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

November 24, 2025

[redacted]

via email: [redacted]

RE: CEAP IR #107–[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 $286.0 M.

Major Scope of Work Identified:

- Add one 230 kV line position and a line terminal to terminate the customer's line and upgrade the following substation equipment at BC Hydro Kelly Lake substation (KLY):
    - Replacing transformers T1 and T2 with 600MVA units
    - Upgrading major bus sections to support higher ampacity

  - Replacing disconnect switches with units rated at a minimum of 2,000 amps
  - Adding other major station equipment including, circuit breakers and associated disconnects, capacitor voltage transformers
- Upgrade required substation facilities, infrastructures, and bus work to support new station equipment
- Supply and install required Protection, Control and Telecommunications equipment

Exclusions:

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

Key Assumptions:

- Construction by contractor
- 30 months of construction is considered
- Execution of early Engineering and Procurement Agreement
- No expansion of existing stations or control buildings to accommodate new equipment
- No construction during winter season
- Impact Benefit Agreements with First Nations are not considered
- A certificate of public convenience and necessity (CPCN) requirement will be exempt.

Key Risks:

- Expansion of the existing substations and/or 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
- If a CPCN is required for the project, it may impact project cost and schedule risks

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 2032 (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_IR107_[redacted]_Feasibility_Study.pdf

BC Hydro
Power smart

[redacted]

Interconnection Feasibility Study

BC Hydro EGBC Permit to Practice No: 1002449

2025 CEAP IR # 107

Prepared for: [redacted]

Prepared by: [redacted]

Sr. Engineer, Transmission Planning

[redacted]

Reviewed by: [redacted]

Engineering Team Lead, Transmission Planning

Accepted by: [redacted]

Manager, Transmission Planning

Report Metadata

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Prepared for:	[redacted]
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Title:	Manager, Transmission Planning
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Revision	Date	Description
0	2025 Nov	Initial release

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

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Entire report except listed below — Transmission Planning

Contributed by:

[redacted] [redacted]

Sr. Engineer, Transmission Planning

Section: **Discipline:**

5.2, 5.3 — Stations Planning

Contributed by:

[redacted] [redacted]

[redacted]

Engineer, Stations Planning

Executive Summary

[redacted] the interconnection customer (IC), requests to interconnect its [redacted] project (2025 CEAP IR # 107) to the BC Hydro (BCH) system. [redacted] has one hundred seventy-six (176) [redacted] inverter, with a maximum power injection of 675.3 MW into the BC Hydro system at the Point of Interconnection (POI). The Point of Interconnection (POI) is on the 230kV bus of BC Hydro's Kelly Lake substation (KLY). The IC's project will connect to the POI via a 79 km long 230kV interconnection line. The IC's proposed commercial operation date (COD) is July 7, 2030.

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

1. A new 230kV line position is required at KLY substation to facilitate the interconnection of the [redacted] project.
2. This study finds a thermal overload violation of up to 133% under system normal operating condition for the power transformers T1 and T4 at Kelly Lake (KLY) substation caused by connection of [redacted] Transformers T1 and T4 at Kelly Lake therefore need to be upgraded.
3. To accommodate the interconnection customer, the scope of work at KLY substation includes replacing transformers T1 and T2 with 600MVA units, upgrading major bus sections to support higher ampacity, and replacing disconnect switches with units rated at a minimum of 2,000 amps, and other major station equipment and infrastructure. The study does not find other performance violation under system normal operating condition, voltage performance violation or voltage stability concern, caused by connection of [redacted]
4. The study concludes that [redacted] project contributes to thermal overload issues on the Kelly Lake (KLY) and Savona (SAV) transformers under single contingency events or circuit breaker-related contingencies. To mitigate these impacts, the [redacted] will be required to participate in a generator-shedding Remedial Action Scheme (RAS). BC Hydro will define the specific design and operational details of the RAS in the next phase of the study.

5. The [redacted] does not meet the reactive power capability requirement specified in the TIR. Installation of minimum of 24MVAr capacitive reactive power equipment is required at the customer facility to meet the requirement. This requirement needs to be addressed if the project proceeds to the next stage of the call process

6. [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.

7. The reactive power under 'Night Mode' function for the [redacted] solar inverter is required so that each inverter can provide reactive power capability at zero MW output including during nighttime.

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.

Note that this is a "limited scope" study which is restricted to only power flow and short circuit analysis in accordance with the BC Hydro Open Access Transmission Tariff (OATT). This Feasibility Study report does not include stability analysis, 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".

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

Contents

Appendices

Acronyms

The following are acronyms used in this report.

BCH	BC Hydro
CEAP	Competitive Electricity Acquisition Process
COD	Commercial Operation Date
DTT	Direct Transfer Trip
ERIS	Energy Resource Interconnection Service
FeS	Feasibility Study
IBR	Inverter-Based Resources
IC	Interconnection Customer
IR	Interconnection Request
IPP	Independent Power Producer
MPO	Maximum Power Output
MPT	Main Power Transformer
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 “60KV to 500kV Technical Interconnection Requirements for Power Generators”
WECC	Western Electricity Coordinating Council

1 Introduction

[redacted] – the interconnection customer (IC) – requests to interconnect its [redacted] project (IR # 107) to the BC Hydro system. [redacted] has one hundred seventy-six (176) [redacted] inverter, with a maximum power injection of 675.3MW into the BC Hydro system at the Point of Interconnection (POI). The Point of Interconnection (POI) is on the 230kV bus of BC Hydro's KLY substation, approx. 79 km from customer's high side of Main Power Transformer (MPT) bus. The [redacted] project is interconnected with BC Hydro transmission system at POI via a new customer built 230kV transmission line. Figure 1 shows a snapshot of the lines from Kelly Lake substation and its surrounding area including the proposed new transmission line by the customer ([redacted]).

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

Table 1-1: Summary Project Information

Project Name	[redacted]	
Proponent Name	[redacted]	
Point of Interconnection	Kelly Lake (KLY)) Substation	
Applicant's Proposed COD	July 7, 2030	
Type of Interconnection Service	NRIS ☒	ERIS ☐
Maximum Power Injection (MW)	675.3	
Number of Generator Units	176	
Plant Fuel	Solar Generation	

The KLY 500/230kV substation serves as a critical hub, connecting BC Hydro's 500kV North Division backbone transmission system with the Lower Mainland transmission network, where the provincial load center is located. It also provides a link to the South Interior 500kV backbone system. The Kelly Lake – Bridge River transmission system includes ten substations and three regional paths: (a) to Bridge River Terminal substation (BRT) in Bridge River area via 2L90, (b) to Central Interior region to supply CI regional local loads via 2L86 and 2L94, and (c) in the SIW region: to Savona Substation (SVA) via 2L92 and 2L93, and to Nicola Substation (NIC) via 5L87.

In addition to the existing generators, the SIW region has five (5) higher queue generation projects [redacted]. Together, these five projects represent nearly 700MW of generating capacity addition to the region.

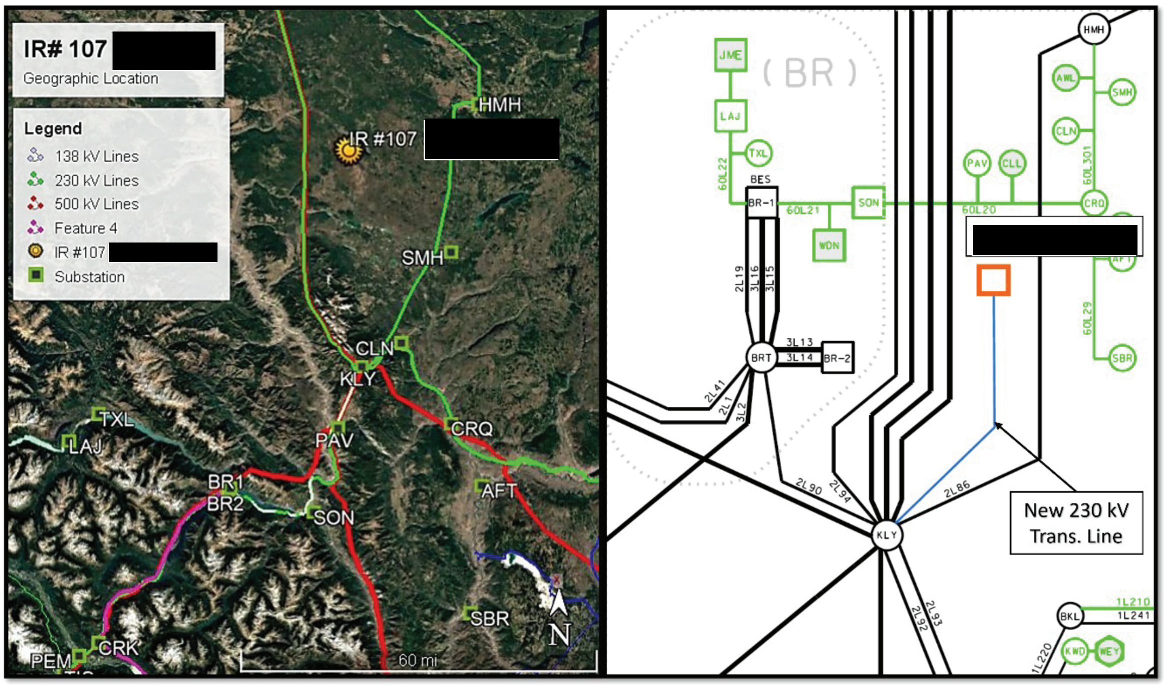


Figure 1 Geographic and on-grid location of the proposed [redacted]

2 Purpose and Scopes of Study

This Feasibility Study (FeS) 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 FeS 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. An assessment of the incremental effect on the 500kV bulk transmission system is beyond this study scope.

This is a “limited scope” study which is restricted to power flow studies of Categories P0, P1, and P2 planning events as defined in TPL-001-4 Table 1 and short circuit analysis. The study does not address other technical aspects such as transient stability and switching transients and impact of multiple contingencies. These subjects would be addressed in subsequent System Impact Study if the project proceeds further.

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

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 FeS 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 500kV 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 60kV 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 FeS is performed based on the IC's submitted data and information available to BC Hydro on October 14, 2025, for the study purpose. Assumptions are made wherever the IC's input is unavailable. Appendix A shows the plant single line diagram for the IC's project used in the study model.

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

Additional assumptions are listed as follows.

1. The regional generation are dispatched to the patterns that stress the transmission system in the study area. In these patterns, the regional generations are typically set to their Maximum Power Outputs (MPO) unless otherwise specified.
2. This study primarily focuses on the impacts of the proposed interconnection on the regional transmission system and does not address bulk transmission system impacts resulting from inter-regional power transfers.
3. Following projects in queue from 2024 CEAP in SIW regions are considered in 2031 HW, 2032 HS and 2032 LS basecase:

   [redacted]

   Together, these five projects represent nearly 700MW of generating capacity addition to the region.
4. Three sets of basecases representing high area generations in Lower Mainland (LM), South Interior, and Peace Region – in addition to the

Central Interior region – were used to stress the Kelly Lake-Bridge River-Savona regional transmission system.

5 System Studies and 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.

5.1 Power Flow Study Results

Steady-state power flow studies have been conducted with the focus on the 32LS (Light Summer, 2032) system condition with High LM generation case, taking into considerations the factors such as load conditions, seasonal variation in ambient temperatures, and generation patterns that stress the transmission system. The 32LS case with 'High Columbia Generation (SIW1)' scenario and 'High Peace Generation (SIW2)' scenario are also considered in addition to 31LS and 30HS/HW cases for the Central Interior (CI) region. 32HS and 31HW cases are checked at a high level to capture any performance violations under high load conditions in SIW1 and SIW2 scenarios.

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

5.1.1 Thermal Overload Analysis

An overload condition is identified in the 32LS basecase with LM regional generation or Columbia generation dispatched to maximum under system normal condition (P0) on the power transformers T1 and T4 at the Kelly Lake (KLY) substation. Thermal upgrade of T1 and T4 power transformers at the KLY substation is required to integrate the proposed IPP.

Tables 5-1, 5-2 and 5-3 summarize the thermal overload observed during the system normal and contingency conditions for various dispatch scenarios. Based on the study results shown in Table 5-1 to 5-3, the [redacted] project causes thermal overload issues on the Kelly Lake (KLY) and Savona (SAV) transformers under single contingency events or circuit breaker-related contingencies. To mitigate these impacts, the [redacted] project will be required to participate in a generator-shedding Remedial Action Scheme (RAS).

BC Hydro will define the specific design and operational details of the RAS in the next phase of the study.

Additional results for the branch loading study are included in Appendix B, Table B-1.

Table 5-1: Summary of Branch Loading Study Results – LM regional generation dispatched to maximum

Case	Major Contingencies		Branch Loading		
	Category	Description	Branch	Load MVA	Loading %
32LS	P0	System Normal	KLY T1	399	133
	P0	System Normal	KLY T4	378	126
	P1	T1 OOS	KLY T4	603	201
	P1	T4 OOS	KLY T1	615	205
	P1	5L87 OOS	KLY T1 KLY T4	371 352	124 117
	P1	SVA T1 & 2L93	KLY T1 KLY T4	402 382	134 127
	P1	2L92 & SVA T3	KLY T1 KLY T4	403 382	134 127
	P2	SVA 2CB5 stuck, trip 2L92 & 2L93	KLY T1 KLY T4	451 427	150 142
	P2	KLY 2CB5, trip 2L86 & 2L94	KLY T1 KLY T4	425 403	142 134
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3	KLY T1 KLY T4	313 296	104 99
	P2	2L92 & SVA T3 or 2CB8 fault, tripping 2L90 & 2L93 & SVA T1	KLY T1 KLY T4	312 296	104 99
32HS	P0	System Normal	KLY T1	324	108
	P0	System Normal	KLY T4	307	102
	P1	T1 OOS	KLY T4	515	172
	P1	T4 OOS	KLY T1	525	175
	P1	SVA T1 & 2L93	KLY T1 KLY T4	347 329	116 110
	P1	2L92 & SVA T3	KLY T1 KLY T4	348 330	116 110
	P2	SVA 2CB5 stuck, trip 2L92 & 2L93	KLY T1 KLY T4	396 375	132 125
	P2	KLY 2CB5, trip 2L86 & 2L94	KLY T1 KLY T4	366 347	192 116
31HW	P1	T1 OOS	KLY T4	406	114
	P1	T4 OOS	KLY T1	419	118

Table 5-2: Summary of Branch Over-Loading Study Results – SI regional generation dispatched to maximum

Case	Major Contingencies		Branch Loading		
	Category	Description	Branch	Load MVA	Loading %
32LS	P0	System Normal	KLY T1	326	109
	P0	System Normal	KLY T4	309	103
	P1	T1 OOS	KLY T4	486	162
	P1	T4 OOS	KLY T1	495	165
	P1	5L87 OOS	KLY T1 KLY T4	362 343	121 114
	P1	SVA T1 & 2L93	KLY T1 KLY T4	316 300	105 100
	P1	2L92 & SVA T3	KLY T1 KLY T4	316 299	105 100
	P2	KLY 2CB5, trip 2L86 & 2L94	KLY T1 KLY T4	373 354	124 118
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3	KLY T1 KLY T4	366 347	122 116
	P2	2CB8 fault, tripping 2L90 & 2L93 & SVA T1	KLY T1 KLY T4	366 347	122 116
32HS	P1	T1 OOS	KLY T4	331	110
	P1	T4 OOS	KLY T1	338	113
	P1	5L87 OOS	KLY T1 KLY T4	312 295	104 98

Table 5-3: Summary of Branch Over-Loading Study Results – Peace Generation dispatched to maximum

Case	Major Contingencies		Branch Loading		
	Category	Description	Branch	Load MVA	Loading %
31LS	P1	5L87 OOS	SVA T3	158.1	105.4
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3	KLY T1	308	103
	P2	2CB8 fault, tripping 2L90 & 2L93 & SVA T1	KLY T1	306	102
30HS	P1	T1 OOS	KLY T4	311	104
	P1	T4 OOS	KLY T1	318	106

5.1.2 Steady-State Voltage Analysis

For all the studied load conditions (31HW, 32LS, 32HS), the voltage performance under both system normal (P0) and N-1 contingency conditions (P1 and P2) is within acceptable limits across all generation dispatch scenarios. A summary of the results for the LM regional generation scenario is provided in Appendix B, Table B-2, for reference.

5.1.3 Reactive Power Capability Evaluation

The BCH TIR requires IBR generators have the dynamic reactive power capability at a minimum of +/- 33% of its Maximum Power Output (MPO) at the high voltage side of the IC's switchyard over the full MW operating range. This translates to a minimum reactive power range of ±232.32MVAr (704 * 33%) at the high voltage side of the main power transformer.

Based on the PSS/E power flow data submitted for this project, the study finds that the proposed generating project cannot meet the BC Hydro's reactive capability requirement. Installation of minimum of 24MVAr reactive power equipment is required at the customer facility to meet the requirement. This requirement needs to be addressed if the project proceeds to the next stage of the call process.

Scenario	Dynamic Q_{HV} required.	Dynamic Q_{HV} simulated.	Reactive Capability Requirement is met?
Plant's Max Q **injection** at the HV side of MPT	232.32	204.8	No
Plant's Max Q **absorption** at the HV side of MPT	-232.32	-377.7	Yes

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 project from the grid when an inadvertent island forms with the local loads.

5.2 Fault Analysis

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

5.3 Stations Requirements

Kelly Lake substation (KLY) will be upgraded to provide a 230kV line termination to allow connection to the [redacted] facility.

Scope of substation work at KLY is as follows:

- Replace both 500/230kV, 300MVA transformers (T1 & T4) with 500/230kV 600 MVA transformers.
- Add the following station equipment. Appendix C (Figure C-1 and C-2) shows the Stations Planning's one-line sketch for Kelly Lake substation (KLY) upgrade.
    - Four new 230kV circuit breakers and associated disconnects
    - One 230kV line terminal for the [redacted] 2LXXX transmission line
- Replace all the existing disconnects associated with the existing and future 230kV circuit breakers and replace 230kV motorized disconnects associated with the transformers.
- Upgrade the required substation facilities, infrastructures, and bus work to support new station equipment.
- Reconnect 2L90 and 2L93 transmission lines terminals.

Refer to one-line sketches Appendix C for further details.

5.4 Transmission Line Engineering Requirements

No requirements from transmission line engineering have been identified 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 [redacted] and its facilities to the BCH Transmission System at the POI, this Feasibility Study has identified the following conclusions and requirements:

Transmission Planning assessed the impact of interconnecting the proposed generation project to the BC Hydro system and identified the system modifications required to obtain acceptable system performance.

Transmission Planning's study has made the following conclusions and recommendations:

1. This study finds a thermal overload violation of up to 133% under system normal operating condition for the power transformers T1 and T4 at Kelly Lake (KLY) substation caused by connection of [redacted] Transformers T1 and T4 at Kelly Lake therefore need to be upgraded. Transmission Planning recommends installing BC Hydro standard blanket order size of 600MVA transformers which will provide additional capacity for single contingency scenarios.

2. The study does not find other performance violation under system normal operating condition, voltage performance violation or voltage stability concern, caused by connection of [redacted]

3. The study concludes that the [redacted] project contributes to thermal overload issues on the Kelly Lake (KLY) and Savona (SAV) transformers under single contingency events or circuit breaker-related contingencies. To mitigate these impacts, the [redacted] project will be required to participate in a generator-shedding Remedial Action Scheme (RAS). BC Hydro will define the specific design and operational details of the RAS in the next phase of the study. Additionally, depending on the size of the KLY transformer upgrade recommended in Item 1, the contingency-related overload at Kelly Lake may be alleviated or eliminated, potentially reducing the scope of the required RAS.

4. A new 230kV line position at KLY is required to interconnect the proposed [redacted] project.

   Functional Requirements at KLY 230:

- The new line position shall have independent switching and protection zone.
- The breaker internal fault or fault with stuck breaker shall not result in Loss of
  - 2L92 & 2L93, or
  - 2L86 & 2L94, or
  - KLY T1 & T4.

5. The [redacted] project does not meet the reactive power capability requirement specified in the TIR. Installation of at least 24MVAr reactive power equipment is required at the customer facility to meet the requirement. This requirement needs to be addressed if the project proceeds to the next stage of the call process

6. [redacted] Project 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.

7. The reactive power under 'Night Mode' function for the [redacted] solar inverter is required so that each inverter can provide reactive power capability at zero MW output including during nighttime.

Appendix A
One-Line Sketch for [redacted]

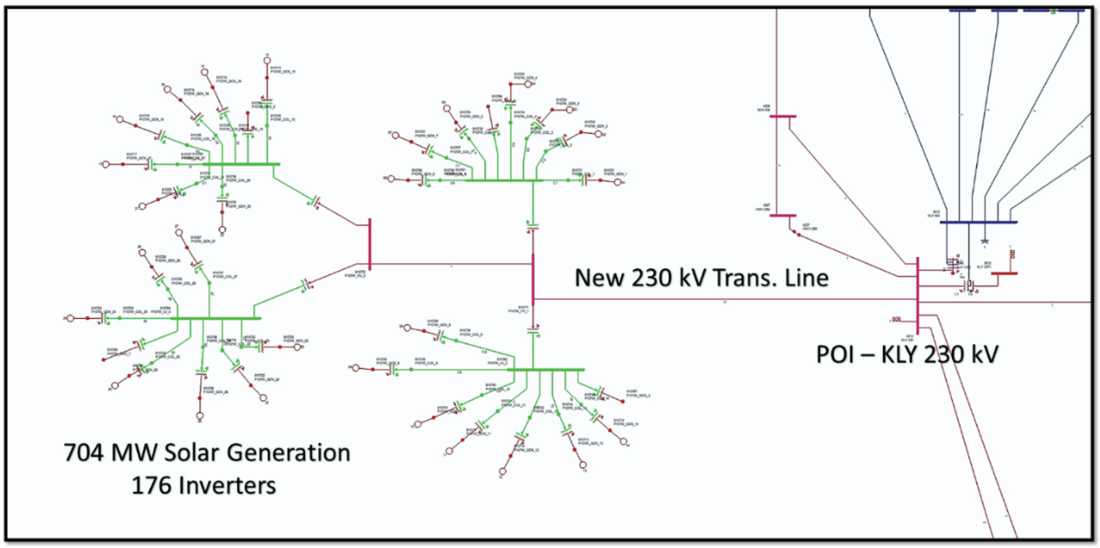


Figure A-1: Single line diagram showing the proposed [redacted] generation, collector feeders and interconnection with KLY substation

Appendix B
Power Flow Study Results

Table B-1: Summary of Branch Loading Study Results – LM regional generation dispatched to maximum

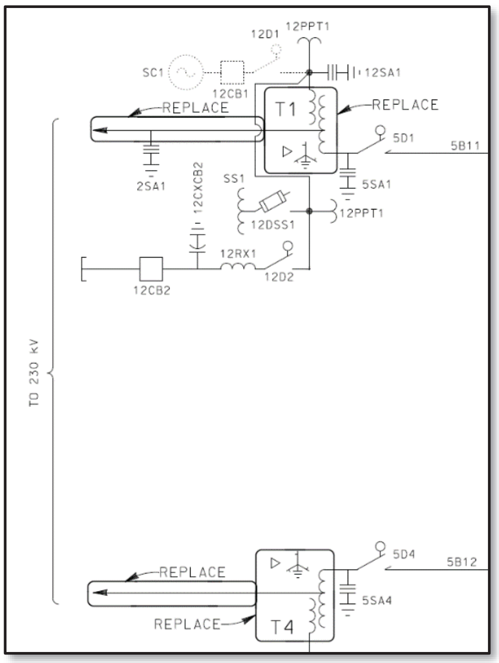
Case	Major Contingencies		Branch Loading		
	Category	Description	Branch	Load MVA	Loading %
32LS	P0	System Normal	KLY T1	399	133
	P0	System Normal	KLY T4	378	126
	P1	T1 OOS	KLY T4	603	201
	P1	T4 OOS	KLY T1	615	205
	P1	5L87 OOS	KLY T1 KLY T4	371 352	124 117
	P1	SVA T1 & 2L93	KLY T1 KLY T4	402 382	134 127
	P1	2L92 & SVA T3	KLY T1 KLY T4	403 382	134 127
	P2	SVA 2CB5 stuck, trip 2L92 & 2L93	KLY T1 KLY T4	451 427	150 142
	P2	KLY 2CB5, trip 2L86 & 2L94	KLY T1 KLY T4	425 403	142 134
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3	KLY T1 KLY T4	313 296	104 99
	P2	2L92 & SVA T3 or 2CB8 fault, tripping 2L90 & 2L93 & SVA T1	KLY T1 KLY T4	312 296	104 99
32HS	P0	System Normal	KLY T1	324	108
	P0	System Normal	KLY T4	307	102
	P1	T1 OOS	KLY T4	515	172
	P1	T4 OOS	KLY T1	525	175
	P1	5L87 OOS	KLY T1 KLY T4	294 279	98 93
	P1	SVA T1 & 2L93	KLY T1 KLY T4	347 329	116 110
	P1	2L92 & SVA T3	KLY T1 KLY T4	348 330	116 110
	P2	SVA 2CB5 stuck, trip 2L92 & 2L93	KLY T1 KLY T4	396 375	132 125
	P2	KLY 2CB5, trip 2L86 & 2L94	KLY T1 KLY T4	366 347	192 116
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3	KLY T1 KLY T4	279 264	93 88
	P2	2CB8 fault, tripping 2L90 & 2L93 & SVA T1	KLY T1 KLY T4	278 263	93 88
31HW	P0	System Normal	KLY T1	266	75
	P0	System Normal	KLY T4	252	71
	P1	T1 OOS	KLY T4	406	114
	P1	T4 OOS	KLY T1	419	118
	P1	5L87 OOS	KLY T1 KLY T4	255 242	72 68
	P1	SVA T1 & 2L93	KLY T1 KLY T4	291 276	82 77
	P1	2L92 & SVA T3	KLY T1 KLY T4	292 277	82 78

Case	Major Contingencies		Branch Loading		
	Category	Description	Branch	Load MVA	Loading %
	P2	SVA 2CB5 stuck, trip 2L92 & 2L93	KLY T1 KLY T4	343 325	96 91
	P2	KLY 2CB5, trip 2L86 & 2L94	KLY T1 KLY T4	317 301	89 84
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3	KLY T1 KLY T4	258 244	72 69
	P2	2L92 & SVA T3 or 2CB8 fault, tripping 2L90 & 2L93 & SVA T1	KLY T1 KLY T4	257 143	72 68

Table B-2: Summary of Steady-State Voltage Study Results – LM regional generation dispatched to maximum

Case	Major Contingencies		Bus Voltage (PU)						
	Cate-gory	Description	KLY_500	KLY_230	NIC_500	SVA_230	BRT_230	HMH_230	SCK_230
31LS	P0	System Normal	1.062	1.036	1.071	1.043	1.03	1.038	1.038
	P1	KLY T1 OOS	1.069	1.037	1.074	1.048	1.031	1.039	1.038
	P1	KLY T4 OOS	1.068	1.038	1.074	1.048	1.031	1.039	1.038
	P1	5L87 OOS	1.062	1.05	1.074	1.058	1.035	1.05	1.047
	P2	SVA 2CB5 stuck, trip 2L92 & 2L93	1.064	1.045	1.072	1.053	1.032	1.045	1.043
	P2	KLY 2CB5, trip 2L86 & 2L94	1.065	1.049	1.073	1.057	1.034	1.034	1.031
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3 or 2CB8 fault, tripping 2L90 & 2L93 & SVA T1	1.043	1.075	1.047	1.021	1.043	1.042	1.043
31HS	P0	System Normal	1.061	1.052	1.071	1.058	1.035	1.05	1.046
	P1	KLY T1 OOS	1.064	1.038	1.072	1.046	1.031	1.039	1.038
	P1	KLY T4 OOS	1.063	1.039	1.072	1.047	1.031	1.039	1.038
	P1	5L87 OOS	1.049	1.046	1.068	1.052	1.032	1.045	1.043
	P2	SVN 2CB5 stuck, trip 2L92 & 2L93	1.059	1.046	1.069	1.065	1.033	1.045	1.043
	P2	KLY 2CB5, trip 2L86 & 2L94	1.061	1.049	1.07	1.055	1.035	1.02	1.019
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3 or 2CB8 fault, tripping 2L90 & 2L93 & SVA T1	1.061	1.055	1.07	1.057	1.021	1.051	1.048
30HW	P0	System Normal	1.066	1.055	1.067	1.054	1.035	1.046	1.04
	P1	KLY T1 OOS	1.058	1.037	1.062	1.04	1.028	1.031	1.029
	P1	KLY T4 OOS	1.062	1.039	1.065	1.042	1.03	1.033	1.031
	P1	5L87 OOS	1.061	1.053	1.064	1.054	1.034	1.044	1.039
	P2	SVN 2CB5 stuck, trip 2L92 & 2L93	1.064	1.05	1.066	1.054	1.033	1.042	1.037
	P2	KLY 2CB5, trip 2L86 & 2L94	1.066	1.053	1.067	1.052	1.035	0.986	0.993
	P2	KLY 2CB1 fault tripping 2L90 & 2L92 & SVA T3 or 2CB8 fault, tripping 2L90 & 2L93 & SVA T1	1.066	1.056	1.067	1.05	1.023	1.046	1.041

Appendix C
One-Line Sketch for Kelly Lake Switching Station



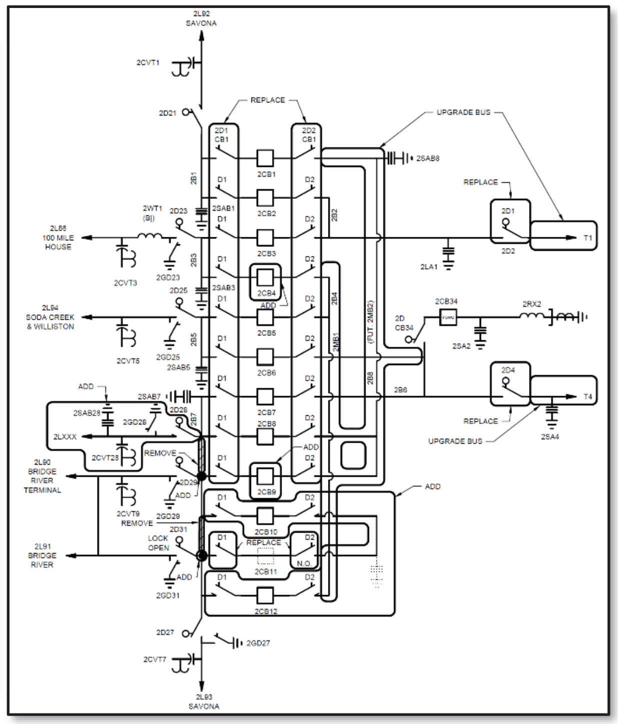


Figure C-1 (Left) and C-2 (Right): Stations Planning One-Line Sketch for Kelly Lake substation