2001 March 05

ASSESSMENT OF INTERIOR TO LOWER MAINLAND TRANSMISSION NETWORK

Introduction

Recent System Impact Studies and Facilities Studies have been performed in response to Long-Term Firm Point-to-Point requests for transmission service with the Point Of Receipt (POR) in the interior of BC Hydro's transmission network and the Point Of Delivery (POD) as the BC.US.Border. These Studies have been posted on OASIS and have identified the Interior to Lower Mainland (ILM) transmission network as a limiting factor. Based on the result of the studies, there is no firm transmission capacity available prior to implementation of system upgrades in 2006 that make use of the ILM network. In addition, other system limitations may also play a part in limiting firm transfer capability.

The information in this report is a summary of existing System Impact Studies and outlines ILM restrictions and recommended system reinforcements to create additional Long-Term Firm Total Transfer Capability (TTC). It should be emphasized that this information is based on the assumptions listed in the System Impact Studies (see http://gridops.bchydro.bc.ca/studies/index.html) which outline existing system conditions and contracts, and represents the best information to date.

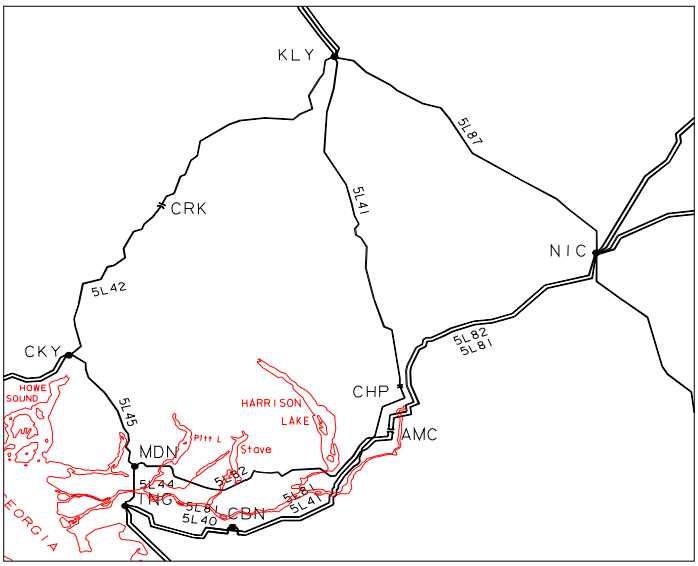
BC Hydro does not accept any liability of any kind arising out of the use of, or reliance by any third party on any information, product or process described and referenced in this report.

Description of ILM Transmission Network

The ILM transmission network is comprised of five 500 kV circuits which connect the Kelly Lake (KLY) and Nicola (NIC) substations in the Interior to the Cheekye (CKY), Meridian (MDN), Ingledow (ING) and Clayburn (CBN) substations in the Lower Mainland. In addition, three 500 kV circuits connecting CKY, MDN, ING and CBN in the Lower Mainland also form part of the ILM network.

Both transmission paths GMS.MCA.REV (POR) to BC.US.Border (POD) and BC.AB.Border (POR) to BC.US.Border (POD) include the entire ILM transmission network. Power flow from GMS.MCA.REV and BC.AB.Border goes through both KLY and NIC on its way to the BC.US.Border and ILM restrictions affect both of the above mentioned paths.

The following diagram shows the ILM transmission network:



ILM Restrictions and Recommended System Reinforcements

The ILM transmission network is thermally and voltage stability limited during peak power transfers. Additional Power flow on the ILM transmission network (whether on the GMS.MCA.REV POR to BC.US.Border POD or BC.AB.Border POR to BC.US.Border POD path) will only be possible if thermal and voltage stability constraints are removed. The most costly constraint to alleviate is the thermal constraint.

The following is a list of Network Restrictions that have been identified from the System Impacts Studies completed to date.

ILM Thermal Limit

The ILM transmission network is loaded to its thermal limit. This thermal restriction limits the TTC to present firm commitments for long term transmission service on the existing BC Hydro ILM transmission network.

The thermal constraint on the ILM transmission network can be alleviated through Network Upgrades as described in recent Studies. The feasible Network Upgrades that can alleviate the restriction are:

1. Guichon Series Capacitor: A new Guichon Series Capacitor Station (estimated in-service date of 2006, five years from commitment) located midway on the NIC to KLY 500 kV transmission line (5L87) would help overcome some of the thermal limitations and increase the TTC of the ILM transmission network.
2. NIC to MDN 500 kV transmission line (5L83): A new 250 km 500 kV line with 50% series compensation (estimated in-service date eight years from commitment) from NIC to MDN would increase the thermal constraint and improve the TTC of the ILM transmission network.

In response to Transmission Requests 254221, 291566, 293825, and 299499, T&D performed System Impact Studies and identified re-dispatch to alleviate the thermal

restriction on the ILM transmission network. The System Impact Studies concluded that the above Transmissions Requests could be accommodated utilizing re-dispatch along with minor Network Upgrades prior to construction of Guichon Series Capacitor station or Nicola-Meridian 500 kV transmission line 5L83. However, the studies used re-dispatch based on the installed capacities of the existing Generation Resources without taking into consideration their operating characteristics and requirements. Upon consulting with the Generation Resource Operators of BC Hydro Power Supply, T&D was informed that the re-dispatch assumed in the studies could not be supported.

ILM Voltage Stability Limit

The ILM transmission network also has voltage stability constraints. Adding shunt capacitors in the Lower Mainland area as a means of improving system voltage stability limits has been identified from the System Impacts Studies.

The above recommended reinforcements will alleviate the ILM thermal and voltage stability restrictions. Other restrictions that may exist outside the ILM network will also need to be addressed.

Conclusion

The following conclusions can be made with respect to providing additional Long-Term Firm Point-To-Point transmission service over the ILM transmission network, above the existing firm commitments:

- 150 MW of transfer capability is available only in 2001 (and has been awarded to No.'s 291566, 293825, and 299499).
- 0 MW of transfer capability is available from 2002 until 2006.
- An additional 500 MW of transfer capability is available in 2006 based on Guichon Series Capacitor station in service (awarded to No. 254221).
- Additional transfer capability is available with the addition of a new ILM 500kV transmission line

Pending transmission requests for Long-Term Firm Point-to-Point Service on paths that utilize the ILM transmission network for the period 2001 to 2009 cannot be accommodated based on the above information to date. Transmission Requests for 2009 and beyond may be accommodated with the completion of another major transmission line, such as 5L83.

T&D has not pursued the option of 5L83 further at this time, as a new 500 kV line would be a large and complex proposal requiring significant capital investment and raising complex issues for all stakeholders. However, T&D would undertake this work if there is interest and commitment from the Transmission Customers.