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

November 24, 2025

[redacted]

via email: [redacted]

RE: CEAP IR #12 – [redacted] – Interconnection Feasibility Study

Dear [redacted]

Enclosed is the Interconnection Feasibility Study for the proposed Interconnection Request (IR), [redacted] 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.

Interconnection Study Costs

The Interconnection Customer is responsible for paying the full cost of all Interconnection Studies in cash. Interconnection Study costs vary depending on the scope, complexity, and other factors such as whether any scope is shared with another Interconnection Customer (not applicable to this Interconnection Feasibility Study). The deposit amounts specified in the OATT are not proxy Interconnection Study costs. If actual Interconnection Study costs exceed the deposit amount, the Interconnection Customer must pay the remaining balance in cash. Please refer to the answer for question no. 53 in the posted Questions & Answers for 2025 Call for Power for typical study cost ranges.

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 $281.3 M.

Major Scope of Work Identified:

- Expand BC Hydro Tumbler Ridge substation (TLR) to add one 230 kV line position with associated substation equipment
- Relocate the existing line terminal for 2L323 along with associated equipment at TLR and re-terminate on North side of substation

- Install new 230 kV line terminal at TLR
- Remove the temporary connection between bus 2B3 and 2B9
- Install one new 230kV circuit breaker
- Upgrade required substation facilities, infrastructures, and bus work to support new station equipment
- Line thermal upgrades involving reconductoring of, and structure replacements and installations of 230 kV line 2L313 from Meikle Wind station (MKT) to Sukunka station (SNK)
- Supply and install required Protection, Control and Telecommunications equipment

Exclusions:

- GST
- Permits
- Right-of-Way & property costs
- Removal cost for foundation demolition is not included

Key Assumptions:

- Construction by contractor
- 24 months of construction is considered
- A certificate of public convenience and necessity (CPCN) requirement will be exempt
- No construction during winter season
- Execution of early Engineering and Procurement Agreement
- No expansion of existing stations or control buildings to accommodate new equipment
- Impact Benefit Agreements with First Nations are not considered
- For line thermal upgrade, a new transmission line (31km) in parallel to the existing line is assumed

Key Risks:

- Expansion of the existing control building may be required leading to increased costs and/or a longer project schedule
- If a CPCN is required for the project, it may impact project cost and schedule risks
- Major equipment delivery presents potential project cost and schedule risks, based on variance in equipment lead times
- Transmission scope and routing may be different than assumed, including number of structures and types
- Ability to acquire new Right-of-Way
- No defined supply chain strategy; construction costs may increase depending on delivery method
- Project schedule may be longer than expected, leading to increased overhead costs
- Ground improvements may be required leading to increased construction costs
- Contaminated soil may be encountered leading to increased construction costs
- Cost of materials and major equipment may be affected by market conditions and escalation

Study Limitations and Exclusions

Protection, Control, and Telecommunications

The Interconnection Feasibility Study does not include a detailed review of the protection, control, and telecommunications system requirements specific to your Interconnection Request. Based on a high-level review, we have identified proxy costs for protection, control, and telecom Network Upgrades drawn from comparable interconnection projects with similar scope and complexity; these proxy costs have been included solely for indicative budgeting purposes. The relative interconnection cost determined by the Interconnection Feasibility Study includes a telecommunications component based on an assumed solution to deliver teleprotection and telecontrol circuit requirements necessary for the Interconnection Request. Protection, control, and telecommunications system requirements will be reviewed in detail in the System Impact Study if you are a successful participant of the CEAP and meet applicable requirements.

For Interconnection Feasibility Study purposes, it is assumed that any applicant-proposed works that could obstruct or impair the performance of existing BC Hydro microwave systems or new links from the proposed Interconnection Customer Interconnection Facilities (ICIF) to the BC Hydro microwave system would be identified and either relocated or repositioned as determined in a System Impact Study if you are a successful participant of the CEAP and meet applicable requirements. Such works may include, but are not limited to, towers, turbines, dams, support structures, panels, surface materials deposited or redistributed, water surface changes, or vegetation.

Generation Shedding/Curtailment Scheme and Electromagnetic Transient (EMT) Studies

The generation shedding/curtailment scheme reviews (e.g., Remedial Action Scheme (RAS), and a direct transfer trip for anti-islanding scheme) and EMT studies are completed in a System Impact Study. The outcomes of these studies may result in additional requirements, which could include Network Upgrades or ICIF. Any costs associated with completion of these studies, and resulting requirements, are not included in the Interconnection Feasibility Study cost estimate.

Revenue Metering

Please note that revenue metering requirements have not been determined with the Interconnection Feasibility Study. As such, any costs associated with revenue metering and other interconnection components are not included in the cost estimate provided above. Once these requirements are defined, 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 Interconnection Request’s Network Upgrades is Quarter 3 2033 (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 or delays in data submission or financial commitments may also impact the target in-service date.

If you have any questions, please contact the BC Hydro CEAP team at ceap2025@bchydro.com.

Sincerely,

[redacted]

[redacted]

Manager, Customer Interconnections

BC Hydro

Encl.: CEAP_2025_IR12_[redacted]_Feasibility_Study.pdf

[redacted]

Interconnection Feasibility Study

BC Hydro EGBC Permit to Practice No: 1002449

2025 CEAP IR # 12

Prepared for: [redacted]

Prepared by: [redacted] [redacted]

[redacted]
Technical Professional, Transmission
Operations Services

Reviewed by: [redacted]

[redacted]
Principal Engineer, Transmission
Operations Services

Accepted by: [redacted]

Manager, Transmission Planning

Report Metadata

Header:	2025 CEAP IR # 12
Subheader:	Interconnection Feasibility Study
Title:	[redacted]
Subtitle:	2025 CEAP IR # 12
Report Number:	1000-APR-00045
Revision:	0
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Date:	2025 Nov 21
Volume:	1 of 1
Prepared for:	[redacted].
Prepared by:	[redacted]
Title:	Technical Professional, Transmission Operations Services
Checked by:	[redacted]
Title:	Specialist Engineer, Transmission Operations Services
Reviewed by:	[redacted]
Title:	Principal Engineer, Transmission Operations Services
Related Facilities:	TLR (Tumbler Ridge 230 kV substation)
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Revision	Date	Description
0	2025 Nov	Initial release

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Section:	**Discipline:**
Entire report except listed below	Transmission Planning

Contributed by:

[redacted]

[redacted]

Technical Professional, Transmission Operations Services

[redacted]

Section:	**Discipline:**
5.2, 5.3	Stations Planning

Contributed by:

[redacted]

[redacted]

Specialist Engineer, Station Planning

[redacted]

Section:	**Discipline:**
5.4	Transmission Lines Engineering

Contributed by:

[redacted]

[redacted]

Sr. Engineer, Transmission Lines Engineering

[redacted]

Executive Summary

[redacted] the interconnection customer (IC), requests to interconnect its [redacted] (2025 CEAP IR # 12) to the BC Hydro (BCH) system. [redacted] has thirty-eight (38) [redacted] type-3 wind turbine generators with a maximum power injection of 219.53 MW into the BC Hydro system at the Point of Interconnection (POI). The proposed POI is on BC Hydro's Tumbler Ridge (TLR) 230 kV substation. The IC's project will connect to the POI via a 24.48 km 230 kV interconnection line. The IC's proposed commercial operation date (COD) is Feb 5, 2031.

To interconnect the [redacted] and its facilities to the BCH Transmission System at the proposed POI, this Feasibility Study has made the recommendations and conclusions as follow:

1. Relocating 2L323 line position and adding a new 230 kV line position with bus work modification and upgrades to accommodate the interconnection of [redacted]

2. The 2L313 line sections from SNK to MNK, and from MNK to MKT shall be thermally upgraded to achieve a summer normal rating of 1371 A/1357 A or greater at 30°C ambient.

3. For critical single contingency (N-1) conditions, the study has observed thermal overloads on 2L308, 2L309, 2L312, 1L361, 1L349, GMS T13, or GMS T14. The existing Peace Region Local Gen-shedding RAS will continue to be relied upon to mitigate these overloads and [redacted] will participate in the RAS (shedding at Feeder level). The [redacted] generators are also required to participate in GMS Area Gen Shed RAS scheme for Peace 500 kV transmission line contingencies. The details of the RAS will be investigated during the System Impact Study (SIS) stage if the project moves forward.

4. The [redacted] is required to install anti-islanding protection within its facility to disconnect the IC's generating plant from the grid when an inadvertent island with the local load

forms. The anti-islanding protection shall be configured in the manner that does not compromise the required ride-through performance.

5. The [redacted] is required 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, per BC Hydro's TIR Section 6.4.2.

6. The "STATCOM option" for the proposed type-3 WTGs is required so that each turbine can provide reactive power capability at zero MW output. BC Hydro recognizes that Type-3 WTGs with the STATCOM option have an inherent limitation, providing only partial reactive power capability during turbine standstill.

7. Fast Frequency Response, also known as Virtual Inertia Control (VIC) in [redacted] wind turbines, is required at the [redacted]. The proposed wind turbine generators, when equipped with the VIC option, are expected to temporarily boost the MW output to limit the system frequency drop during a major frequency event. The VIC settings should be determined in coordination with BC Hydro in the later stage of the interconnection process.

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 October 14, 2025.

A non-binding good faith cost for required network upgrades and estimated schedule for construction are included in a separate letter to the IC.

Please note that, this Feasibility Study report does not include the descriptions of Protection, Control, and Telecommunications requirements and the associated upgrade scopes; however, as discussed in Section 2 "Purpose and Scopes of Study, the associated cost implications are captured and delivered in the cover 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
IR	Interconnection Request
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

1 Introduction

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

Table 1-1 Summary of Project Information

Project Name	[redacted]	
Name of Interconnection Customer (IC)	[redacted]	
Point of Interconnection (POI)	Tumbler Ridge Substation (TLR)	
IC's Proposed COD	5th February 2031	
Type of Interconnection Service	NRIS ☒	ERIS ☐
Maximum Power Injection (MW)	219.53 MW (Summer)	219.53 MW (Winter)
Number of Turbines	38 x 5.9 MW WTGs	
Plant Fuel	Wind	

[redacted], the interconnection customer (IC), requests to interconnect its [redacted] (2025 CEAP IR # 12) to the BC Hydro (BCH) system. [redacted] has thirty-eight (38) [redacted] type-3 wind turbine generators with a maximum power injection of 219.53 MW into the BC Hydro system at the Point of Interconnection (POI). The proposed POI is on BC Hydro's Tumbler Ridge (TLR) 230 kV substation. The IC's project will connect to the POI via a 24.48 km 230 kV interconnection line. The IC's proposed commercial operation date (COD) is Feb 5, 2031.

Figure 1-1 shows the Peace region 138/230/500 kV transmission system diagram. The Peace Regional System is connected to BC Hydro 500 kV bulk system through two 500 kV substations GMS and SBK:

- One 230 kV transmission line 2L308 and two 138 kV transmission lines 1L361 and 1L364 connecting GMS substation to Peace Regional system, and
- Two 230 kV transmission lines 2L391 and 2L392 and three 138 kV transmission lines 1L360, 1L370 and 1L374 connecting SBK substation to Peace Regional system.

- Two 500 kV transmission lines 5L5 and 5L6 connecting SBK to PCN 500 kV substation, and through eight 500 kV transmission lines from GMS/PCN further down to BC Hydro load centre in the south.

[redacted] project is connecting to BC Hydro's 230 kV substation at Tumbler Ridge (TLR), as showing in Figure 1.1 below. Currently there are a few wind farm IPPs connected at Tumbler Ridge area so there are pre-existing branch overloading concerns under single or multiple contingencies. The Peace Region Generation Shedding RAS is relied on to address these overloading concerns.

In addition to the existing generators, the Peace region has two (2) future proposed generating projects with higher queue priority — [redacted] 200 MW connecting on 2L392 and [redacted] 200 MW connecting on 2L391 in Groundbirch area.

There is a new wind farm project - [redacted] with installed capacity of 54.6 MW, to be connected at BC Hydro Sukunka Switching Station. The in-service date for [redacted] is September 30, 2030. The temporary station code [redacted] and its connection is shown in Figure 1-1 below.

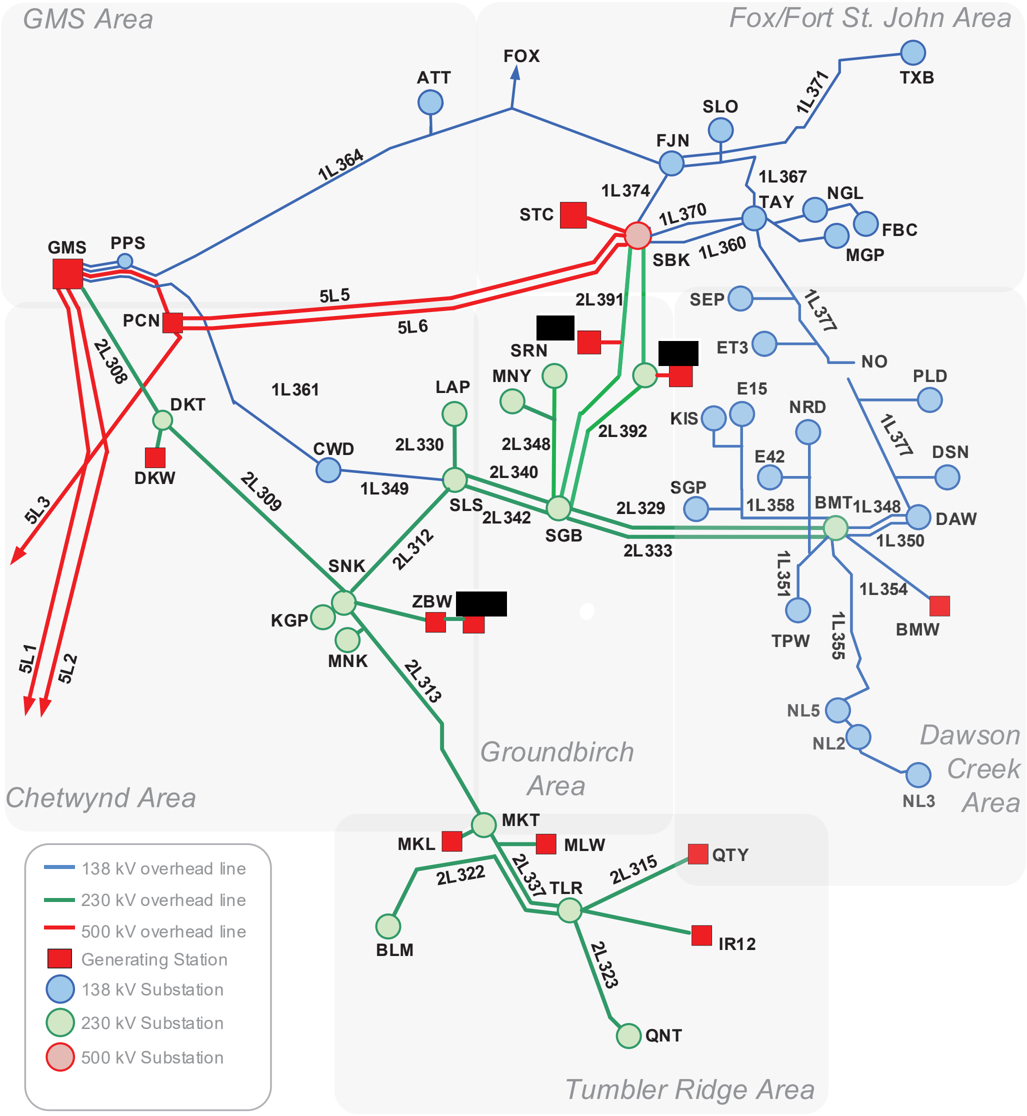

Figure 1-1: Peace Region 138/230/500 kV Transmission System Diagram

2 Purpose and Scopes of Study

This Feasibility Study is a preliminary evaluation of the 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) and produces the estimated cost of required Network Upgrades and the implementation schedule.

Per OATT, the Feasibility Study is performed individually for each of the participating projects in the CEAP process and focuses specifically on the BC Hydro regional transmission system where the proposed generating project is connected and affects.

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 will be addressed in subsequent System Impact Study if the project proceeds further. In addition, any potential impacts to the adjacent external systems to BC Hydro would be addressed in subsequent detailed and coordinated studies with the relevant adjacent entities if the proposed generator project proceeds further.

Please note that, due to the compressed study timeline for 2025 CEAP Feasibility Study, this report does not include the descriptions of the Protection, Control, and Telecommunication requirements and the associated upgrade scopes. Instead, the network upgrades associated with Protections, Controls and Telecommunications are incorporated with cost estimates in a separate cover letter to the IC.

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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, Rev 2.1.1, Effective: Sept 22, 2025.
- BC Hydro Operating Order 5T-10, Ratings for All Transmission Circuits 60 kV or Higher, Sept 17, 2025.
- BC Hydro Operating Order 5T-14, Ratings for All Transmission and Distribution Transformer, Sept 22, 2025.
- BC Hydro System Operating Order 7T-22 System Voltage Control, Sept 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 Oct 14, 2025 for the study purpose. Assumptions are made wherever the IC’s input is unavailable. Appendix A shows the schematic diagram of the IC’s Project IC’s project used in the study model.

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

2) There are three wind farm projects in Peace Region system that have been planned in the future, and one has followed the regular generation interconnection process:

    - The following are the two wind farm projects that comes from [redacted]r: [redacted] project 200 MW connecting on 2L392 and [redacted] Wind project 200 MW connecting on 2L391.
    - [redacted] project 54.6 MW connecting to Sukunka (SNK) Switching Station.

3) BMT T4 300 MVA has planned to be in service by March 2027.

4) A new 138 kV transmission line from SBK to TAY - 1L370 has been planned to be in service by March 2029.

5 System Studies and Results

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 system reinforcement requirement based on steady state performance analysis.

The study focuses on the base scenario — 31LS/31HS/31HW/32LS system conditions after the [redacted] enters service. These base cases were prepared based on factors such as load conditions, seasonal variation in ambient temperatures, and generation patterns that stress the transmission system.

In addition to the base scenario, an additional scenario is studied for the future year system conditions that include all the higher-queued generating projects in the region (32HW/33LS/33HS).

The studies are performed for system normal conditions and under critical system contingencies specified in the P1 and P2 events by NERC TPL-001-4. Study results are summarized below.

5.1.1 Thermal Overload Analysis

Table 5-1 summarizes the thermal overload concerns identified in the study and the proposed solutions. Appendix B contains the details of thermal overload analysis results.

Table 5-1: Thermal Overload Concerns and Proposed Solutions

Equipment subject to overloads	Conditions observed	Contingencies that result in overloads	Solution Proposed
Under system normal conditions			
2L313 (SNK-MNK, MNK-MKT)	LS, HS	P0: system normal	Thermally upgrade 2L313 line sections from SNK to MNK and from MNK to MKT to achieve a continuous rating of 1371 A/1357A or greater at 30°C ambient.
Under contingencies			

2L312	LS	P1.2: 2L308, 2L309 P2.3: SNK 2CB1, DKT 2CB2/3/4.	Generation Shedding RAS.
2L308	LS	P1.2: 2L312, 2L392A P2.3: SLS 2CB11/12/14, SNK 2CB12, SBK 2CB21/22.	
2L309	LS	P1.2: 2L312 P2.3: SLS 2CB11/12/14, SNK 2CB12.	
1L361	LS	P2.3: SLS 2CB14.	
1L349	LS	P2.3: SLS 2CB14.	
GMS T13	LS	P1.2: 2L312 P2.2 GMS_T14&12 P2.3: SLS 2CB11/12, SNK 2CB12.	
GMS T14	LS	P1.2: 2L312 P2.2 GMS_T13&11 P2.3: SLS 2CB11/12, SNK 2CB12.	
Note: For P1 and P2 contingencies, only the overloads in LS case, which is the worst case, are listed.			

The study shows that the addition of [redacted] would cause new thermal overload on 2L313 from SNK to MNK, and from MNK to MKT under system normal conditions in both light and heavy summer cases. Thermally upgrade 2L313 to achieve a summer normal rating of 1371 A/1357 A or greater at 30°C ambient is required.

For N-1 conditions, the connection of S[redacted] will contribute to the pre-existing thermal overload on the BC Hydro lines 2L308, 2L309 or 2L312 and cause new overloads on 1L361,1L349, GMS T13, or GMS T14 under single contingencies or breaker contingencies (2L308, 2L309, 2L312, 2L392A, DKT 2CB2/3/4, SLS 2CB11/12/14, SNK 2CB1/12 or SBK 2CB21/22). The existing Peace Region Local Gen-shedding RAS will continue to be relied upon to mitigate these overloads and [redacted]

[redacted] will participate in the RAS. The [redacted] generators are also required to participate in GMS Area Gen Shed RAS scheme for Peace 500 kV transmission line contingencies. The details of the RAS will be investigated during the System Impact Study (SIS) stage if the project moves forward.

5.1.2 Steady-State Voltage Analysis

With the connection of the IC's project, the stead-state voltage performance under system normal condition (P0) is acceptable for all the three load conditions (31LS, 31HS, 31HW).

Voltage deviation violations are identified at buses DKT 230 and DKW 230 in all studied cases for 2L312 contingency. Note that marginal voltage deviation violations are observed at bus SNK 230 in all studied cases for 2L312 contingency as well. Gen-shedding RAS is required to mitigate the issues. Appendix B shows the details in the steady-state voltage study results.

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 power flow model data submitted by the IC, the proposed [redacted] 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 the interconnection process.

In addition, according to the IC-provided reactive capability data, the proposed WTG would provide +1.7 Mvar to -1.9 Mvar reactive capability at the zero MW output if the turbine's "STATCOM" function is enabled. This function needs to be re-confirmed if the IC's project proceeds to next stage of the interconnection process.

5.1.4 Anti-Islanding Requirements

[redacted] is not arranged for islanded operation. In addition, the IC is required to install anti-islanding protection within its facility to disconnect the IC's wind farm from the grid when an inadvertent island with the local loads forms.

5.1.5 Other Performance Requirements

Fast Frequency Response, also known as Virtual Inertia Control (VIC) in the proposed wind turbines, is required at the [redacted]. The proposed wind turbine generators, when equipped with the VIC option, are expected to temporarily boost the MW output to limit the system frequency drop during a major frequency event. The VIC settings should be determined in coordination with BC Hydro in the later stage of the interconnection process.

5.2 Fault Analysis

The short circuit analysis in the Feasibility Study (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

To interconnect the [redacted] (IC) to BC Hydro's transmission system at the 230 kV bus of the Tumbler Ridge (TLR) Substation the following station works are required:

- Relocate the existing line terminal 2L323 along with associated equipment - 2CVT4 and 2D24, so that the line egress is from the north side of the substation. With the addition of the seventh circuit breaker (2CB2) as part of the interconnection at the TLR substation, the total number of circuit breakers now exceeds the planning criteria. Therefore, provisions must be made for a future circuit breaker (2CB10) to complete a meshed ring configuration. However, no additional breaker will be installed under this project, apart from the relocation of the 2L323 line terminal and its associated equipment.
- Remove the temporary connection between bus 2B3 and 2B9.

- Install one new outdoor dead-tank type, 230kV circuit breaker (2CB2) rated at 3000A continuous current, 40kA interrupting rating, 950kV BIL along with associated disconnects rated 3000A.
- Install a new 230kV line terminal ([redacted] with associated motorised disconnect switch (2D23) rated 3000A, Surge Arrester (2SA13) and one 230kV Capacitor Voltage Transformer (2CVT3).
- Expand the existing 230kV switchyard within the limits of the current property boundaries to accommodate the above-mentioned facilities.
- Install associated protection and control (P&C) equipment and other equipment.
- Other associated station works.
- Refer to the one-line diagram in Appendix C for details.

5.4 Transmission Line Requirements

Thermally upgrade the overhead circuit 2L313 (SNK to MNK Tap, MNK Tap to MKT) from existing 1073 Amps /1082 Amps to required 1371 Amps/1357 Amps (30°C ambient summer Temperature) by changing from the existing SP 927.2 ASC to new ACSR Lapwing (at 90°C conductor temperature, 30°C ambient summer Temperature), with structure replacements may be required. In the case of planned outage constrain of 2L313, build a brand new parallel circuit with the new proposed replacement conductor and new right-of-way may be required.

Re-terminate 2L323 to the north side of the TLR substation.

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] and its facilities to the BCH Transmission System at the proposed POI, this Feasibility Study has made the recommendations and conclusions as follow:

1. Relocating 2L323 line position and adding a new 230 kV line position with bus work modification and upgrades.
2. The 2L313 line sections from SNK to MNK, and from MNK to MKT shall be thermally upgraded to achieve a summer normal rating of 1371 A or greater at 30°C ambient.
3. For N-1 conditions, the study has observed thermal overloads on 2L308, 2L309, 2L312, 1L361, 1L349, GMS T13, or GMS T14. The existing Peace Region Local Gen-shedding RAS will continue to be relied upon to mitigate these overloads and [redacted] will participate in the RAS (shedding at Feeder level). The [redacted] generators are also required to participate in GMS Area Gen Shed RAS scheme for Peace 500 kV transmission line contingencies. The details of the RAS will be investigated during the System Impact Study (SIS) stage if the project moves forward.
4. The [redacted] is required to install anti-islanding protection within its facility to disconnect the IC's generating plant from the grid when an inadvertent island with the local load forms. The anti-islanding protection shall be configured in the manner that does not compromise the required ride-through performance.
5. The [redacted] is required 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, per BC Hydro's TIR Section 6.4.2.
6. The "STATCOM option" for the proposed type-3 WTGs is required so that each turbine can provide reactive power capability at zero MW output. BC Hydro recognizes that Type-3 WTGs with the STATCOM option have an inherent limitation, providing only partial reactive power capability during turbine standstill.

7. Fast Frequency Response, also known as Virtual Inertia Control (VIC) in [redacted] wind turbines, is required at the [redacted]. The proposed wind turbine generators, when equipped with the VIC option, are expected to temporarily boost the MW output to limit the system frequency drop during a major frequency event. The VIC settings should be determined in coordination with BC Hydro in the later stage of the interconnection process.

Appendix A

Schematic Diagram of the IC’s Project

Figure A-1 shows the schematic diagram for the [redacted]

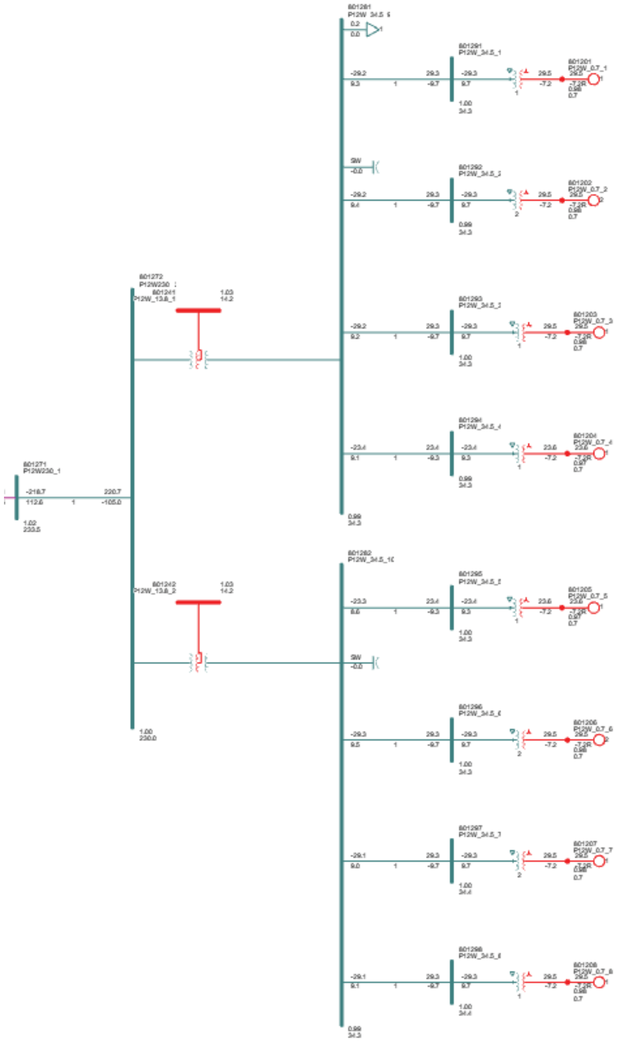

Figure A-1: [redacted] Plant Schematic Diagram.

Appendix B

Power Flow Study Results

Base Scenario (31LS/31HS/31HW/32LS)

Table B-1: Thermal Overload Study Results

Case	Peace Regional Generation	Contingency		Branch Loading (% of its seasonal normal rating)								
				2L313		2L312	2L308	2L309	T13	T14	1L361	1L349
		Cat.	Description	SNK-MNK	MNK-MKT	SNK-SLS	GMS-DKT	DKT-SNK	GMS	GMS	GMS-CWD	CWD-SLS
Summer Rating in MVA				431	427	425	427	427	300	300	140.5	139.8
31LS	Max	P0	System Normal	120%	121%							
	Max	P1.2	2L308			175%						
	Max	P1.2	2L309			143%						
	Max	P1.2	2L312				183%	150%	124%	124%		
	Max	P2.2	GMS_T13&11							106%		
	Max	P2.2	GMS_T14&12						106%			
	Max	P2.3	SLS 2CB11/12				183%	150%	124%	124%		
	Max	P2.3	SLS 2CB14				145%	113%			103%	102%
	Max	P2.3	SNK 2CB1			122%						
	Max	P2.3	SNK 2CB12				158%	126%	107%	107%		
	Max	P2.3	DKT 2CB2/3/4			143%						
Summer Rating in MVA				431	427	425	427	427	300	300	140.5	139.8
32LS	Max	P0	System Normal	120%	121%							
	Max	P1.2	2L308			175%						
	Max	P1.2	2L309			143%						
	Max	P1.2	2L312				182%	150%	124%	124%		
	Max	P1.2	2L392A				108%					
	Max	P2.2	GMS_T13&11							106%		
	Max	P2.2	GMS_T14&12						106%			
	Max	P2.3	SLS 2CB11/12				183%	150%	124%	124%		
	Max	P2.3	SLS 2CB14				145%	113%			103%	102%
	Max	P2.3	SNK 2CB1			122%						
	Max	P2.3	SNK 2CB12				158%	126%	107%	107%		
	Max	P2.3	DKT 2CB2/3/4			143%						
	Max	P2.3	SBK 2CB21/22				112%					
Note: Only the overloads in LS case, which is the worst case, are listed.												

Table B-2: Steady-State Voltage Study Results

Case	IC's Plant Output	Contingency		Bus Voltages (pu)					
		Cat.	Description	DKT 230	GMS 230	DKW 230	P12 HV	SNK 230	TLR 230
31LS	Max	P0	System Normal	1.010	1.001	1.015	1.016	1.012	1.016
		P1.2	2L312	0.925	0.946	0.930	0.992	0.933	0.992
32LS	Max	P0	System Normal	1.011	1.003	1.020	1.016	1.013	1.016
		P1.2	2L312	0.929	0.950	0.973	0.992	0.935	0.992
31HS	Max	P0	System Normal	1.011	1.002	1.016	1.026	1.011	1.016
		P1.2	2L312	0.927	0.948	0.931	0.992	0.934	0.992
31HW	Max	P0	System Normal	1.011	1.002	1.016	1.015	1.013	1.015
		P1.2	2L312	0.931	0.950	0.936	0.993	0.938	0.993
Note: Only the results for the worst contingency are listed.									

Appendix C

One-Line Sketch of IC's Connection to BC Hydro's Transmission System at TLR Substation

Figure C-1 shows the Stations Planning one-line sketch for the connection of the IC to BC Hydro's transmission system at the Tumbler Ridge (TLR) Substation.

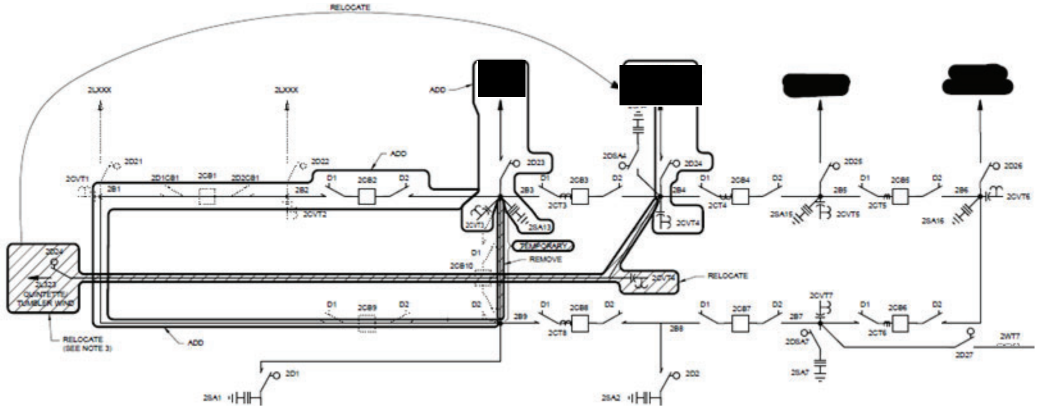

Figure C-1: Stations Planning One-Line Sketch of IC's Connection to BC Hydro's Transmission System.