GI-2020-16

Draft

Interconnection Facilities Study

Phase 4 Report

4/08/2022

Table of Contents

1.0 Summary

This report only includes the Interconnection Customer's Interconnection Facilities and should be read in conjunction with the ***DISIS-2020-002 Cluster Interconnection Facilities Study Phase 4 Report*** located at: Transmission Studies (rmao.com).

GI-2020-16 is a 199.5 MWac net rated solar Photovoltaic (PV) Generating Facility requesting Network Resource Interconnection Service (NRIS). The requested Point of Interconnection (POI) is the Barr Lake 230 kV Substation.

The total estimated cost of the transmission system improvements for GI-2020-16: $14.837 million.

Network Resource Interconnection Service of GI-2020-16 is: 199.5 MW (after required transmission system improvements identified in Table 3.4.1 for the Station Network Upgrades and Table 4.1 for the System Network Upgrades in the *DISIS-2020-002 Cluster Interconnection Facilities Study Phase 4 Report,* and Table 1 below for the Transmission Providers Interconnection Facilities).

The Generation Interconnection Service identified in this report in and of itself does not convey transmission service.

2.0 Introduction

GI-2020-16 is a 199.5 MWac net rated solar PV Generating Facility located in Adams County, Colorado. The solar PV Generation Facility will consist of fifty-nine (59) SMA Sunny Central SC4400 UP-US 4.40 MVA/3.52 MW ±0.80 PF inverters, each with its own 0.66/34.5 kV, 4.40 MVA Wye-Grounded/Delta Z=6.5%, X/R=8.58 pad-mount transformer. The 34.5 kV collector system will connect to one (1) 134/178/222 MVA, 34.5/230/13.8 kV Wye-grounded/Wye-grounded/Delta, Z=11.5%, X/R=34.52 main step-up transformer which will connect to the PSCo transmission system via a 0.13-mile, 230 kV generation tie-line. The POI is the Barr Lake 230 kV Substation.

GI-2020-16 requested NRIS[1].

The proposed Commercial Operation Date (COD) of GI-2020-16 is October 31, 2023. For the study purpose, the back-feed date is assumed to be June 1, 2023, approximately six (6) months before the COD. PSCo is unable to meet the requested COD.

3.0 Study Scope

The scope of the Interconnection Facilities Study which is Phase 4 of the Definitive Interconnection Study process includes non-binding cost estimates and construction schedule of the Interconnection Facilities and Network Upgrades identified for GI-2020-16 in the ***DISIS-2020-002 Phase 2 Study Report*** dated 8/26/2021 and ***DISIS-2020-002 Phase 2 Study Report - Addendum*** dated 9/14/2021.

4.0 Cost Estimates

The cost responsibilities associated with these facilities shall be handled as per current FERC guidelines.

The total cost of the required transmission improvement required for GI-2020-16 to interconnect at the Barr Lake 230 kV Substation is $14.837 million.

- The cost of Transmission Provider's Interconnection Facilities is $1.480 million (Table 1).
- The cost of Station Network Upgrades is $7.617 million (See Table 3.4.1 of ***DISIS-2020-002 Cluster Interconnection Facilities Study Phase 4 Report***).
- The cost of other System Network Upgrades is $5.740 million (See Table 4.2 of ***DISIS-2020-002 Cluster Interconnection Facilities Study Phase 4 Report***).

[1] Network Resource Interconnection Service shall mean an Interconnection Service that allows the Interconnection Customer to integrate its Large Generating Facility with the Transmission Provider's Transmission system (1) in a manner comparable to that in which the Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an RTO or ISO with market based congestion management, in the same manner as all other Network Resources. Network Resource Interconnection Service in and of itself does not convey transmission service.

Table 1 – GI-2020-16 Transmission Provider's Interconnection Facilities

Element	Description	Cost Est. (million)
PSCo's Barr Lake 230 kV Substation	Interconnection GI-2020-16 at the Barr Lake 230 kV line Substation. The new equipment includes: • (1) 230 kV deadend structure • (3) 230 kV surge arresters • (1) 230 kV 3,000 A disconnect switch • (3) CTs • (3) PTs • Fiber communication equipment • Station controls • Associated electrical equipment, bus, wiring and grounding • Associated foundations and structures • Associated transmission line communications, fiber, relaying and testing.	$1.380
	Siting and Land Rights support for siting studies, land and ROW acquisition and construction	$0.100
Total Cost Estimate for Interconnection Customer-Funded, PSCo-Owned Interconnection Facilities		**$1.480**
Time Frame	**Site, design, procure and construct**	**36 Months**

*Construction of the Interconnection Customer's Interconnection Facilities are reliant on the expansion of the Barr Lake 230 kV Substation, which will take 36 months. PSCo will complete the Interconnection Customer's Interconnection Facilities in this same timeframe. Expansion of the Barr Lake 230 kV Substation to interconnect GI-2020-16 requires a Certificate of Public Convenience and Necessity (CPCN) from the Colorado Public Utilities Commission. It is expected that the CPCN proceedings may take up to 18 months. The construction timeframe following the CPCN approval is estimated to take up to 18 months, so the total time required to site, design, procure and expand the Barr Lake 230 kV Substation is expected to take up to 36 months.