

LMP Calculation for Phase I/II and HQHIGATE

Loss sensitivity factors and loss components are calculated for External Nodes, which are electrically located outside the NEPOOL Control Area. The calculation of loss sensitivity factors for an External Node includes the impact of losses on the portion of the tie line internal to the NEPOOL Control Area, while losses occurring on the portion of the tie line external to NEPOOL are excluded. This method makes the proxy bus located logically at the NEPOOL border in terms of losses. For HQ Direct Current (DC) facilities, loss tables based on line flow are used to incorporate the losses on the DC facility into the loss component at the External Node.

1. Locational Marginal Price (LMP) Loss Component Calculation for Phase I/II External Nodes

Calculation of the loss sensitivity factor for the Phase I/II facilities depends on the mode of operation (Phase I mode consists of Comerford/Des Cantons operation and Phase II mode consists of Sandy Pond/Nicolet and/or Radisson operation).

In Phase I mode, losses are assumed to be zero due to the close proximity of the Comerford terminal to the Control Area boundary. In Phase II mode, the loss sensitivity factor calculated at the Sandy Pond AC connection is adjusted using a loss table representation of losses between Sandy Pond and the Control Area boundary. This loss sensitivity factor includes the impact of losses on the portion of the DC interconnection only within the NEPOOL Control Area.

Loss table for Phase II

F _{AB} (MW)	200	300	400	500	600	700	800	900	1000	1100
Loss (MW)	2	3	4	5	6	7	8	10	11	13
F _{AB} (MW)	1200	1300	1400	1500	1600	1700	1800	1900	2000	
Loss (MW)	15	16	18	20	22	24	26	29	32	

2. LMP Loss Component Calculation for Highgate External Node

Loss sensitivity factors calculated for the Highgate External Node include losses on the 115 kv AC line from the Georgia substation to the converter station, the back to back DC Converter Station (via loss table), and the portion of the 120 kv AC line within the NEPOOL Control Area. They do not include the impact of losses in the Quebec portion of the 120 kv AC line.

Since the external part of Ln 1429 is modeled to be a zero impedance branch in RTNET (i.e., the internal impedance is assigned to the whole line), the penalty factor calculated at the price node/Bus for HQHIGATE is actually the penalty factor at the border.