

**GI-2020-14**

**Draft**

**Interconnection Facilities Study**

**Phase 4 Report**

**4/08/2022**



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## 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 \(rmao.com\)](https://www.rmao.com).

GI-2020-14 is a 700 MWac net rated wind Generating Facility requesting Energy Resource Interconnection Service (ERIS). The requested Point of Interconnection (POI) is a tap on the Waterton–Midway 345 kV line at approximately 50 miles from the Midway 345 kV Substation.

**The total estimated cost of the transmission system improvements for GI-2020-14: \$37.568 million.**

**Energy Resource Interconnection Service of GI-2020-14 is: 700 MW (after required transmission system improvements identified in Table 3.1.1 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-2020-14 is a 700 MWac net rated wind Generating Facility located in Cheyenne County, Colorado. The Wind Generation Facility will consist of three-hundred-eighty-one (381) Vestas V100 2.0 MW MK10D, 2.1 MVA,  $\pm 0.95$  PF wind turbines each with its own 0.69/34.5 kV, 2.1 MVA, Delta/Wye-grounded  $Z = 9.5\%$ ,  $X/R = 10.6$  pad-mount transformer. The 34.5 kV collector system will connect to three (3) 175/218/290 MVA, 345/34.5/13.8 kV Wye-grounded/Wye-grounded/Delta,  $Z = 10\%$ ,  $X/R = 51$  main step-up transformer which will connect to the PSCo transmission system via a 105-mile, 345 kV generation tie-line. The POI is a tap on the Waterton–Midway 345 kV line, at approximately 50 miles from the Midway 345 kV Substation.



GI-2020-14 requested ERIS<sup>1</sup>.

The proposed Commercial Operation Date (COD) of GI-2020-14 is December 1, 2024. For the study purpose, the back-feed date is assumed to be June 1, 2024, approximately six (6) months before the COD. PSCo is unable to meet the requested COD.

GI-2020-14 shares the same POI as GI-2020-12. The interconnection at the tap point will require building a new switching station will be referred to as “GI-2020-12/GI-2020-14 345 kV Switching Station” in this report.

### 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-2020-14 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-2020-14 to interconnect at the GI-2020-12/GI-2020-14 345 kV Switching Station is \$37.568 million.

- The cost of Transmission Provider’s Interconnection Facilities is \$2.094 million (Table 1).
- The cost of Station Network Upgrades is \$20.927 million (See Table 3.1.2 of **DISIS-2020-002 Cluster Interconnection Facilities Study Phase 4 Report**).
- The cost of other System Network Upgrades is \$14.547 million (See Table 4.2 of **DISIS-2020-002 Cluster Interconnection Facilities Study Phase 4 Report**).

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<sup>1</sup> 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. Energy Resource Interconnection Service in and of itself does not convey transmission service

**Table 1 – GI-2020-14 Transmission Provider’s Interconnection Facilities**

Element	Description	Cost Est. (million)
PSCo’s GI-2020-12/14 New 345 kV Switching Station	Interconnection GI-2020-14 tapping the Waterton–Midway 345 kV line. The new equipment includes: <ul style="list-style-type: none"> <li>• (1) 345 kV deadend structure</li> <li>• (3) 345 kV surge arresters</li> <li>• (1) 345 kV 3,000 A disconnect switch</li> <li>• (3) CCVTs</li> <li>• (3) CTs</li> <li>• Fiber communication equipment</li> <li>• Station controls</li> <li>• Associated electrical equipment, bus, wiring and grounding</li> <li>• Associated foundations and structures</li> <li>• Associated transmission line communications, fiber, relaying and testing.</li> </ul>	\$1.994
	Siting and Land Rights support for siting studies, land and ROW acquisition and construction	\$0.100
<b>Total Cost Estimate for Interconnection Customer-Funded, PSCo-Owned Interconnection Facilities</b>		<b>\$2.094</b>
<b>Time Frame</b>	<b>Site, design, procure and construct</b>	<b>36 Months*</b>

\*Construction of the Interconnection Customer’s Interconnection Facilities are reliant on the construction of the GI-2020-12/GI-2020-14 345 kV Switching Station, with will take 36 months. PSCo will complete the Interconnection Customer’s Interconnection Facilities in this same timeframe. Construction of the GI-2020-12/GI-2020-14 345 kV Switching Station 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 construct the GI-2020-12/GI-2020-14 345 kV Switching Station is expected to take up to 36 months.