Nova Scotia Transmission System Operating Limits 2023

System Operating Limit is defined as:
The value (such as MW, MVAR, Amperes, Frequency, or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria.

System Operating Limits are based upon certain operating criteria. These include, but are not limited to:

- Facility Ratings (applicable pre- and post-contingency equipment or facility ratings)
- Transient Stability Limits (applicable pre- and post- contingency stability limits)
- Voltage Stability Limits (applicable pre- and post- contingency voltage stability)
- System Voltage Limits (applicable pre- and post- contingency voltage limits)

System Operating Limits are established and are subject to review and revision in accordance with NERC and NPCC Standards, and incorporate the function of approved Remedial Action Schemes (RAS). *System Operating Limits* are subject to change if transmission elements are out of service for any reason, planned or unplanned. *System Operating Limits* are dependent on sufficient generation armed for Special Protection Schemes.

System Operating Limits are established for the following primary[1] interfaces:

1. Nova Scotia – New Brunswick (NS-NB) Tie
2. Cape Breton Export
3. Onslow Import
4. Onslow South
5. Maritime Link

The *System Operating Limits* described in this document include the power system configuration in the second quarter of 2023. There are no significant transmission facilities currently under construction.

System Operating Normal Limits (all Elements in Service)

1. NS-NB Tie

From the perspective of the NS side of the NS-NB Tie, the **export** Total Transfer Capability (TTC) is up to 500 MW. **Import** Total Transfer Capability is up to 300 MW or 27 % of gross load in Nova Scotia, whichever is less.

The Nova Scotia Power OASIS[2] provides real-time and future Non-Firm Available Transmission Capability and Firm Available Transmission Capability. Available Transmission Capability (ATC) is

[1] Other interfaces are established for local transmission operations, typically used for transmission elements out of service for maintenance.

a function of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and existing reservations:

$$ATC = TTC - TRM - \text{existing reservations}$$

Restrictions on the NB side of the NS-NB Tie are the responsibility of the NB Power Transmission System Operator and may be more restrictive than on the NS side. NB-NS transfer capability can also be restricted by simultaneous import from Maritime Link.

The firm import capability is limited to 100 MW based on the setting of the Import Power Monitor RAS. The firm export capability is limited to 330 MW based on the setting of the Export Power Monitor RAS.

2. Cape Breton Export (CBX)

CBX limit varies from 1075 MW in Summer to 1250 MW in Winter, but can be significantly reduced by certain generation dispatch patterns. In general, the Winter limit is reduced by 50 MW if the generation at Point Tupper is off-line, and both the Summer and Winter limits are reduced by 100 MW if there is only one generator on-line at Trenton, and reduced by 200 MW if there is no generation on-line at Trenton.

3. Onslow Import (ONI)

ONI limit is 1275 MW in Summer and Winter, but can be reduced by certain generation dispatch patterns.

4. Onslow South (ONS)

ONS is a function of the available Metro Dynamic Reactive Reserve (MDRR) as shown in Figure 1, up to a thermal limit of 850 MW in Summer and 970 MW in Winter.

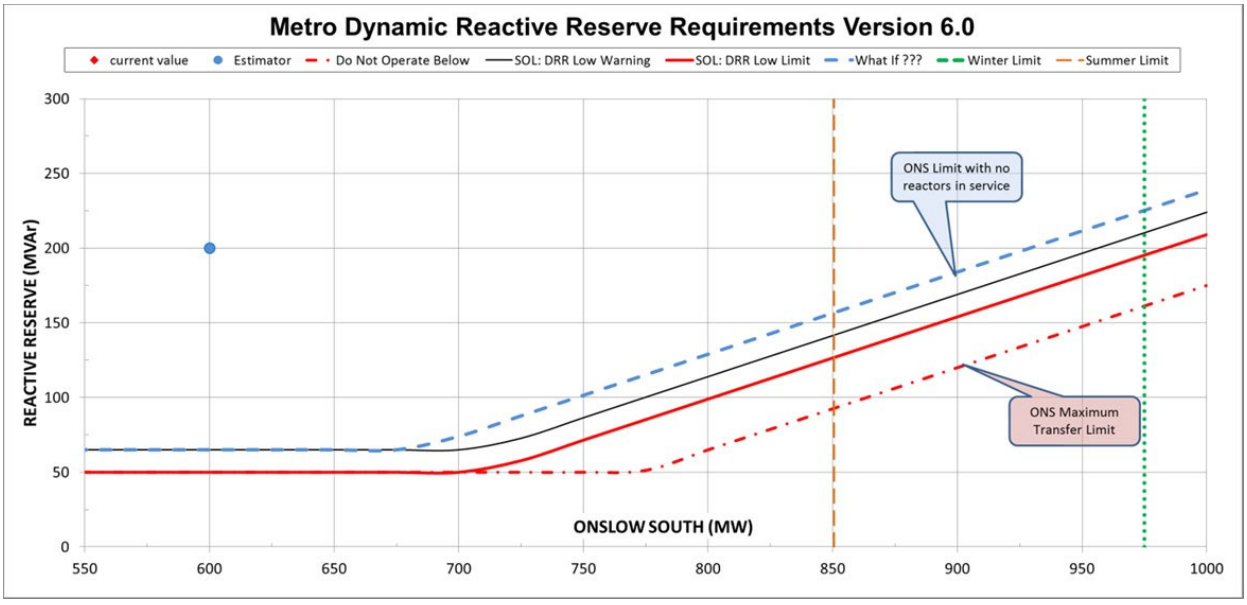

Figure 1 Metro Dynamic Reactive Power Reserve (MDRR)

[2]URL: nspower.ca/OASIS

5. Maritime Link

Maritime Link is a High Voltage Direct Current interconnection between Newfoundland and Labrador (Bottom Brook) and Nova Scotia (Woodbine). It has a nominal bi-directional rating of 500 MW. The net import capability at Woodbine is 475 MW. The export limit at Woodbine is set at 325 MW but can be dependent on generation patterns in NS. The Newfoundland and Labrador Hydro System Operator may set more restrictive limits based on their operating conditions.

Transmission Congestion for New Generation

The interconnection of new generation is governed by the NSPI Generation Interconnection Procedures (GIP). The shaded areas of Figure 2 indicate portions of the NSPI power system less likely to encounter transmission congestion, depending on the size and specific location of proposed new generation. However all projects must be studied in accordance with the GIP for overall system impact.

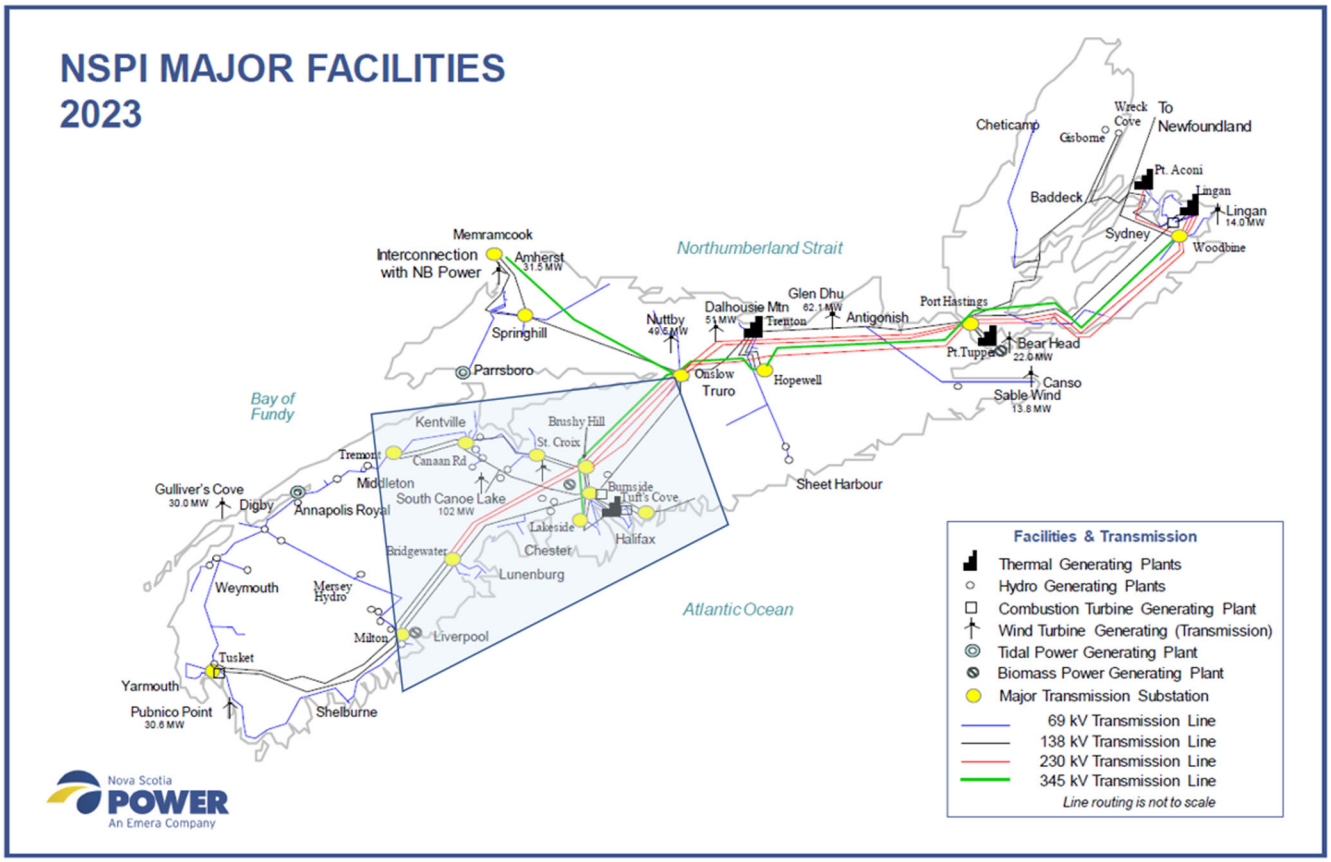

Figure 2 Generation Limited Congestion Zones