

NextEra – Grazing Yak Solar LLC

upload the agreement

Interconnect Agreement Status

NextEra submitted an interconnection request to Public Service Company of Colorado (PSCo) in November 2017 for the 35 MW Grazing Yak project. The combined Feasibility and System Impact Study was completed October 17, 2018 and is attached. The Facilities Study was completed on December 6, 2018 and is attached. A draft Large Generator Interconnection Agreement (LGIA) has been received and execution of the agreement is expected by the end of January 2019. NextEra has been in communication with PSCo throughout this process, and fully expects that the final LGIA will be executed well before start of construction.



INTERCONNECTION FACILITIES STUDY REPORT

GENERATOR INTERCONNECTION REQUEST # GI-2017-52

**36 MW PV Solar Generating Facility
Interconnecting at
Jackson Fuller Substation 230kV Bus**

**Xcel Energy – Public Service Company of Colorado (PSCo)
December 6, 2018**

Executive Summary

This Interconnection Facilities Study Report summarizes the analysis performed by Public Service Company of Colorado (PSCo) to specify and estimate the cost of the siting, engineering, equipment procurement and construction needed to physically and electrically connect the GI-2017-52 photovoltaic (PV) solar generation facility (GF) located in El Paso County, Colorado.

The Point of Interconnection (POI) requested for GI-2017-52 is the 230 kV bus within the Jackson Fuller substation jointly-owned by PSCo, Colorado Springs Utilities (CSU) and Tri-State Generation & Transmission (TSGT). The Interconnection Customer's PV solar GF will produce 36 MW using eighteen (18) GE 2.0 MW inverters connected to a 34.5kV collector system bus. The 34.5kV collector system will use the existing Golden West wind generating facility's Main Step-up Transformer rated 34.5/230 kV, 180/240/300 MVA and the existing 230kV transmission line (Gen-Tie) to interconnect to the POI.

The Commercial Operation Date (COD¹) requested by the Interconnection Customer is December 31, 2019. The COD allows for the estimated time-frame of 12 months required to site, engineer, procure and construct the interconnection facilities (noted in Table 1 of this report) from the date the customer meets all applicable milestones as agreed to in any future Large Generator Interconnection Agreement (LGIA). An Engineering & Procurement Agreement can be executed to facilitate completion of the interconnection facilities.

The proposed one-line diagram for the GI-2017-52 interconnection station is shown in Figure 1 in the Appendix.

GI-2017-52 was studied as Energy Resource Interconnection Service (ERIS)² only.

¹ **Commercial Operation Date** of a unit shall mean the date on which the Generating Facility commences Commercial Operation as agreed to by the Parties pursuant to Appendix E to the Standard Large Generator Interconnection Agreement.

² **Energy Resource Interconnection Service** shall mean an Interconnection Service that allows the Interconnection Customer to connect its Generating Facility to the Transmission Provider's Transmission System to be eligible to deliver the Generating Facility's electric output using the existing firm or non-firm capacity of the Transmission Provider's Transmission System on an as available basis. ERIS in and of itself does not convey transmission service

The total estimated cost of the transmission system improvements required for GI-2017-52 to qualify for ERIS interconnection is \$80,000 and includes:

- \$80,000 for Transmission Provider's Interconnection Facilities (cf. Table 1)
- \$0 for Network Upgrades for Interconnection for either ERIS or NRIS (cf. Table 2)

For GI-2017-52 interconnection:

ERIS (after required transmission system improvements) = 36 MW

(output delivery assumes the use of existing firm or non-firm capacity of the PSCo Transmission System on an as-available basis.)

Note: NRIS or ERIS, in and of itself, does not convey transmission service.

Cost Estimates and Assumptions

Transmission Provider has specified and estimated the cost of the equipment, engineering, procurement and construction work needed to interconnect GI-2017-52. The results of the engineering analysis for facilities owned by the Transmission Provider are estimates and are summarized in Tables 1 and 2.

Table 1: “Transmission Provider’s Interconnection Facilities” includes the nature and estimated cost of the Transmission Provider's Interconnection Facilities and an estimate of the time required to complete the construction and installation of such facilities.

Table 2: “Network Upgrades required for Interconnection (applicable for either ERIS or NRIS)” includes the nature and estimated cost of the Transmission Provider's Network Upgrades necessary to accomplish the interconnection and an estimate of the time required to complete the construction and installation of such facilities.

The total estimated cost of the transmission system improvements required for GI-2017-52 to qualify for ERIS interconnection is \$80,000 and includes:

- \$80,000 for Transmission Provider’s Interconnection Facilities (cf. Table 1)
- \$0 for Network Upgrades for Interconnection for either ERIS or NRIS (cf. Table 2)

The following tables list the transmission system improvements required to accommodate the interconnection of GI-2017-52. The cost responsibilities associated with these transmission system improvements shall be handled as per current FERC guidelines.

Table 1 – Transmission Provider’s Interconnection Facilities

| Element | Description | Cost Est. (Millions) |
|---|---|-----------------------------|
| PSCo’s Jackson Fuller 230kV Substation | Interconnect via the existing Golden West Wind Generator’s Transmission Line (Gen-Tie). <ul style="list-style-type: none"> • Associated transmission line metering, communications, relaying and testing | \$0.080 |
| | Total Cost Estimate for Transmission Provider’s Interconnection Facilities | \$0.080 |
| Time Frame | Site, design, procure and construct | 12 months |

Table 2 – Network Upgrades required for Interconnection (for ERIS or NRIS)

| Element | Description | Cost Est. (Millions) |
|-----------------------|--|-----------------------------|
| Not Applicable | Not Applicable (N/A). | \$0.000 |
| | Total Cost Estimate for Network Upgrades for Interconnection | \$0.000 |
| Time Frame | Site, design, procure and construct | N/A |

Cost Estimate Assumptions

- Appropriations level cost estimates for Interconnection Facilities and Network Upgrades have a specified accuracy of +/- 20%.
- Estimates are based on 2018 dollars with appropriate escalation and contingencies applied.
- Allowance for Funds Used During Construction (AFUDC) is excluded.
- Labor is estimated for straight time only – no overtime included. Assumes contracted construction for the majority of the work.
- Lead times for materials were considered for the schedule.
- Estimates are developed assuming typical construction costs for previous completed projects. These estimates include all applicable labor and overheads associated with the siting support, engineering, design, material/equipment procurement, construction, testing and commissioning of these new substation and transmission line facilities.
- The Generation Facility is not in PSCo’s retail service territory. Therefore, costs for retail load metering are not included in these estimates.
- PSCo (or it’s Contractor) crews will perform all construction, wiring, and testing and commissioning for PSCo owned and maintained facilities.
- The estimated time to site, design, procure and construct the Transmission Provider’s Interconnection Facilities is approximately 12 months after authorization to proceed has been obtained. A CPCN will not be required.
- Line and substation bus outages will be necessary during the construction period. Outage availability could potentially be problematic and necessitate extending the back-feed date.
- Estimates do not include the cost for any Customer owned equipment and associated design and engineering.
- The Customer will string optical ground wire (OPGW) cable into the substation as part of their 230 kV transmission line construction scope.
- Power Quality Metering (PQM) will be required on the Customer’s 230 kV transmission line terminating into the POI.
- The Customer will be required to design, procure, install, own, operate and maintain a Load Frequency/Automated Generation Control (LF/AGC) RTU at the Customer Substation. PSCo / Xcel will need indications, readings and data from the LFAGC RTU.

Figure 1 below shows the electrical connection of the Interconnection Customer’s Generating Facility to the Transmission Provider’s Transmission System. The one-line diagram also identifies the electrical switching configuration of the interconnection equipment, including, without limitation: the transformer, switchgear, meters, and other station equipment.

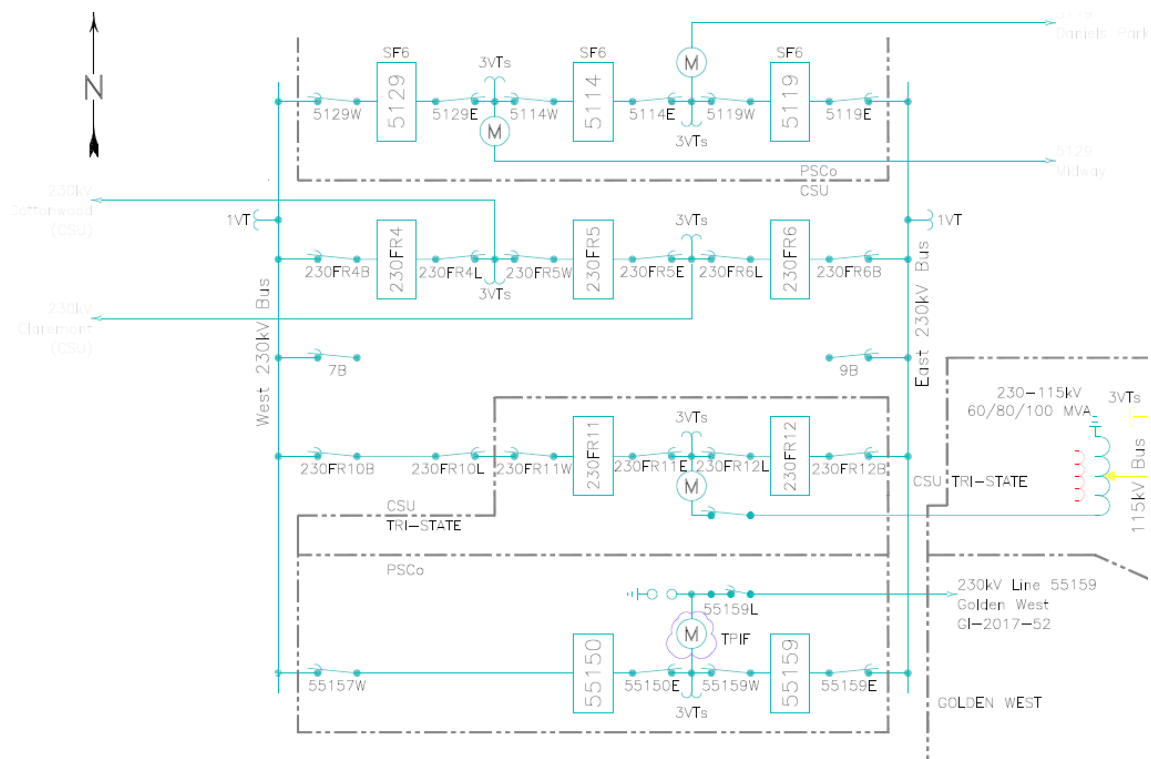


Figure 1 – GI-2017-52 Interconnection to Jackson Fuller 230kV Substation via the existing Golden West Wind Generating Facility’s Gen-Tie (Transmission Line 55159)