its Option to Build if the Transmission Owner has elected to Self-Fund (GIA 5.2.13).   | Within six (6) months of completion.   |
| 10a. | Transfer ownership of the Transmission Owner's Interconnection Facilities and Stand-Alone Network Upgrades to Transmission Owner if Interconnection Customer has exercised the Option to Build (GIA 5.2.9).  | As agreed to by the Parties, but in no event later than the earlier of energization or three days prior to the Initial Synchronization Date.                       |
| 10b. | Refund overpayment, if any, of estimated costs to construct any Stand-Alone Network Upgrades for which the Interconnection Customer has exercised its Option to Build if the Transmission Owner has elected to Self-Fund (GIA 5.2.13).   | Within 30 Calendar Days after submitting invoice for final costs under Milestone 10.   |
| 11.  | Notify Transmission Provider and Transmission Owner in writing of Local Balancing Authority where Generating Facility is located (GIA 9.2).  | Three months prior to Initial Synchronization Date.  |
| 12.  | Pre-energization meeting.  | As may be agreed to by the Parties.  |
| 13.  | Initial Synchronization Date.  | As agreed to by the Parties.   |
| 14.  | Commercial Operation Date.   | As agreed to by the Parties.   |

| <b>No.</b> | <b>Description</b>   | <b>Date</b>   |
|------------|--|---|
| 15.        | Interconnection Customer shall provide the Parties with notice on the status of the Generating Facility, including COD, under Article 15 of this GIA and shall also send such notice by email to <a href="mailto:ResourceIntegration@misoenergy.org">ResourceIntegration@misoenergy.org</a> . Notification shall include Interconnection Customer's name, and as applicable Market Participant(s) name(s), and project number.   | 6 months prior to Initial Synchronization Date.                             |
| 16.        | Interconnection Customer shall provide notice to the Parties of a test plan in advance of conducting tests for the Generating Facility. The notice shall be in the form below and should be provided under Article 15 of this GIA, and a copy of such notice should be emailed to <a href="mailto:ResourceIntegration@misoenergy.org">ResourceIntegration@misoenergy.org</a> .   | 5 Business Days prior to testing.   |
| 17.        | In the event the Interconnection Customer makes any modifications to the design of the site layouts or interconnection facility routes after execution of this GIA, Interconnection Customer shall notify the Parties of such changes immediately upon identifying the need for such changes. After providing such notification, the Interconnection Customer shall provide to Transmission Provider evidence of continued Site Control for land sufficient to accommodate the changes in site layouts and/or interconnection facility routes (GIP 7.2.2). | 90 Calendar Days after Interconnection Customer provides notice to Parties. |



## **A13 Permits, Licenses, Regulatory Approvals, and Authorization**

Permits, licenses, and approvals required to construct the Transmission Owner facilities may include, but are not limited to:

1. Wetland delineation of servitudes and proposed construction access points – Interconnection Customer responsibility
2. US Corps of Engineers permitting/approval for wetlands – Interconnection Customer responsibility
3. US Corps of Engineers permitting/approval for river/levee permits – Interconnection Customer responsibility
4. Environmental sampling and disposal of displaced soils – Interconnection Customer responsibility
5. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) – Interconnection Customer responsibility
6. Temporary landowner easements – Interconnection Customer responsibility
7. Pipeline Letters of No Objection – Interconnection Customer responsibility
8. Land Acquisition for POI Substation

## **A14 Interconnection and Operating Guidelines**

### **Power Factor Range**

The Big Rivers planning criteria requires that an interconnecting generator must be able to operate within a power factor range of 0.95 lagging (supplying VARs to the system) to 0.95 leading (absorbing VARs from the system) at the high-voltage side of the Generating Facility step-up transformer.

### **Harmonics Requirements**

The connecting entity shall take responsibility for limiting harmonic voltage and current distortion caused by their generation equipment. Limits for harmonic distortion (including inductive telephone influence factors) are consistent with those published in the latest issues of ANSI/IEEE 519, "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems." Big Rivers may require the installation of a monitoring system to permit ongoing assessment of compliance with these criteria.

The generator's facilities and equipment shall not cause excessive voltage flicker nor introduce excessive distortion to the sinusoidal voltage or current waves as defined by ANSI Standard C84.1 1989, or any applicable superseding electric industry standard. For voltage flicker in the frequency range of 1 to 25 Hz, voltage flicker levels are unacceptable if either of the following conditions exist: (a) the cumulative RMS voltage flicker at the Points of Interconnection exceeds 0.30% for 1.0% of a representative time period, or (b) the instantaneous voltage flicker level regularly exceeds 0.45% at the Points of Interconnection (this is approximately equal to a cumulative RMS voltage flicker of 0.45% for 0.01% of a representative time period.)

### **Operating to a Specified Voltage or VAR Schedule**

Big Rivers will provide the required voltage schedule at the time of startup. A typical voltage schedule requires operation within a maximum voltage range of 152.95 kV to 169.0 kV with 165.0 kV to 167.0 kV desired.

### **Operating Guidelines**

No operating restrictions are anticipated.