

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

November 24, 2025

[REDACTED]

via email: [REDACTED]

**RE: CEAP IR #117 – [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 \$130.4 M.

### **Major Scope of Work Identified:**

- Acquire adequate property and construct a new 500kV, three-circuit breaker ring bus switching Substation on 5L11
- Construct a new control building and other required substation facilities and infrastructures
- Cut the existing 5L11 and loop into/out the substation

- Terminate 500kV line of [REDACTED] project at the substation
- Supply and install required Protection, Control and Telecommunications equipment

**Exclusions:**

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

**Key Assumptions:**

- Construction by contractor
- 24 months of construction is considered
- No construction during winter months
- Execution of early Engineering and Procurement Agreement
- Ability to acquire adequate property for a new switching station close to the existing transmission line 5L11
- No expansion of existing stations or control buildings to accommodate new equipment
- Impact Benefit Agreements with First Nations are not considered

**Key Risks:**

- Cost and ability of obtaining new property for the new switching station may be higher than estimated which may increase the Network Upgrade cost estimate and schedule.
- Expansion of the existing control building may be required leading to increased costs and/or a longer project schedule
- 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 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](mailto:ceap2025@bchydro.com).

Sincerely,

[Redacted signature]

[Redacted name]

Manager, Customer Interconnections

BC Hydro

Encl.: CEAP\_2025\_IR117\_[Redacted]\_Feasibility\_Study.pdf

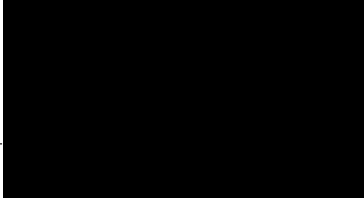

  
**Interconnection Feasibility Study**

**BC Hydro EGBC Permit to Practice No: 1002449**

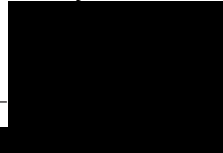
**2025 CEAP IR # 117**

Prepared for: 

Prepared by:

   
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Revision	Date	Description
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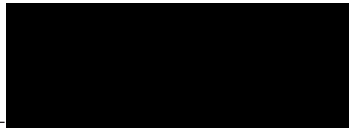
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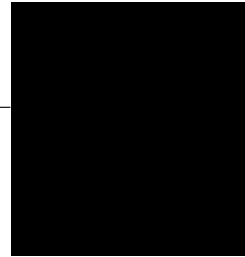
The following accept responsibility for the content in the specified sections. Professionals apply their signature and/or seal as appropriate.

**Section:** The entire report except those listed below  
**Discipline:** Transmission Planning

Contributed by:



Specialist Engineer, Planning  
Coordinator & Bulk Planning

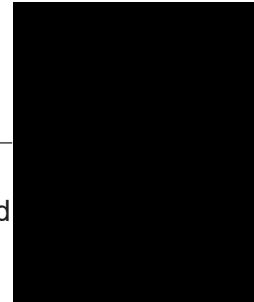


**Section:** 5.2, 5.3  
**Discipline:** Stations Planning

Contributed by:

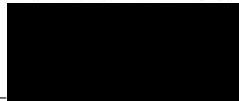


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Engineering



## Executive Summary

██████████, the interconnection customer (IC), requests to interconnect its ██████████ hereafter “██████████” (2025 CEAP IR #117) to the BC Hydro system. ██████████ has one-hundred-twenty (120) ██████████ wind turbine generators (WTG), adding a total installed capacity of 504 MW. The Point of Interconnection (POI) is on BC Hydro’s 500kV line 5L11, approx. 98km from Williston substation (WSN). The IC’s proposed commercial operation date (COD) is July 7th, 2030.

To interconnect the ██████████ ██████████ ██████████ 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 500 kV switching substation (temporarily referred to as “P117W”) on 5L11 is required to interconnect the customer’s generating project to the BCH system. The station work at the switching substation ‘P117W’ includes acquiring property near transmission line 5L11, constructing a new outdoor 500kV three-breaker ring bus switching station and associated supporting infrastructure such as control building, cutting and looping the existing 5L11 line into the new substation, and terminating the 500kV line from the ██████████ at the substation.
2. The study does not find performance violation under system normal, such as thermal overload, voltage performance violation or voltage stability concern, caused by connection of ██████████.
3. The study finds that the ██████████ could exacerbate the thermal overload (and/or transient stability) issues on BC Hydro 500kV bulk systems under single contingencies or circuit breaker related contingencies. To address these issues, the ██████████ is required to participate in the existing GMS Area Gen-shedding RAS. BC Hydro will develop the details of the RAS to address system constraints during the next stage of the study.
4. ██████████ 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 from the plants 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 [REDACTED] type-4 WTGs is required so that each turbine can provide reactive power capability at zero MW output including during turbine standstill.
7. Fast Frequency Response (FFR), as per BCH TIR Section 4.6.5, is required at the [REDACTED] [REDACTED] [REDACTED]. The proposed wind turbine generators, when the FFR function is enabled, are expected to temporarily boost the MW output to limit the system frequency drop during a major frequency event. The FFR settings should be determined in coordination with BC Hydro in the later stage of the [REDACTED] 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".

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## Appendices

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Appendix B	Power Flow Study Results
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Table 1-1 Summary of Project Information	1
Table 5-1: Summary of Thermal Overload Study Results	<b>Error! Bookmark not defined.</b>

## 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
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

██████████, the interconnection customer (IC), requests to interconnect its ██████████ (BCH's Unified Study Project Code: #117) to the BC Hydro system. ██████████ has one-hundred-twenty (120) ██████████ wind turbine generators (WTG), adding a total installed capacity of 504 MW into the BC Hydro system. The Point of Interconnection (POI) is on BC Hydro's 500kV line 5L11, approx. 98km from Williston substation (WSN). The IC's proposed commercial operation date (COD) is July 7th, 2030.

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

Table 1-1 Summary of Project Information

Project Name	██████████	
Name of Interconnection Customer (IC)	██████████	
Point of Interconnection (POI)	On 5L11, 98km from WSN	
IC's Proposed COD	7th July 2030	
Type of Interconnection Service	NRIS <input checked="" type="checkbox"/>	ERIS <input type="checkbox"/>
Maximum Power Injection (MW)	483.4 MW (Summer)	483.4 MW (Winter)
Number of Inverters	120 x 4.2 MW WTGs	
Plant Fuel	Wind	

Figure 1-1 shows the Central Interior Regional transmission system diagram, where the 500kV bulk system and the ██████████ (P117) project are highlighted. Line 5L11 is part of BC Hydro's major 500 kV transmission corridor that delivers power from the Peace region to the South Interior. It serves as one of the key backbone paths of the provincial transmission network and is equipped with approximately 50% series compensation to enhance power transfer capability and improve system stability.

A new 500 kV switching station (temporarily referred to as "P117W") on 5L11 is required to interconnect the customer's generating project to the BCH system. With the new switching station P117W, the existing line 5L11 will be segregated into two circuits: the name "5L11 KLY" is temporarily used for the line segment from P117W to Kelly Lake substation (KLY), and the line segment from WSN to P117W

is temporary designated as “5L11 WSN”. These temporary line designations will be replaced by permanent ones at a later stage of interconnection study.

In the Central Interior region, lines 2L96, 2L354, and 2L95 form the 230 kV transmission path from WSN to Soda Creek (SCK) substation via Red Bluff (RBF) substation. From SCK, there are two 230kV transmission paths to KLY: 1) 2L94 that directly connects SCK from KLY, and 2) Lines 2L352 and 2L86 that connect KLY from SCK via Hundred-Mile-House (HMH) substation, as shown in Figure 1-1. Customer’s system topology behind the Point of Interconnection is provided in the Appendix, Figure A-1.



## 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 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. Given the proximity of the inverter-based generation to the series-compensated transmission segment, potential sub-synchronous interaction (SSI) risk has been identified and will require further detailed electromagnetic transient (EMT) analysis as part of the subsequent System Impact Study if the 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, October 7, 2025.

## 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) Use of the latest August 2025 distribution load forecast, reference system coincident forecast and reference TVC.
- 3) Use of Feb 2025 NITS BRP generation dispatch.
- 4) For the purpose of this feasibility study, approximately 483 MW injection at the IC-proposed POI on 5L11 is achievable and used based on proponent's total installed capacity of 504 MW.

## 5 System Studies and Results

Based upon the IC's submitted information and the area system conditions, a new 500 kV switching station (referred to as "P117W") on 5L11 is required to interconnect the customer's generating project to the BCH system.

With the new switching station P117W, the existing line 5L11 will be segregated into two circuits: the name "5L11 KLY" is temporarily used for the line segment from P117W to Kelly Lake substation (KLY), and the line segment from WSN to P117W is temporary designated as "5L11 WSN". These temporary line designations will be replaced by permanent ones at a later stage of interconnection study.

### 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 2031 light summer (31LS) system 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 2031 heavy summer (31HS) and 2030 heavy winter (30HW) cases are also checked to capture any possibility of performance violations under heavy load scenarios.

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

The study shows that the addition of [REDACTED] would not cause any thermal overloads under system normal conditions (P0).

For the base scenario with adding the customer's generation at P117W, the study finds that in all the summer and winter loading conditions (31LS, 31HS, 30HW), the [REDACTED] will cause thermal overloads (and/or transient stability

issues) on BC Hydro 500kV bulk systems under single contingencies (e.g., 5L11, 5L12, 5L13) or breaker contingencies (e.g., WSN 5CB5/7/15/17, KLY 5CB1/3/5/11/13/15).

To address these issues, the new [REDACTED] is required to participate in the existing GMS Area Gen-shedding RAS. BC Hydro will develop the details of the RAS to address system constraints during the next stage of the study.

Appendix B, Table B-1 shows the details of thermal overload analysis results. Also note that the [REDACTED] injects power to 5L11, which creates power flow imbalance on the transmission lines between WSN and KLY as seen in Tables B-1.

### **5.1.2 Steady-State Voltage Performance**

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 studied load conditions (30HW, 31LS, 31HS). Appendix B, Table B-2 show 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 PSS/E power flow data submitted for this project, the study finds that the proposed generating project can meet the BC Hydro's reactive capability requirement.

In addition, according to the IC-provided reactive capability data, the proposed WTG would provide +/-14 MVAR for reactive capability at the zero MW output if the turbine's "reactive power at standstill" mode 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

██████████ 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.

## 5.2 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

A new outdoor 500kV, 3-circuit breaker ring bus switching substation (referred to "P117W" temporarily) will be built at POI, close to the existing 500kV transmission line 5L11. The existing transmission line 5L11 will be cut and looped in to, and 500kV line of ██████████ will be terminated at the new substation.

The scope at the new switching substation P117W is as follows.

- Acquire adequate property for a new substation close to the existing transmission line 5L11.
- Construct a new outdoor 500kV, three-circuit breaker ring bus switching substation.
- Construct a new control building and other required substation facilities and infrastructures.
- Cut the existing 5L11 and loop into/out the substation.
- Terminate 500kV line of ██████████ at the substation.

One-line sketch for the new switching substation P117W is shown in Appendix C, Figure C-1.

## 5.4 Transmission Line Engineering Requirements

The scope of work for BC Hydro Transmission Line Engineering involves designing and constructing the connection interfaces (ingress and egress) between the

existing 500kV overhead transmission line 5L11 and the new switching station P117W proposed for this project.

## 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] [REDACTED] [REDACTED] and its facilities to the BCH Transmission System at the POI, this Feasibility Study has identified the following conclusions and requirements:

1. A new 500 kV switching substation (temporarily referred to as “P117W”) on 5L11 is required to interconnect the customer’s generating project to the BCH system. The station work at the switching substation ‘P117W’ includes acquiring property near transmission line 5L11, constructing a new outdoor 500kV three-breaker ring bus switching station and associated supporting infrastructure such as control building, cutting and looping the existing 5L11 line into the new substation, and terminating the 500kV line from the [REDACTED] at the substation.
2. The study does not find performance violation under system normal, such as thermal overload, voltage performance violation or voltage stability concern, caused by connection of [REDACTED].
3. The study finds that the [REDACTED] could exacerbate the thermal overload (and/or transient stability) issues on BC Hydro 500kV bulk systems under single contingencies or circuit breaker related contingencies. To address these issues, the new [REDACTED] is required to participate in the existing GMS Area Gen-shedding RAS. BC Hydro will develop the details of the RAS to address system constraints during the next stage of the study.
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. The [REDACTED] is required to have the dynamic reactive power capability at a minimum of +/- 33% of its MPO from the plants 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 [REDACTED] type-4 WTGs is required so that each turbine can provide reactive power capability at zero MW output including during turbine standstill.
7. Fast Frequency Response (FFR), as per BCH TIR Section 4.6.5, is required at the [REDACTED] [REDACTED] [REDACTED]. The proposed wind turbine generators, when the FFR function is enabled, are expected to temporarily boost the MW output to limit the system frequency drop during a major frequency event. The FFR settings should be determined in coordination with BC Hydro in the later stage of the [REDACTED] process.

## Appendix A Schematic Diagram of the IC's Project

Figure A-1 shows the schematic diagram for the [REDACTED].

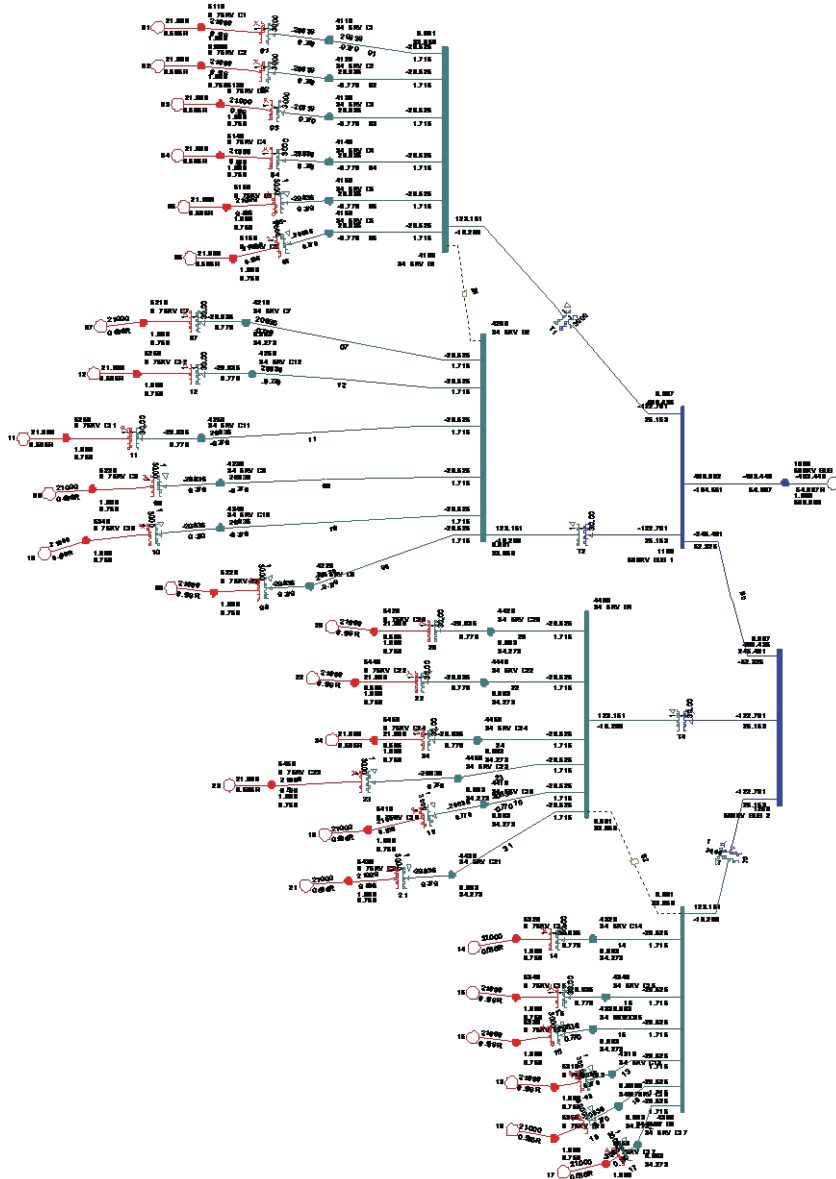


Figure A-1: [REDACTED] (P117) Schematic Diagram.

## Appendix B Power Flow Study Results

### Base Scenario (30HW/31HS/31LS)

Table B-1: Thermal Overload Study Results

Case	Peace and CI Regional Generation/ Load	IPP's Generator Output	Contingency		Most Limiting Branch Loadings		
			Category	Description	MLS 5CX1	MLS 5CX2	MLS 5CX3
31LS	4019 MW / 839.6 MW	233.37 MW	P0	System Normal	1435.8 MVA 85%	1134.4 MVA 67%	1151.5 MVA 68%
			P1/P2	5L11 (segment from P117W to KLY), or KLY 5CB1 or 5CB11	-	1827 MVA 108%	1847.9 MVA 109%
			P1/P2	5L12 CTG, or WSN 5CB5 or 5CB15, or KLY 5CB3 or 5CB13	1983.7 MVA 117 %	-	1700.7 MVA 101%
			P1/P2	5L13 CTG, or WSN 5CB7 or 5CB17, or KLY 5CB5 or 5CB15	1988 MVA 118 %	1685.7 MVA 100%	-
31HS	4019 MW / 915.2 MW	233.37 MW	P0	System Normal	1354.2 MVA 80%	1054.7 MVA 62%	1071 MVA 63%
			P1/P2	5L11 (segment from P117W to KLY), or KLY 5CB1 or 5CB11	-	1702.2 MVA 101%	1722.7 MVA 102%
			P1/P2	5L12 CTG, or WSN 5CB5 or 5CB15, or KLY 5CB3 or 5CB13	1859 MVA 110 %	-	1577.9 MVA 93%
			P1/P2	5L13 CTG, or WSN 5CB7 or 5CB17, or KLY 5CB5 or 5CB15	1863.1 MVA 110 %	1563.6 MVA 93%	-
30HW	4019 MW / 955.5 MW	233.37 MW	P0	System Normal	1255 MVA 74%	959.2 MVA 57%	974.3 MVA 58%
			P1/P2	5L11 (segment from P117W to KLY), or KLY 5CB1 or 5CB11	-	1556.3 MVA 92%	1576 MVA 93%
			P1/P2	5L12 CTG, or WSN 5CB5 or 5CB15, or KLY 5CB3 or 5CB13	1713.6 MVA 101 %	-	1435.3 MVA 85%
			P1/P2	5L13 CTG, or WSN 5CB7 or 5CB17, or KLY 5CB5 or 5CB15	1717.2 MVA 102 %	1421.6 MVA 84%	-

Note 1. Continuous ratings for all facilities are used for both pre and post contingency power flow cases.  
 Note 2. Existing GMS Area Gen Shedding RAS allows gen shedding GMS/PCN/STC units. Tripping the new [redacted] helps addressing/mitigating the overload.

**Table B-2: Steady-State Voltage Study Results**

Case	Peace and CI Regional Generation/ Load	IPP's Generator Output	Contingency		Bus Voltage (PU)		
			Category	Description	WSN_500	P117W_500	KLY_500
31LS	4019 MW / 839.6 MW	233.37 MW	P0	System Normal	1.047	1.07	1.051
			P1/P2	5L11 (segment from P117W to KLY), or KLY 5CB1 or 5CB11	1.005	1.007	1.011
			P1/P2	5L12 CTG, or WSN 5CB5 or 5CB15, or KLY 5CB3 or 5CB13	1.019	1.039	1.021
			P1/P2	5L13 CTG, or WSN 5CB7 or 5CB17, or KLY 5CB5 or 5CB15	1.021	1.037	1.016
31HS	4019 MW / 915.2 MW	233.37 MW	P0	System Normal	1.053	1.073	1.052
			P1/P2	5L11 (segment from P117W to KLY), or KLY 5CB1 or 5CB11	1.019	1.02	1.018
			P1/P2	5L12 CTG, or WSN 5CB5 or 5CB15, or KLY 5CB3 or 5CB13	1.032	1.047	1.025
			P1/P2	5L13 CTG, or WSN 5CB7 or 5CB17, or KLY 5CB5 or 5CB15	1.033	1.045	1.02
30HW	4019 MW / 955.5 MW	233.37 MW	P0	System Normal	1.053	1.07	1.045
			P1/P2	5L11 (segment from P117W to KLY), or KLY 5CB1 or 5CB11	1.024	1.024	1.013
			P1/P2	5L12 CTG, or WSN 5CB5 or 5CB15, or KLY 5CB3 or 5CB13	1.036	1.047	1.02
			P1/P2	5L13 CTG, or WSN 5CB7 or 5CB17, or KLY 5CB5 or 5CB15	1.037	1.045	1.015

## Appendix C One-Line Sketch for New Switching Substation

Figure C-1 shows the Stations Planning One-Line Sketch for the New Switching Substation P117W.

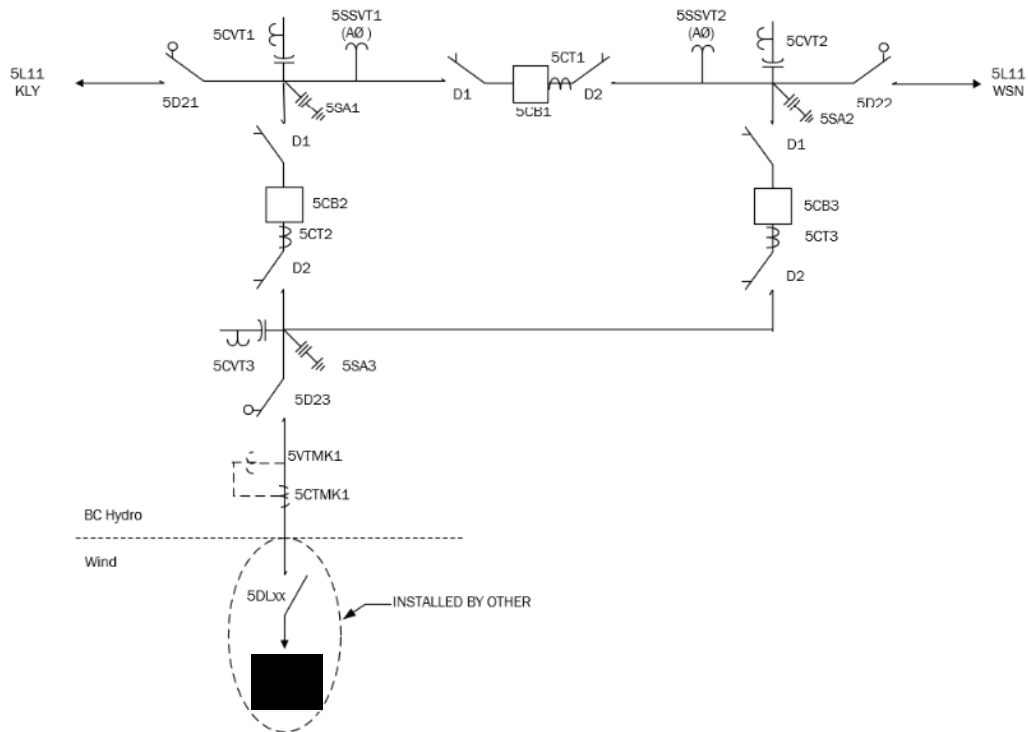


Figure C-1: Stations Planning One-Line Sketch for the New Switching Substation P117W.