BC Hydro
Power smart

6911 Southpoint Drive (B03)
Burnaby, BC
V3N 4X8

July 30, 2024

[redacted]

[redacted]

RE: CEAP IR 12 - [redacted] Project - Interconnection Feasibility Study Report

Enclosed is the Interconnection Feasibility study report for the proposed [redacted] Project submitted under Attachment M-2: Transmission Service and Interconnection Service Procedures for Competitive Electricity Acquisition Process (CEAP) of the Open Access Transmission Tariff (OATT). This letter provides a non-binding good faith estimate of the cost and time to construct the facilities required to interconnect your project to BC Hydro's Transmission System, being the Network Upgrades, based on the findings of the Interconnection Feasibility study.

Open Access Transmission Tariff

The OATT defines Network Upgrades as additions, modifications, and upgrades to BC Hydro's Transmission System required at or beyond the Point of Interconnection to accommodate the interconnection of the Generating Facility to the BC Hydro's Transmission System. Pursuant to the OATT, BC Hydro will design, procure, construct, install, and own the Network Upgrades. While BC Hydro will pay the costs for the Network Upgrades, the Interconnection Customer provides security for such costs.

Cost Estimate

Based on the Interconnection Feasibility study, the non-binding good faith estimated cost (typical accuracy range of +150%/-50%) for Network Upgrades required to interconnect your project is $200.2M.

Major Scope of Work Identified:

- Acquire adequate property for a new substation close to the existing transmission line 1L143
- Construct a new outdoor 132kVkV, 3- circuit breaker ring bus switching substation
- Construct a new control building and other required substation facilities and infrastructures
- Thermal upgrade of 1L143 and 1L146 is required
- Replace disconnect switches and associated equipment at BC Hydro Colwood (CLD) substation to allow new thermal rating of 1L143
- Supply and install fibre optic cable on 1L143 ~48km
- Supply and install protection relays and other required protection equipment
- Supply and install required telecommunication equipment

Exclusions:

- GST
- Right of Way
- Permits

Key Assumptions:

- Construction will be done by contractor
- 3 years of construction is considered
- No expansion of existing stations or control buildings to accommodate new equipment
- Early Engineering and Procurement
- No ground improvements will be required
- No piles will be required for construction
- No contaminated soil will be encountered during construction
- A Certificate of Public Convenience and Necessity (CPCN) requirement will not impact the schedule

Key Risks:

- No defined supply chain strategy, construction costs may increase depending on delivery method
- Cost of construction may increase based on geotechnical condition of the actual project site
- Project schedule may be longer than expected, leading to increased costs
- Cost of materials and major equipment may be affected by market conditions and escalation
- A CPCN requirement may delay the project schedule and increase costs

Please note that the Revenue Metering requirements and associated costs required to interconnect your project have not been determined at this stage and, therefore, not included in the above estimate. Revenue Metering costs that are attributable to the Interconnection Customer are to be paid in cash. For more details on Revenue Metering requirements and responsibilities, please refer to:

https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/distribution/standards/ds-rmr-complex-revenue-metering.pdf.

Schedule

Based on the Interconnection Feasibility study, the non-binding good faith estimated in-service date for your project's Network Upgrades is Quarter 3 2031 (calendar year). To achieve this timeline, we may need to expedite certain activities, including engineering design and procurement of long-lead equipment.

Timely actions required from you to minimize risks to the schedule:

- Submission of additional technical data required for the System Impact Study and Facilities Study
- Submission of any required information or document such as demonstration of Site Control
- Execution of Combined Study Agreement and Standard Generator Interconnection Agreement
- Financial commitments and securities

Please note that changes to your interconnection request, delays in data submission, or financial commitments may also impact the target in-service date.

Next Steps

In September 2024, we will issue a final invoice for the Feasibility Study costs. This invoice will reflect the total amount due, taking into account the $15,000 Feasibility Study deposit you have already paid and any remaining amount on the non-refundable $15,000 Interconnection request deposit that we did not spend in reviewing and validating your interconnection request.

If you have any questions, please contact the BC Hydro CEAP Team at ceap2024@bchydro.com.

Sincerely,

[redacted]

Senior Manager, Transmission Interconnections

BC Hydro

Encl.: CEAP2024_IR_12_[redacted]_FeS_Report_final.pdf

[redacted]

[redacted] Project

Interconnection Feasibility Study

BC Hydro EGBC Permit to Practice No: 1002449

2024 CEAP IR # 12

Prepared for: [redacted]

[redacted]

Report Metadata

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Subheader:	Interconnection Feasibility Study
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[redacted]

[redacted]

Related Facilities: 1L143

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Revision	Date	Description
0	2024 Jul	Initial release

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Executive Summary

[redacted] the interconnection customer (IC), requests to interconnect its [redacted] Project (2024 CEAP IR # 12) to the BC Hydro (BCH) system. [redacted] Project is a hybrid solar plant with BESS and has thirty-three (33) [redacted] solar inverters and (24) [redacted] battery inverters with a total capacity of 100 MW into the BC Hydro system. The Point of Interconnection (POI) is at the 132 kV bus of a new switching station on BC Hydro's 132 kV line 1L143, approx. 4.2 km from Jordan River generation station (JOR). The IC's project will connect to the POI via a 2.6 km customer-built 132 kV interconnection line. The IC's proposed commercial operation date (COD) is Jul 31, 2026.

To interconnect the [redacted] Project and its facilities to the BCH Transmission System at the proposed POI, this Feasibility Study has identified the following conclusions and requirements:

1. A new 132 kV switching station (referred to as "P12T") on 1L143 is required as the proposed POI for interconnecting the IC's generating project to the BCH system. With the new switching station P12T, 1L143 will be segregated into two new lines, temporarily referred to as: 1L143_A (CLD-P12T) and 1L143_B (P12T-JOR). The proposed customer-built 132 kV line (P12T-P12) will be designated as 1L143_C. The temporary line designations will be replaced by permanent designations at a later stage of interconnection study.

2. The connection of [redacted] Project will cause overloads on 1L143_A (CLD-P12T) and 1L146 (CLD-GOW) under system normal condition. Thermal upgrades are required for 1L143_A (CLD-P12T) to approximately 1295 Amps in summer, and for 1L146 (CLD-GOW) to approximately 1200 Amps in summer.

3. The connection of [redacted] Project will also cause overloads on 1L10 (VIT-GOW), 1L11 (VIT-GOW), and 1L12 (GOW-GTP) under single contingencies. A new generation shedding Special Protection Scheme (or Remedial Action Scheme) will be required to shed or curtail generation at the IC's facility if overloads on these circuits are detected.

4. An Anti-islanding transfer trip scheme is required to isolate the Solar Project at their entrance circuit breaker under system contingencies. In addition to entrance protection and 1L143_C protection, the IC is required to install anti-islanding protection within their facility to disconnect the IC from the grid when an inadvertent island with the local loads form.

5. The 1L143_A and 1L143_B will remain as BC Hydro's Bulk Electric System (BES) lines. The new 132 kV interconnection line 1L143_C (P12T-P12) will become an IC's BES element and the IC will be responsible for the compliance with NERC MRS requirements.

6. BC Hydro will provide line protections for 1L143_A, 1L143_B and 1L143_C (BC Hydro end only). As part of the line protection replacements for each of the three lines, telecommunication facilities will be required to accommodate the new protection schemes. The IC shall provide required relays, telecom facility and associated equipment at its facilities to accommodate the new protection schemes. Telecommunication facilities will also be required for 1L146.

The above conclusions are made based on the IC's input data and study assumptions listed in Section 4, which represent the best available information on May 22, 2024.

A non-binding good faith estimated cost and time to construct the Network Upgrades required to interconnect the proposed project will be provided in a separate letter to the IC.

Contents

Appendices

Acronyms

The following are acronyms used in this report.

BCH	BC Hydro
CEAP	Competitive Electricity Acquisition Process
COD	Commercial Operation Date
DTT	Direct Transfer Trip
ERIS	Energy Resource Interconnection Service
FeS	Feasibility Study
IBR	Inverter-Based Resources
IC	Interconnection Customer
LAPS	Local Area Protection Schemes
MPO	Maximum Power Output
NERC	North American Electric Reliability Corporation
NRIS	Network Resource Interconnection Service
OATT	Open Access Transmission Tariff
POI	Point of Interconnection
RAS	Remedial Action Scheme
TIR	BC Hydro “60 KV to 500 kV Technical Interconnection Requirements for Power Generators”
WECC	Western Electricity Coordinating Council
WTG	Wind Turbine Generator
CLD	Colwood Substation
EDM	Edmonds Office
FVO	Fraser Valley Office
GOW	Goward Substation
JOR	Jordan River Generating Station
P12	[redacted] (IC customer owned, unofficial site code)
P12T	New switching station – POI for customer (unofficial site code)
SIO	South Interior Office
PRC	Protection and Control
PPIS	Power Parameter Information System

1 Introduction

Table 1-1 below summarizes the project reviewed in this Feasibility Study.

Table 1-1 Summary of Project Information

Project Name	[redacted] Project	
Name of Interconnection Customer (IC)	[redacted]	
Point of Interconnection (POI)	At a switching station on 1L143, 4.25 km from Jordan River generation station	
IC's Proposed COD	31th July 2026	
Type of Interconnection Service	NRIS ☒	ERIS ☐
Maximum Power Injection [1] (MW)	100 (Summer)	100 (Winter)
Number of Generator Units	33 x 3.24 MW PV + 24 x 4.385 MW BESS	
Plant Fuel	Solar + BESS	

[redacted] the interconnection customer (IC), requests to interconnect its [redacted] Project (2024 CEAP IR # 12) to the BC Hydro (BCH) system. [redacted] Project is a hybrid solar plant with BESS and has thirty-three (33) [redacted] solar inverters and (24) [redacted] battery inverters with a total capacity of 100 MW into the BC Hydro system. The IC's proposed Point of Interconnection (POI) is a new switching station on BC Hydro's 132 kV line 1L143, approx. 4.2 km from Jordan River generation station (JOR). The IC's project will connect to the POI via a 2.6 km customer-built 132 kV interconnection line. The IC's proposed commercial operation date (COD) is Jul 31, 2026.

Figure 1-1 shows the South Vancouver Island region 132/230 kV transmission system diagram. The South Vancouver Island region 132/230 kV system has pre-existing branch overload and voltage stability concerns under system single and multiple contingencies during heavy load conditions. The South Vancouver Island Region 1L10/1L11/1L14 Overload RAS and 2L142 RAS are relied on to address these overload and voltage stability concerns.

A new switching station, temporarily designated P12T, would be required for [redacted] Project interconnection to the existing 1L143. 1L143 would be looped in and out of P12T. 1L143 between JOR and P12T will be redesignated temporarily as 1L143_B, and 1L143 between P12T and CLD will be redesignated temporarily

as 1L143_A. [redacted] Project will connect to P12T with a customer-built 132 kV line temporarily designated as 1L143_C.

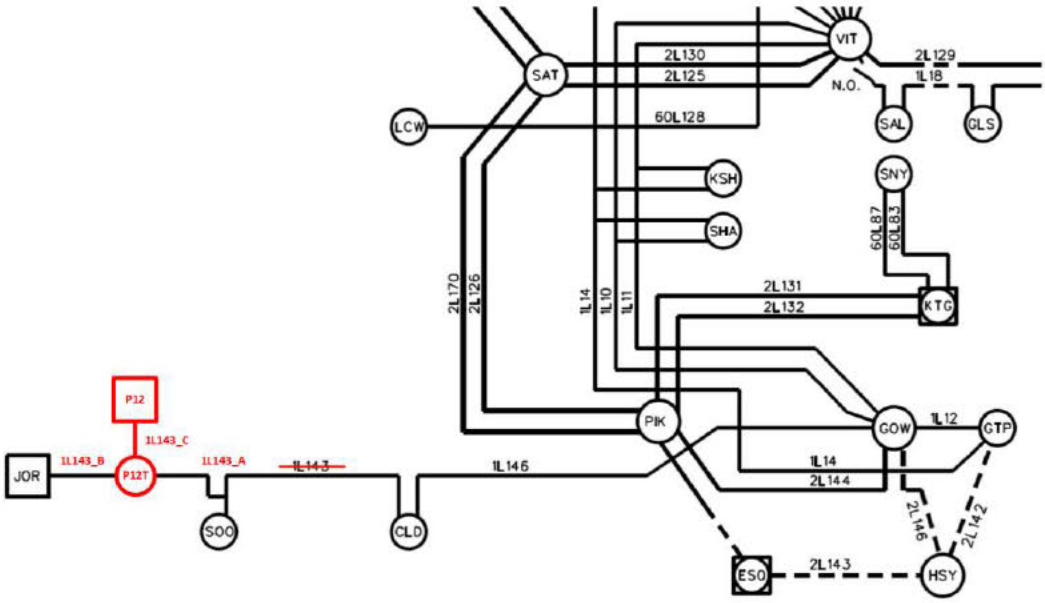

Figure 1-1: 2026 South Vancouver Island 132/230 kV Transmission System Diagram with the Proposed [redacted] Project

In the Vancouver Island Bulk system, Vancouver Island - Transmission Reinforcement Completion (VITRC) project is the major capital project in identification phase with target ISD of 2029. This project is scoped to upgrade 1L18 (Vancouver Island Terminal – Arnott) to 230 kV and redesignate to 2L124.

In the South Vancouver Island, CLD (Colwood) Integrated Area Study capital project is a major capital project currently in identification phase with target ISD of 2030. This project is scoped to build a new 230/132/25kV Goldstream Substation (GOL) in the northwest area of city of Langford to offload existing Colwood Substation (CLD). The transmission component of this project includes two 230 kV parallel line from GOL to Pike Lake substation (PIK) and loop the existing 132 kV transmission circuits 1L143 and 1L146 in-and-out the GOL substation.

2 Purpose and Scopes of Study

This Feasibility Study is a preliminary evaluation of the incremental system impact of interconnecting the proposed project to the BC Hydro system based on power flow and short circuit analysis in accordance with BCH's Open Access Transmission Tariff (OATT). A non-binding good faith estimated cost of required Network Upgrades and estimated time to construct will be provided.

Per OATT, the feasibility study is performed individually for each of the participating projects in the CEAP and focuses specifically on the BC Hydro regional transmission system where the proposed generating project is proposed to be constructed. An assessment of the incremental effect on the 500kV bulk transmission system is beyond this study scope.

This is a "limited scope" study which is restricted to power flow studies of P0, P1 and P2 planning events as defined in TPL-001-4 and short circuit analysis. The study does not address other technical aspects such as transient stability and switching transients and impact of multiple contingencies. These subjects would be addressed in subsequent System Impact Study if the project is a Successful Participant of the CEAP.

In case impact to the adjacent external systems to BC Hydro is observed, such impact would be addressed in subsequent detailed and coordinated studies with the relevant adjacent entities if the proposed interconnection proceeds further.

3 Standard and Criteria

The Feasibility Study is performed in compliance with the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) reliability standards, and the BCH interconnection requirements in the TIR, and upon the ratings of the existing BCH transmission facilities described in Operating Orders, specifically:

- NERC standards: TPL-001-4 and FAC-002-3 relevant to the scope of this Feasibility Study.
- WECC criteria TPL-001-WECC-CRT-4 Transmission System Planning Performance, July 1, 2023.
- BC Hydro's 60 kV to 500 kV Technical Interconnection Requirements for Power Generators.
- BC Hydro Operating Order 5T-10, Ratings for All Transmission Circuits 60 kV or Higher, April 16, 2024.
- BC Hydro Operating Order 5T-14, Ratings for All Transmission and Distribution Transformer, November 8, 2022.
- BC Hydro System Operating Order 7T-22 System Voltage Control, September 19, 2023.

4 Assumptions and Conditions

This Feasibility Study is performed based on the IC's submitted data and information available to BC Hydro on May 22, 2024 for the study purpose. Appendix A shows the plant single line diagram for the IC's project used in the study model. Certain assumptions were, as set out below, made to the extent required.

The power flow study cases used in this Feasibility Study are established based upon the BC Hydro's base resource plan and load forecasts available at the time of performing the study, which includes existing and future generations, transmission facilities, and loads in addition to the subject interconnection project in this study. Applicable seasonal conditions and the appropriate study years for the study planning horizon are also incorporated.

Additional assumptions are listed as follows.

1) The regional generation are dispatched to the patterns that stress the transmission system in the study area. In these patterns, the regional generations are typically set to their Maximum Power Outputs (MPO) unless otherwise specified.

2) The target in-service date for Vancouver Island - Transmission Reinforcement Completion (VITRC) project is March 2029 at the time of performing this SIS.

3) The projected in-service date for CLD Integrated Area Study capital project is March 2030 at the time of performing this SIS.

4) Because this FeS study is for generation interconnection only, BESS in the IC Customer's plant during charging cycle will be charged by the IC Customer's own solar plant. BESS in the IC Customer's plant will not be charged by the BC Hydro system. Active power direction is always from the IC towards BC Hydro. If the IC Customer requires BC Hydro to charge BESS, they need to submit separate load interconnection request.

5) In case of discrepancy between GIDF form and PSSE case provided by customer, the PSSE case provided by the customer is used for this Feasibility study.

5 System Studies and Results

Based upon the IC's submitted information and the area system conditions, a new switching station (referred to as "P12T") as the proposed POI on 1L143 is required to interconnect the IC's generating project to the BCH system. There are multiple terminals and sources on the existing line 1L143. The new switching station would help to maintain reliability and adequate protection performance to serve the existing customers and the new addition.

With the new switching station P12T, the existing line 1L143 will be segregated into two new lines, temporarily referred to as: 1L143_A (CLD-P12T) and 1L143_B (P12T-JOR). The proposed customer-built interconnection line (P12T-P12) will be designated as 1L143_C. The temporary line designations will be replaced by permanent designations at a later stage of interconnection study.

The 1L143_A and 1L143_B will remain BC Hydro's Bulk Electric System (BES) lines. The new 132 kV interconnection line 1L143_C (P12T-P12) will become an IC's BES element and the IC will be responsible for the compliance with NERC MRS requirements.

5.1 Power Flow Study Results

Power flow studies were performed to evaluate whether the IC's generating project would cause any unacceptable system performance (e.g. equipment overloads, steady-state voltage violation and voltage instability) and to determine the reinforcement requirement based on steady state performance analysis.

The study focuses on the 2028 light summer (28LS) system load condition which is typically a stressed condition for a generation interconnection project, taking into considerations of factors such as load conditions, seasons and generation patterns. The 2029 light summer (29LS), 2031 heavy winter (31HW) and 2032 heavy summer (32HW) cases are also checked at a high level to capture any possibility of performance violations under high load conditions.

5.1.1 Branch Loading Analysis

Table 5-1 shows a summary of branch loading analysis under system normal and single contingencies (P1, P2) for various load conditions.

The study finds 1L143_A overload and 1L146 overload under system normal condition. Thermal upgrades are required for 1L143_A between the P12T and CLD to approximately 1295 Amps in summer, and for 1L146 CLD to GOW to approximately 1200 Amps in summer.

The study finds the following overloads under P1 and P2 contingencies, and a Special Protection Scheme (SPS) or RAS scheme is required to curtail or shed the IC to mitigate against the following overloads:

- Contingency loss of 1L10 results in overload of 1L12.
- Contingency loss of 1L11 results in overload of 1L12.
- Contingency GOW 1CB3 internal fault results in overload of 1L11.
- Contingency GOW 1CB4 internal fault results in overload of 1L10.

Arming Conditions: system off-peak operating condition and with high output of the [redacted] Project.

Contingencies: powerflow direction, MW and Conductor temperatures (measured or calculated) of 1L146, 1L10, 1L11 and 1L12

Actions: shed or curtail the [redacted] plant.

The proposed SPS or RAS mechanism and exact mitigation actions will be determined in discussion with BCH at the next study stage.

Table 5-1: Summary of Branch Loading Analysis Results

Case	IC's Plant Output	Contingency		Branch Loading				
				1L143_A	1L146	1L10	1L11	1L12
			Summer Line rating	872 Amps	850 Amps	561 Amps	544 Amps	731 Amps
		Cate-gory	Description	P12T-CLD	CLD-GOW	VIT-GOW	VIT-GOW	GOW-GTP
29LS	100 MW	P0	System Normal	1295 Amps	1200 Amps	210 Amps	200 Amps	710 Amps
		P1	1L10	1295 Amps	1200 Amps	--	260 Amps	850 Amps
			1L11	1295 Amps	1200 Amps	270 Amps	--	850 Amps
		P2	GOW 1CB3 [1]	1295 Amps	1200 Amps	--	1070 Amps	--
			GOW 1CB4 [2]	1295 Amps	1200 Amps	1070 Amps	--	--
[1] Loss of Multiple elements including (1L10 + 1L12 + GTP T14 + GTP T11 + 2L142) [2] Loss of Multiple elements including (1L11 + 1L12 + GTP T14 + GTP T11 + 2L142)								

5.1.2 Steady-State Voltage Analysis

With the connection of the IC's project, the voltage performance under system normal condition and single contingencies is acceptable.

5.1.3 Reactive Power Capability Evaluation

The BC Hydro TIR requires IBR power plant to have the dynamic reactive power capability at a minimum of +/- 33% of its MPO at the high voltage side of the IC's switchyard over the full MW operating range.

Based on the PSS/E power flow data submitted by the IC, the proposed generating project would be capable of meeting the BC Hydro's reactive capability requirement at the plant's maximum MW output, which is subjected to further verification in the next stage of interconnection study.

Furthermore, the BCH TIR requires the IC's project to provide sufficient reactive power capability over full MW operating range including at zero MW output level. According to the IC-provided reactive capability curve, the proposed Solar Plant would be capable of meeting the BC Hydro's reactive capability requirement at the plant's zero MW output, which needs to be re-confirmed if the IC's project proceeds further.

5.1.4 Anti-Islanding Requirements

The study finds the IC's project may be inadvertently islanded with the existing generators and BC Hydro loads, which is not allowed. An Anti-islanding transfer trip scheme is required to isolate the IC at their entrance circuit breaker for the following system contingencies.

- SOO T1 and T2
- CLD 1CB1, 1CB2, 1CB3 internal fault or T1 or T3
- GOW 1CB2 or 1CB5 internal fault
- 1L143_A (P12T to CLD) or 1L146
- P12T 1CB3 internal fault

In addition, the IC is required to install anti-islanding protection within its facility to disconnect the IC from the grid when an inadvertent island with the local load forms.

5.2 Fault Analysis

The short circuit analysis in the FeS is based upon the latest BC Hydro system model, which includes the generating facility information and associated impedance data provided by the IC. A more detailed study will be performed at the system impact study stage if needed.

5.3 Stations Requirements

A new outdoor 132 kV, 3-circuit breaker ring bus switching substation will be built at POI, close to the existing 132 kV transmission line 1L143. The existing transmission line 1L143 will be cut and looped in to, and 132 kV line of [redacted] will be terminated at the new substation.

The station upgrade scope at the new switching station P12T is as follows.

- Acquire adequate property for a new substation close to the existing transmission line 1L143.
- Construct a new outdoor 132 kV, 3-circuit breaker ring bus switching substation. Refer to one-line diagram in Appendix B for details.
- Construct a new control building and other required substation facilities and infrastructures.
- Cut the existing 1L143 and loop into the substation.
- Terminate 132 kV line of [redacted] at the station.

The station upgrade scope at the existing Colwood substation (CLD) is as follows.

- Replace 1D22, 1WT2, 1D1CB2, 1D2CB2, 1D1CB3 and 1D2CB3 to allow new thermal rating of 1L143_A

5.4 Transmission Line Requirements

1L143_A and 1L146 are overloaded under system normal. Thermal upgrade is required for 1L143_A (P12T and CLD) from existing 872 Amps to approximately 1295 Amps in summer, and thermal upgrade is required for 1L146 (CLD to GOW) from existing 850 Amps to approximately 1200 Amps in summer.

Requirements to support Telecom requirements in Section 5.6:

- A fibre optic cable running between the new switching station P12T and JOR (approx. 4.2 km) will be required along the 1L143 transmission line support structures.
- A fibre optic cable running between the new switching station P12T and CLD (approx. 43 km) will be required along the 1L143 transmission line support structures.

With the proposed thermal upgrades of 1L143 and 1L146, fibre addition to 1L143, structure replacements may be required on 1L143_A and 1L146.

5.5 Protection & Control Requirements

BC Hydro will provide line protections for 1L143_A, 1L143_B and 1L143_C protections. As part of the line protection replacements for each of the three lines, telecommunication facilities will be required to accommodate the new protection schemes. Telecommunication facilities will also be required for 1L146 so this line can transition to a differential-based protection scheme.

The IC is to provide the following for the interconnection:

- Entrance protection that complies with the latest version of the “60 kV to 500 kV BC Hydro Technical Interconnection Requirements for Power Generators.”
- Provide two SEL-411L-1 relays (firmware and options specified by BC Hydro) at the entrance of P12 to provide protection coverage for 1L143_C. BC Hydro P&C Planning will provide core protection settings for these relays to protect transmission line 1L143_C during a transmission line fault. Non-core protection such as local breaker failure, auto-reclosing, backup protection for station elements will not be provided by BC Hydro P&C Planning.
- The IC is responsible for NERC PRC-related tasks, settings to compliance standards within their facilities.
- The IC is responsible for providing a communications link for remote interrogation of the PPIS equipment by BCH servers.
- Provide anti-islanding protection as stated in Section 5.1.

The runback schemes or RAS requirements stated in Section 5.1 are mainly to address the overloading concerns under contingencies, which are preliminary. These RAS requirements may utilize the communication channels required for protection purposes included in the cost estimate. If the proposed project proceeds through the CEAP process, subsequent System Impact Studies may identify additional RAS requirements for this interconnection. These RAS functional requirements will include initiating events, control actions, and latency times. Depending on these supplementary requirements, additional telecommunication facilities may be needed to facilitate signal transmission between the BC Hydro substations and customer facilities.

5.6 Telecommunications Requirements

BC Hydro performed a high-level feasibility assessment of a telecom solution to meet the following requirements.

Teleprotection Requirements for Telecom

- Provide WECC Level 3 64 kbps synchronous circuits between CLD and P12T for "CLD-P12T 1L143_A PY DIGITAL TELEPROT" and "CLD-P12T 1L143_A SY DIGITAL TELEPROT" with C37.94 interfaces.
- Provide WECC Level 3 64 kbps synchronous circuits between CLD and GOW for "CLD-GOW 1L146 PY DIGITAL TELEPROT" and "CLD-GOW 1L146 SY DIGITAL TELEPROT" with C37.94 interfaces.
- Provide WECC Level 3 64 kbps synchronous circuits between JOR and P12T for "JOR-P12T 1L143_B PY DIGITAL TELEPROT" and "JOR-P12T 1L143_B SY DIGITAL TELEPROT" with C37.94 interfaces.
- Provide WECC Level 3 64 kbps synchronous circuits between P12T and P12 for "P12T-P12 1L143_C PY DIGITAL TELEPROT" and "P12T-P12 1L143_C SY DIGITAL TELEPROT" with C37.94 interfaces.

Telecontrol Requirements for Telecom

- Provide two P12T SCADA circuits off FVO & SIO.
- Provide P12 SCADA circuit off FVO & SIO.
- Provide P12T REMACC circuit off EDM.

Other Requirements for Telecom

- Provide PY & SY T1s over separate OC3s between P12T-JOR.
- Provide PY & SY T1s over separate OC3 between P12T- CLD
- Provide TMS circuit for P12T (end point TBD)
- Provide MPLS links and LSPs for new CLD, GOW, JOR, and P12T MPLS nodes.

Certain assumptions were made for determining a potential telecom solution. Details of the telecom solution (e.g. assumptions made, alternatives investigated and work required for BCH and the IC) would be provided at the next study stage.

6 Cost Estimate and Schedule

The non-binding good faith estimated cost and time to construct the Network Upgrades required to interconnect the proposed project will be provided in a separate letter to the IC.

7 Conclusions

To interconnect the [redacted] Project and its facilities to the BCH Transmission System at the POI, this Feasibility Study has identified the following conclusions and requirements:

1. A new 132 kV switching station (referred to as "P12T") on 1L143 is required as the proposed POI for interconnecting the IC's generating project to the BCH system. With the new switching station P12T, 1L143 will be segregated into two new lines, temporarily referred to as: 1L143_A (CLD-P12T) and 1L143_B (P12T-JOR). The proposed customer-built interconnection line (P12T-P12) will be designated as 1L143_C. The temporary line designations will be replaced by permanent designations at a later stage of interconnection study.

2. The connection of [redacted] Project will cause overloads on 1L143_A (CLD-P12T) and 1L146 (CLD-GOW) under system normal condition. Thermal upgrades are required for 1L143_A (CLD-P12T) to approximately 1295 Amps in summer, and for 1L146 (CLD-GOW) to approximately 1200 Amps in summer. Structure replacements may be required on 1L143_A (CLD-P12T) and 1L146 (CLD-GOW). Replacement of line terminal equipment at Colwood substation (CLD) is required to allow new thermal rating of 1L143_A.

3. The connection of [redacted] Project will also cause overloads on 1L10 (VIT-GOW), 1L11 (VIT-GOW), and 1L12 (GOW-GTP) under single contingencies. A generation shedding SPS (or RAS) will be required to shed or curtail generation at the IC's facility if overloads on these circuits are detected.

4. An Anti-islanding transfer trip scheme is required to isolate the Solar Project at IC's entrance circuit breaker for protective and unintentional tripping of 1L143_A (CLD-P12T) or 1L146 (CLD-GOW), or transformers and circuit breaker faults at SOO, CLD or GOW. In addition to entrance protection and 1L143_C protection, the IC is required to install anti-islanding protection within their facility to disconnect the IC's solar plant from the grid when an inadvertent island with the local loads form.

5. The 1L143_A and 1L143_B will remain as BC Hydro's BES lines. The new 132 kV interconnection line 1L143_C (P12T-P12) will become an IC's BES element and the IC will be responsible for the compliance with NERC MRS requirements.

6. BC Hydro will provide line protections for 1L143_A, 1L143_B and 1L143_C (BC Hydro end only). As part of the line protection replacements for each of the three lines, telecommunication facilities will be required to accommodate the new protection schemes. The IC shall provide required relays, telecom facility and associated equipment at its facilities to accommodate the new protection schemes. Telecommunication facilities will also be required for 1L146.

Appendix A
Plant Single Line Diagram Used for Power Flow Study

Figure A-1 shows [redacted] Project single line diagram used for power flow study.

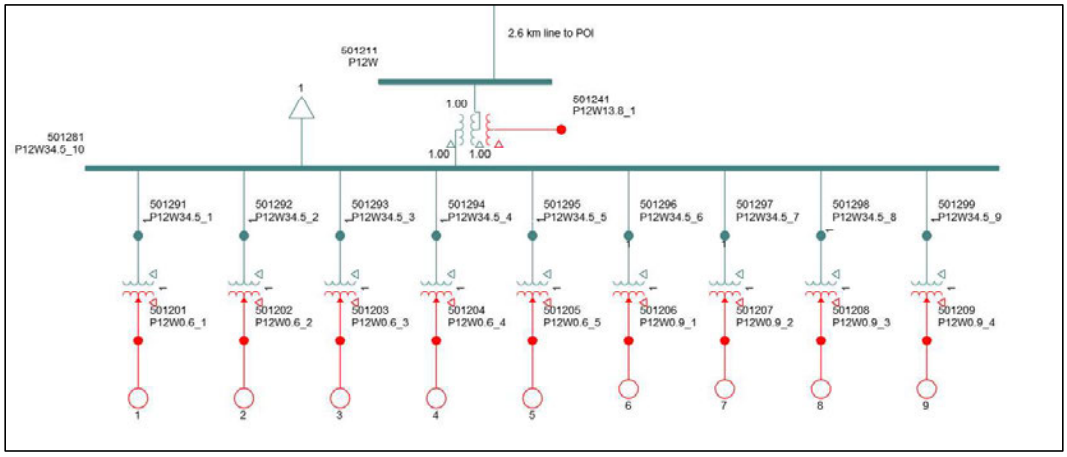

Figure A-1: [redacted] Project Single Line Diagram for Power Flow Study.

As seen in the diagram, [redacted] Project has one main power transformer and has a total of nine (9) feeders. Five (5) feeders connect 33 solar inverters to the collector station, and four (4) feeders connect 24 battery inverters to the collector station.

Appendix B
One-Line Sketch for New Switching Station

Figure B-1 shows the Stations Planning One-Line Sketch for the New Switching Station P12T.

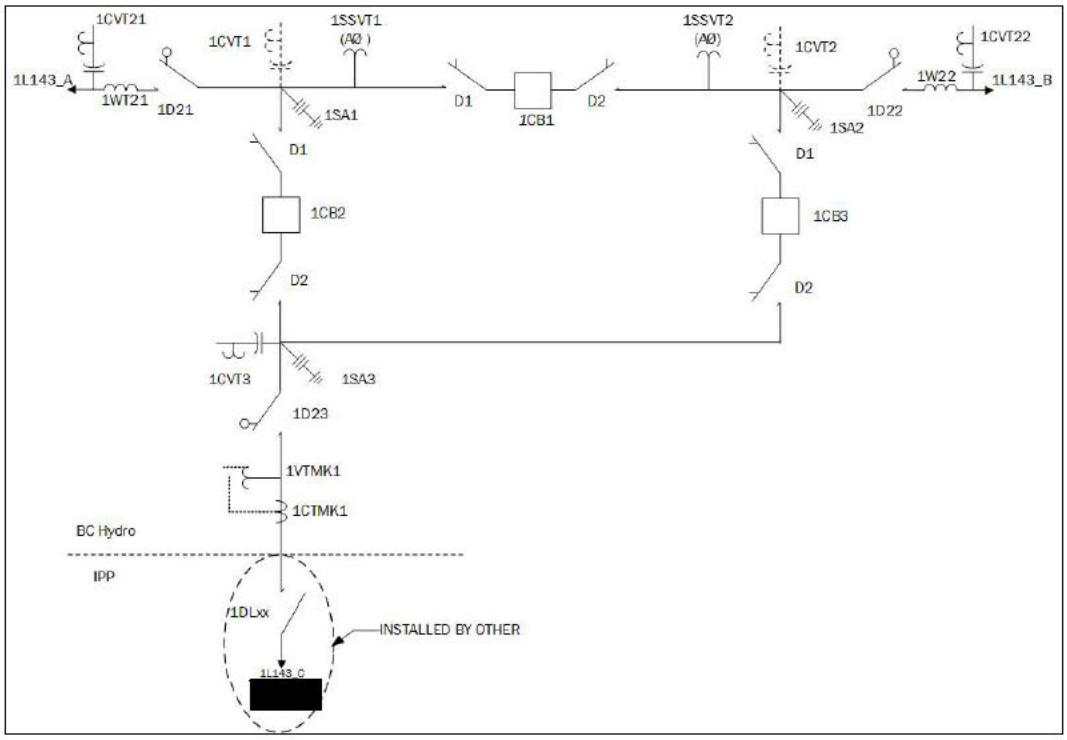

Figure B-1: Stations Planning One-Line Sketch for the New Switching Station P12T.