Comment Response Form

For Comments on

60 kV to 500 kV Technical Interconnection Requirements for Power Generators

17 September 2008 Draft

On 17 September 2008 BCTC posted a new draft 60 kV to 500 kV Technical Interconnection Requirements for Power Generators and requested comments from interested parties by 30 September 2008. BCTC has received comments and suggestions from various interested parties, and would like to thank those parties for their assistance.

BCTC has completed the review and made changes to the 17 September 2008 draft. The following is a summary of those suggestions and comments and BCTC's responses.

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Item	Section	Comments & Responses
C1	Section 4.5.4 Revenue Metering	It is important to incorporate revenue metering early in the design phase of the PGF. Revenue metering equipment shall be installed prior to connecting to the BCTC Transmission System, and its location shall be selected and confirmed during the design stage. The revenue metering shall be in accordance with **Measurement Canada regulations and with** BC Hydro's Requirements for Remotely Read Load Profile Revenue Metering, which is available at http://www.bchydro.com/rx_files/services/services10518.pdf. See section 6.2 for possible location
Response		We have revised the language.
C2	Appendix C – Power Parameter Information System	The PPIS system is preferably installed indoors in the control cubicle with front mounted local display unit, **but may be located in a individual cabinet beside BCH revenue metering cabinet if necessary.**
Response		We have revised the language.
C3	Section 3	There is new wording in this TIR which states, that the: "… technical requirements apply to all new or existing interconnections to the BCTC system". Whereas, the 2006 version of the TIR stated that the requirements of the TIR "will generally apply to all generating resources interconnecting to the Transmission system." BC Hydro recommends that the wording in the 2006 TIR not be amended. BC Hydro believes that the above-noted statement in the draft TIR is inaccurate with respect to BC Hydro's existing interconnections to the BCTC system. The interconnection requirements applicable to our existing facilities are detailed in the Generating Plant and Operational Obligations Agreement, dated April 1, 2005, which has been filed and approved by the Commission. Also, with respect to other existing generators connected to the BCTC system, such as IPPs, it is BC Hydro's understanding that not all new interconnection requirements would be retroactively applied to an existing interconnection
Response		We have revised the language to say "… technical requirements apply to all new or modified interconnections to the BCTC system".
C4	Section 5.4	Large generators that are directly connected to the main grid and which are electrically remote from load centres may not have sufficient direct influence on load centre bus voltages to justify the additional effort and expense of making them 0.90 overexcited versus 0.95 pf overexcited capable. Since the contribution of such generators to load centre voltage control is, therefore, contextual. BC Hydro suggests that a 'means test' for the 0.90 over the 0.95 pf requirement be included in the TIR document

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		to ensure that additional resources are not being expended providing capability that will not be used. Such remote generators could be categorized in a class of their own based on Interconnection Application data and their overexcited power factor requirement set at 0.90 or 0.95 depending on Impact Study results. In addition, the interconnection requirements for generators do not address multi-unit plants. For example, Section 5.4.1 (Generator Active Power) states that "[t]he active power output should be limited to Rated Power (MVA rating times rated overexcited power factor)." Such a requirement imposes undue restriction on the operation of a multi-unit plant.
Response		The dynamic VAR capability is to ensure that the sending end voltage is properly maintained in response to disturbance to prevent system collapse or excessive voltages. The requirement for each unit is to ensure effective VAR contributions collectively from the entire plant under all conditions to meet the system voltage performance requirement.
C5	Section 5.6	Section 5.6.1 (Environmental Considerations) discusses the construction of transmission lines and states that they are to be constructed in accordance with BCTC's environmental principles and Environmental Management System. It is unclear to BC Hydro which or what type of transmission lines BCTC is referring to in this section.
Response		We believe the language is clear. In the context of the TIR, this section refers to any transmission line that is connected to the BCTC System.
C6	Section 4.1 Generator Minimum Size	Please define the unloaded transmission line in the calculation for generator MVA minimum size. (New radial PG transmission line? Is the unloaded transmission line defined to be a transmission line between the PG and the POI?).
Response		We have revised the language to clarify.
C7	Section 4.2 Safety and Isolating Devices	The PG shall provide an entrance circuit breaker in conjunction with the isolator described above; the circuit breaker shall meet the speed, interlocking and other requirements described elsewhere in this document. (Location of this breaker is not determined. Is the location of the entrance circuit breaker at the POI or at the switchyard?).

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Response		We have deleted the paragraph in question. Please see Figure 1.
C8	Section 5.6 Transmission Line Design Requirements	BCTC's Engineering Standards for Overhead Transmission Lines. Would these Standards be available to PG on request?
Response		Subject to a Non-Disclosure Agreement, BCTC will make these standards available to PG upon request.
C9	Section 5.6.3 Line Performance	a) Single Circuit Connection Would the acceptable line performance be achieved by applying any one of the three suggested options? Or all three suggested options?
Response		Requirement for one or more of the options suggested depends on the required line and network performance, voltage class, geographical location and line design to minimize system disturbances from line faults and loss of PG. In some cases, one option may be adequate, and in others all three may be required.
C10	Section 4.5.6 Atmospheric and Seismic	"Good Utility Practice" is too general. Can BCTC provide a specific standard?
Response		There is an industry standard definition in section 2.
C11	Section 4.9 Inspection, Test, Calibration and Maintenance	▪ Does this apply to radial lines? ▪ "Regional standards and good utility practice" is difficult to define. Please provide a specification ▪ Will BCTC be imposing any type of reporting requirements?
Response		▪ Apply to all lines including PG's. ▪ Please see WECC Reliability Management System for Transmission and definition for "Good Utility Practice" in section 2. ▪ Reporting requirement is to meet BCTC's operating requirement in addition to reporting requirements that are imposed by reliability organization having jurisdiction in BC in addition to

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		NERC's and WECC's.
C12	Section 4.13 Certification of the Power Generating Facility	"Good Utility Practice" is difficult to define and should be specified
Response		There is an industry standard definition in section 2.
C13	Section 5.4.5a	Typo: Table6Table7
Response		Thank you.
C14	Section 5.6 Transmission Line Design Requirements	▪ Can BCTC provide these specifications to the PG? ▪ Will this apply to existing new projects connecting through existing private transmission facilities? ▪ Will these extend and/or include vegetation and clearing standards?
Response		▪ Subject to a Non-Disclosure Agreement, BCTC will make BCTC's standards available to PG upon request. ▪ This TIR applies to all new and modified existing connections. ▪ BCTC's Engineering Standards for Overhead Transmission Lines document does not include vegetation and clearing standards.
C15	Section 5.6.3a Line Protection – Single Circuit Connection	▪ Unclear if and what is a requirement in this section. This requirement is onerous on the PG. ▪ Please detail what is "acceptable line performance" if this is a requirement
Response		▪ Requirement for one or more of the options suggested depends on the required line and network performance, voltage class, geographical location and line design to minimize system disturbances from line faults and loss of PG. In some cases, one option may be adequate, and in others all three may be required.

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		▪ We have added language to clarify.
C16	Section 10.1 Maintenance Requirements – General	▪ Unclear what the "applicable reliability standards" are for vegetation management. Please provide a reference for the specific standards. Table 10: ▪ Can the polling interval have a phase lag between the time the measurement was made and when it is transmitted?
Response		▪ NERC has certain reliability standards applicable to PG's facilities. Stakeholders in BC are in the process of defining similar standards for implementation in BC. ▪ We have revised the tables to clarify.
C17	General	From the perspective of a proponent entering BC-Hydro's Clean Power Call, there are some requirements that make the cost estimation required for a quality bid difficult. For example, Section 4.11 "Black Start Capability": This section states that BCTC will advise the PG at the time of the interconnection studies whether or not this is required. As the bids will be submitted before the interconnection studies are complete, what capability should the proponent assume as a requirement?
Response		If Black Start capability is required by BCTC, a separate arrangement will be made between the PG and BCTC.
C18	General	Will BCTC make available specifications which are listed as requirements for interconnection prior to the Oct 17th deadline for interconnection requests? (e.g Section 5.6 requires BCTC Engineering Standards for Overhead Lines).
Response		Subject to a Non-Disclosure Agreement, BCTC will make BCTC's standards available to PG upon request.