BC Hydro
Power smart

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

November 24, 2025

[redacted]

via email: [redacted]

RE: CEAP IR #23 – [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 $14.8 M.

Major Scope of Work Identified:

- Supply and install one 230kV non-standard tap structure approximately between str. 14-01 and 14-02 of 2L312
- Supply and install up to three BC Hydro 230 kV disconnect switches and steel pole structures on line 2L392B

- Convert two adjacent switch structures to dead-end structures, install a dead-end structure as the demarcation point between BC Hydro and the customer
- Acquire additional Right-of-Way
- Supply and install required Protection, Control and Telecommunications equipment

Exclusions:

- GST
- Permits
- Right-of-Way & property costs

Key Assumptions:

- Construction by contractor
- 12 months of construction is considered
- 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

Key Risks:

- Transmission scope may be different than assumed, including number of disconnect switches and structure types
- Major equipment delivery presents potential project cost and schedule risks, based on variance in equipment lead times
- 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 2030 (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

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_IR23_[redacted]_Feasibility_Study.pdf

BC Hydro
Power smart

[redacted]

Interconnection Feasibility Study

BC Hydro EGBC Permit to Practice No: 1002449

2025 CEAP IR # 23

Prepared for: [redacted]

Prepared by: [redacted]

[redacted]
Specialist Engineer, Transmission

[redacted]

Reviewed by: [redacted]

Technical Strategic Principle, Transmission Planning

Accepted by: [redacted]

[redacted]
Division Manager, Transmission Planning

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Section: Entire report except listed below

Discipline: Transmission Planning

Contributed by:

[redacted]

[redacted]

Specialist Engineer, Transmission Planning

[redacted]

Section: **5.2, 5.3**

Discipline: Stations Planning

Contributed by:

[redacted]

[redacted]

Specialist Engineer, Station Planning

[redacted]

Section: **5.4**

Discipline: 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 # 23) to the BC Hydro system. [redacted] has twenty-two (22) [redacted] type-3 wind turbine generators, adding a total capacity of 125.4 MW with a maximum power injection of 124.1 MW into the BC Hydro system at the Point of Interconnection (POI). The IC has proposed to connect their Wind Project to BC Hydro transmission system at the POI, a new tap structure on BC Hydro's 230 kV line 2L312, approx. 14 km from the Sukunka substation (SNK).

The IC's Wind Project will be connected via a new 230 kV customer-built transmission line (2L312-C) from the POI on the 230 kV line 2L312.

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. The proposed POI at the 230 kV line 2L312 with tap connection is acceptable to interconnect the customer's generating project to the BCH system.
2. No thermal overloads or voltage constraints have been identified under system normal condition.
3. The connection of the [redacted] will exacerbate existing thermal overloads on 2L312 and 2L308 under single contingencies. These overloads can be mitigated by the existing Peace Area Wind Farm Gen Shedding Remedial Action Scheme (RAS). The [redacted] is required to participate in this RAS.

   The [redacted] will also exacerbate the existing thermal overloads on the 500 kV lines 5L1, 5L2 and 5L3 under single contingencies. These overloads can be mitigated by the existing G.M. Shrum Area Gen Shedding RAS. The [redacted] is required to participate in this RAS.

   In addition, thermal overloads will be observed on GMS 500/230 kV transformers T13 and T14 under single contingency. The Peace Area Wind

Farm Gen Shedding RAS is required to be modified to include the IC's [redacted] to mitigate these overloads.

Further RAS details will be studied under System Impact Study (SIS) stage.

4. [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. A Direct Transfer Trip (DTT) protection scheme may be required to isolate the IC's wind project at the IC's entrance circuit breaker to avoid potential islanding operations with the existing loads. This requirement will be further verified at SIS stage.

6. [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. Based on the IC-submitted PSS/E model, the proposed [redacted] meets the reactive capability requirement above.

7. 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.

8. 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.

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

Executive Summary **vi**

1 Introduction **1**

2 Purpose and Scopes of Study **3**

3 Standard and Criteria **4**

4 Assumptions and Conditions **5**

5 System Studies and Results **6**

5.1 Power Flow Study Results 6

5.1.1 Thermal Overload Analysis 6

5.1.2 Steady-State Voltage Analysis 7

5.1.3 Reactive Power Capability Evaluation 7

5.1.4 Anti-Islanding Requirements 7

5.1.5 Other Performance Requirements 8

5.2 Fault Analysis 8

5.3 Stations Requirements 8

5.4 Transmission Line Requirements 8

6 Cost Estimate and Schedule **9**

7 Conclusions **10**

Appendices

Appendix A Schematic Diagram of the IC’s Project

Appendix B Power Flow Study Results

Acronyms

The following are acronyms used in this report.

BCH	BC Hydro
BMT	Bear Mountain Terminal
CEAP	Competitive Electricity Acquisition Process
COD	Commercial Operation Date
DTT	Direct Transfer Trip
EGB	East Groundbirch
ERIS	Energy Resource Interconnection Service
FeS	Feasibility Study
IBR	Inverter-Based Resources
IC	Interconnection Customer
IR	Interconnection Request
GMS	Gordon M. Shrum G.S.
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
PRES	Peace Region Electric Supply
RAS	Remedial Action Scheme
SGB	Shell Groundbirch Substation
SBK	South Bank Substation
TIR	BC Hydro “60 KV to 500 kV Technical Interconnection Requirements for Power Generators”
[redacted]	[redacted] Terminal Station
[redacted]	[redacted] Station
VIC	Virtual Inertia Control
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)	On the 230 kV line 2L312	
IC's Proposed COD	1st November 2029	
Type of Interconnection Service	NRIS ☒	ERIS ☐
Maximum Power Injection (MW)	124.1 MW (Summer)	124.1 MW (Winter)
Number of Turbines	22 x 5.7 MW WTGs	
Plant Fuel	Wind	

[redacted]., the interconnection customer (IC), requests to interconnect its [redacted] (2025 CEAP IR # 23) to the BC Hydro system. [redacted] has twenty-two (22) [redacted] type-3 wind turbine generators, adding a total capacity of 125.4 MW with a maximum power injection of 124.1 MW into the BC Hydro system at the Point of Interconnection (POI). The IC has proposed to connect their Wind Project to BC Hydro transmission system at the POI, a new tap structure on BC Hydro's 230 kV line 2L312, approx. 14 km from the Sukunka substation (SNK).

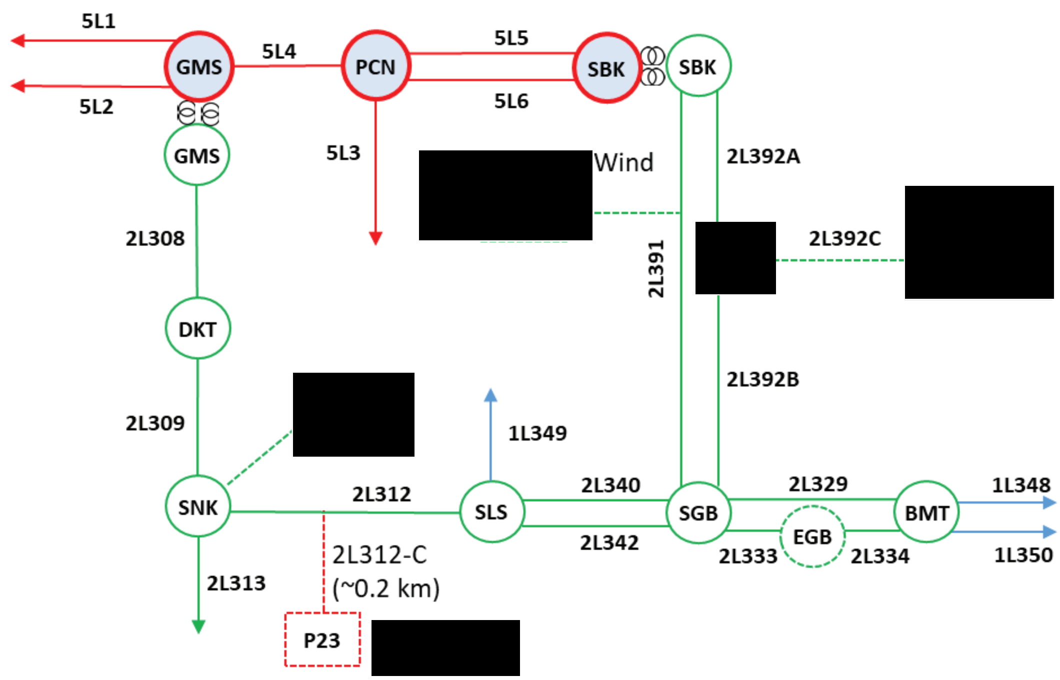
The IC's Wind Project will be connected via a new short 230 kV customer-built transmission line (2L312-C), approximately 0.2 km from the POI on the 230 kV line 2L312. The IC's proposed commercial operation date (COD) is November 1, 2029.

The Peace Region transmission system consists of 230 kV and 138 kV transmission infrastructures supplied from Gordon M. Shrum G.S.(GMS) and South Bank substation, which are the major sources of supply to the Peace Region transmission system. Figure 1-1 shows the Peace region transmission system diagram.

The Dawson Creek-Groundbirch area is supplied from Shell Groundbirch substation (SGB) via two 230 kV lines and multiple radial 138 kV transmission lines, which interconnecting with the two major BC Hydro substations, Bear Mountain Terminal (BMT) and Dawson Creek (DAW) substation, serving major oil and gas customer loads. SGB is fed by 230 kV Peace Region Electric Supply project (PRES) lines from Southbank substation and the other 230 kV lines 2L340 & 2L342 with power sourced from GMS.

There are two new wind farms, [redacted] and [redacted] with installed capacity of 200 MW each, to be added in the Peace region. In addition, one new wind farm with 56 MW installed capacity will also be added in the Peace Region. The wind farms and connection are shown in Figure 1-1 below.

Figure 1-1: Peace Region 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.

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 Peace region 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 Maximum Power Outputs (MPO) unless otherwise specified.
2) The 2024 Distribution Substation Load Forecast, 2025 Transmission Voltage Customer (TVC) Load Forecast and 2025 System Peak Forecast are used.
3) September 2024 Base Resource Plan.
4) 200 MW [redacted] will be in service on September 30, 2031, and 200 MW [redacted] will be in service on October 1, 2030.
5) A new 56 MW generation interconnection project in the queue is expected to be in service on October 31, 2028.
6) 29HW, 30LS, 32HS and 32LS are used as base case in the study to evaluate system impact after [redacted] interconnection.
7) The Bear Mountain Terminal T4 will be in service by March 2027.
8) 1L377 is normally open between [redacted] Parkland Substation (PLD) and [redacted] Tower 03/07 Substation (ET3).
9) All BCH new TVC load interconnection associated system reinforcements are considered in this study.

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 scenarios — 29HW/30LS/32LS/32HS system conditions that includes all the higher-queued generating projects ([redacted] and a new generation interconnection project in the queue) in the Peace region. 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.

The studies were 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

For all the studied scenarios (29HW, 30LS, 32LS, and 32HS), the study shows that the addition of [redacted] would not cause any thermal overloads under system normal condition.

Under single contingency conditions, branch overloads were observed on the 500 kV line 5L1, 5L2, and 5L3 following single contingencies on line 5L3, 5L4 or 5L7. The connection of [redacted] will further aggravate these existing overloads, which is currently addressed by the existing G.M. Shrum Area Gen Shedding Remedial Action Scheme (RAS). So, [redacted] will be required to participate in this RAS.

The interconnection of the IC's [redacted] will also exacerbate existing thermal overloads on 2L312 and 2L308 which were previously observed under single contingencies. These overloads are currently mitigated by the existing Peace Area Wind Farm Gen Shedding RAS. So, [redacted] will be required to participate in this RAS.

Under P2 contingency of no-fault opening 2L312 at Sundance Lakes Substation (SLS), thermal overload would be observed on GMS 500/230 kV transformers T13 and T14. The Peace Area Wind Farm Gen Shedding RAS is required to be modified to include the IC's [redacted] to mitigate these overloads.

The detailed RAS requirements will be confirmed during the System Impact Study (SIS) stage, if necessary.

Details of the thermal overload analysis are provided in Appendix B.

5.1.2 Steady-State Voltage Analysis

With the connection of the IC's project, the steady-state voltage performance under system normal and single contingency conditions is acceptable for all the four study scenarios (29HW, 30LS, 32LS, and 32HS). 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 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

The POI of the [redacted] is a tap connection on the 230 kV transmission line 2L312.

No station work is required.

5.4 Transmission Line Requirements

No transmission line upgrade has been identified for this project.

At the POI, BCH will design and build the tap that may include a non-standard tap structure and up to three non-standard switches and structures, two structures adjacent to the switch structures converted to deadends, and a deadend structure as the demarcation point between BC Hydro and the customer. Up to three 253 kV rated disconnect switches may be installed to isolate/ sectionalize the IC's facilities and BC Hydro's system. Additional Right-of-Way (ROW) may be required to accommodate the tap.

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 POI, this Feasibility Study has identified the following conclusions and requirements:

1. The proposed POI at the 230 kV line 2L312 with tap connection is acceptable to interconnect the customer's generating project to the BCH system.

2. No thermal overloads or voltage constraints have been identified under system normal condition.

3. The connection of the [redacted] will exacerbate existing thermal overloads on 2L312 and 2L308 under single contingencies. These overloads can be mitigated by the existing Peace Area Wind Farm Gen Shedding remedial action scheme. The [redacted] is required to participate in this RAS.

   The [redacted] will also exacerbate the existing thermal overloads on the 500 kV lines 5L1, 5L2 and 5L3 under single contingencies. These overloads can be mitigated by the existing G.M. Shrum Area Gen Shedding remedial action scheme. The [redacted] is required to participate in this RAS.

   In addition, thermal overloads will be observed on GMS 500/230 kV transformers T13 and T14 under single contingency. The Peace Area Wind Farm Gen Shedding RAS is required to be modified to include the IC's [redacted] to mitigate these overloads.

   Further RAS details will be studied under System Impact Study stage.

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. A DTT protection scheme is required to isolate the IC's wind project at the IC's entrance circuit breaker to avoid potential islanding operations with the existing loads.

6. [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. Based on the IC-submitted PSS/E model, the proposed [redacted] meets the reactive capability requirement above.

7. 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.

8. 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.

Appendix A

Schematic Diagram of the IC's Project

Figure A-1 shows the schematic diagram for the [redacted] Note that the proposed plant configuration includes one total of 8.5 MVAr switchable shunt capacitor on the collector bus.

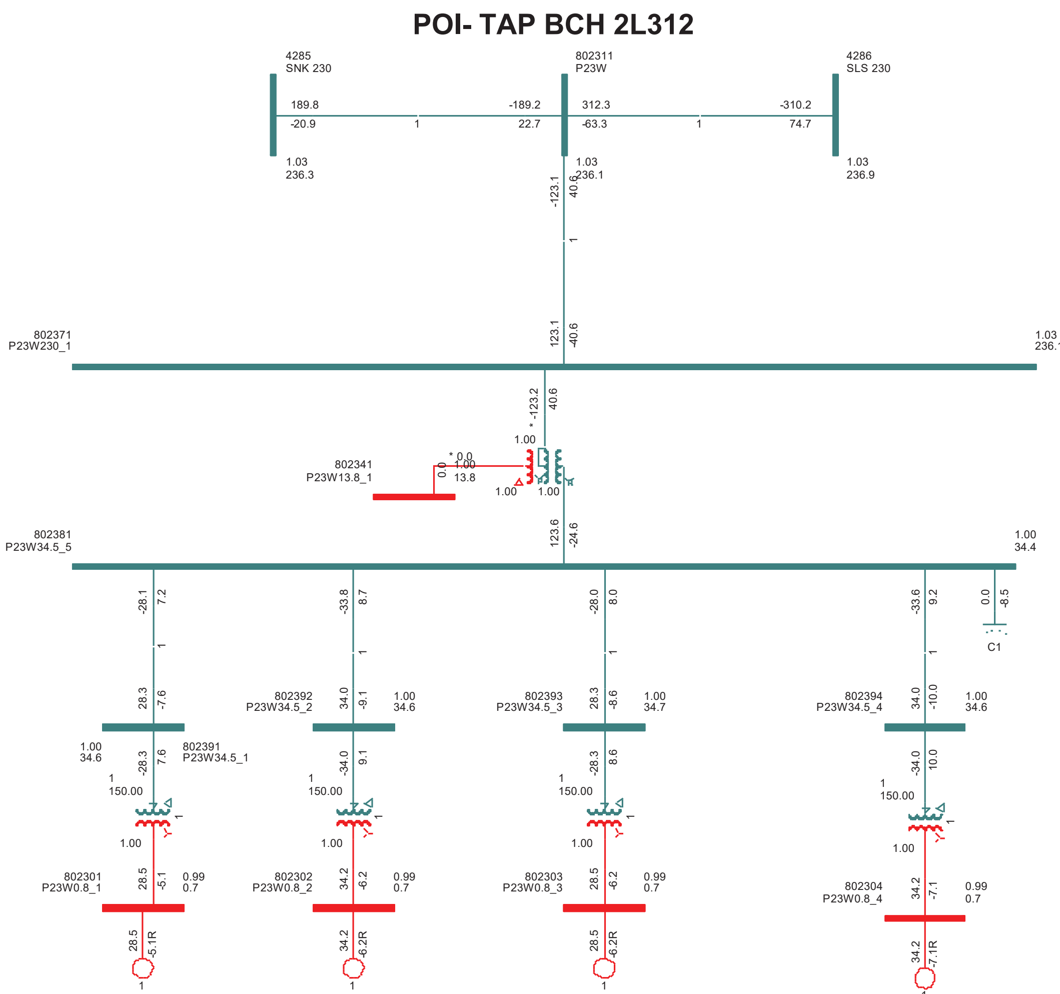


Figure A-1: [redacted] Plant Schematic Diagram.

Appendix B

Power Flow Study Results

Base Scenario (29HW/30LS/32HS/32LS)

Table B-1: Thermal Overload Study Results

Cases	IC's Gen Output (MW)	Contingency Identified		Branch Loading (Amps/MVA)					
				2L308	2L312	2L312	2L313	GMS T14	5L1
		Cate.	Description	GMS-DKT	SNK-P23 Tap	SLS-P23 Tap	SNK-MKT	(MVA)	GMS-KDY
Winter Rating				1359	1351	1351	1352	356	3000
29HW	Max	P0	System Normal	677.3 49.8%	594.4 44.0%	905.7 67.0%	714.8 52.9%	125.0 35.1%	1635.6 54.5%
		P1	2L308	N/A	1272.7 94.2%	1584.1 117.3%	721.1 53.3%	12.9 3.6%	1626.3 54.2%
		P1	2L313	361.0 26.6%	202.0 15.0%	517.0 38.3%	N/A	62.2 17.5%	1526.3 50.9%
		P1	2L309	354.6 26.1%	928.6 68.7%	1239.8 91.8%	717.2 53.1%	61.8 17.3%	1630.9 54.4%
		P1	GMS T13	612.9 45.1%	658.5 48.7%	969.5 71.8%	715.0 52.9%	225.1 63.2%	1635.6 54.5%
		P1	5L3	725.7 53.4%	563.1 41.7%	874.8 64.8%	718.5 53.1%	132.4 37.2%	2528.2 84.3%
		P1	2L392	688.9 50.7%	582.5 43.1%	893.4 66.1%	715.2 52.9%	127.2 35.7%	1635.9 54.5%
		P2	No-fault open 2L312 at SNK	1273.2 93.7%	N/A	317.0 23.5%	724.4 53.6%	239.2 67.2%	1642.0 54.7%
		P2	No-fault open 2L312 at SLS	1602.8 117.9%	315.5 23.4%	N/A	752.0 55.6%	298.9 83.9%	1643.8 54.8%
Summer Rating				1073	1066	1066	1082	300	2244
30LS	Max	P0	System Normal	772.1 72.0%	535.7 50.2%	848.2 79.6%	750.6 69.4%	139.7 46.6%	1713.7 76.4%
		P1	2L308	N/A	1310.4 122.9%	1621.7 152.1%	758.5 70.1%	16.0 5.3%	1703.0 75.9%
		P1	2L313	440.0 41.0%	127.0 11.9%	441.5 41.4%	N/A	74.1 24.7%	1594.6 71.1%
		P1	2L309	357.2 33.3%	964.6 90.5%	1276.1 119.7%	752.8 69.6%	58.7 19.6%	1707.2 76.1%
		P1	GMS T13	702.4 65.5%	604.7 56.7%	916.5 86.0%	750.4 69.4%	253.2 84.4%	1713.2 76.3%
		P1	5L3	824.6 76.8%	503.4 47.2%	816.3 76.6%	754.6 69.7%	147.0 49.0%	2674.1 119.2%
		P1	2L392	809.3 75.4%	498.0 46.7%	810.5 76.0%	750.9 69.4%	146.9 49.0%	1714.5 76.4%
		P2	No-fault open 2L312 at SNK	1312.0 122.3%	N/A	317.7 29.8%	762.3 70.5%	242.7 80.9%	1719.3 76.6%
		P2	No-fault open 2L312 at SLS	1644.3 153.2%	315.6 29.6%	N/A	790.4 73.1%	302.6 100.9%	1721.0 76.7%
32LS	Max	P0	System Normal	899.1 83.8%	405.7 38.1%	718.6 67.4%	751.3 69.4%	163.1 54.4%	1820.5 81.1%
		P1	2L308	N/A	1308.7 122.8%	1620.4 152.0%	756.1 69.9%	17.5 5.8%	1805.6 80.5%

		P1	2L313	557.5 52.0%	27.5 2.6%	319.5 30.0%	N/A	95.8 31.9%	1704.4 76.0%
		P1	2L309	352.8 32.9%	964.8 90.5%	1276.3 119.7%	752.8 69.6%	55.7 18.6%	1811.2 80.7%
		P1	GMS T13	820.8 76.5%	485.3 45.5%	797.5 74.8%	751.2 69.4%	296.0 98.7%	1819.9 81.1%
		P1	5L3	953.4 88.9%	375.4 35.2%	689.6 64.7%	754.9 69.8%	169.9 56.6%	2843.9 126.7%
		P1	2L392-A (SBK-[redacted]	1032.5 96.2%	274.1 25.7%	588.1 55.2%	752.3 69.5%	188.8 62.9%	1821.9 81.2%
		P2	No-fault open 2L312 at SNK	1309.9 122.1%	N/A	317.2 29.8%	761.4 70.4%	241.3 80.4%	1825.3 81.3%
		P2	No-fault open 2L312 at SLS	1641.6 153.0%	315.6 29.6%	N/A	789.0 72.9%	301.4 100.5%	1827.7 81.4%
32HS	Max	P0	System Normal	841.3 78.4%	464.5 43.6%	777.5 72.9%	750.8 69.4%	147.5 49.2%	1766.6 78.7%
		P1	2L308	N/A	1308.2 122.7%	1620.1 152.0%	755.0 69.8%	21.5 7.2%	1752.7 78.1%
		P1	2L313	500.4 46.6%	67.2 6.3%	379.0 35.5%	N/A	80.0 26.7%	1652.8 73.7%
		P1	2L309	352.8 32.9%	964.8 90.5%	1276.6 119.7%	752.2 69.5%	51.3 17.1%	1758.6 78.4%
		P1	GMS T13	769.0 71.7%	537.3 50.4%	849.7 79.7%	750.8 69.4%	267.4 89.1%	1766.0 78.7%
		P1	5L3	893.3 83.3%	434.7 40.8%	748.9 70.2%	753.5 69.6%	154.5 51.5%	2744.1 122.3%
		P1	2L392-A (SBK-[redacted])	961.0 89.6%	345.7 32.4%	659.7 61.9%	751.5 69.5%	170.8 56.9%	1768.2 78.8%
		P2	No-fault open 2L312 at SNK	1310.1 122.1%	N/A	317.6 29.8%	761.7 70.4%	237.3 79.1%	1772.0 79.0%
		P2	No-fault open 2L312 at SLS	1642.3 153.1%	315.6 29.6%	N/A	789.6 73.0%	297.6 99.2%	1774.3 79.1%

Table B-2: Steady-State Voltage Study Results

Case	IC's Generator Output (MW)	Contingency		Bus Voltage (PU)	
		Cate.	Description	SNK 230	SLS 230
29HW	Max	P0	System Normal	1.027	1.028
		P1	2L308	1.020	1.016
		P1	2L313	1.024	1.030
		P1	2L309	1.024	1.023
		P1	GMS T13	1.027	1.027
		P1	5L3	1.022	1.023
		P1	2L392	1.026	1.026
		P2	No-fault open 2L312 at SNK	1.017	1.030
		P2	No-fault open 2L312 at SLS	0.999	1.033
30LS	Max	P0	System Normal	1.027	1.030
		P1	2L308	1.018	1.012
		P1	2L313	1.027	1.034

Case	IC's Generator Output (MW)	Contingency		Bus Voltage (PU)	
		Cate.	Description	SNK 230	SLS 230
		P1	2L309	1.023	1.023
		P1	GMS T13	1.027	1.029
		P1	5L3	1.021	1.024
		P1	2L392	1.026	1.029
		P2	No-fault open 2L312 at SNK	1.015	1.034
		P2	No-fault open 2L312 at SLS	0.996	1.039
32LS	Max	P0	System Normal	1.026	1.029
		P1	2L308	1.020	1.018
		P1	2L313	1.024	1.030
		P1	2L309	1.024	1.024
		P1	GMS T13	1.026	1.028
		P1	5L3	1.021	1.027
		P1	2L392-A (SBK-[redacted])	1.024	1.028
		P2	No-fault open 2L312 at SNK	1.016	1.031
		P2	No-fault open 2L312 at SLS	0.997	1.035
32HS	Max	P0	System Normal	1.027	1.031
		P1	2L308	1.021	1.021
		P1	2L313	1.026	1.032
		P1	2L309	1.025	1.026
		P1	GMS T13	1.027	1.030
		P1	5L3	1.023	1.029
		P1	2L392-A (SBK[redacted])	1.026	1.031
		P2	No-fault open 2L312 at SNK	1.016	1.033
		P2	No-fault open 2L312 at SLS	0.997	1.037