



Virtual Open House Q & A Document

Non-Consequential Load Loss



Énergie NB Power

the power of possibility
débordant d'énergie

The following is a summary of the questions received by the public during the virtual information session and directly submitted to the project email address with the corresponding responses.

1. How often does an unplanned outage occur?

All lines have different unplanned outage rates, but according to CEA statistics, for the line length and voltage class associated with 1193 line, the line that could cause an NCLL event at Pennfield and Milltown, the rate would be close to 0.88 outages per year. As described in the NCLL report, an NCLL event related to an outage of 1193 line is much rarer than that [at 1 outage per 86 years] because the outage would have to occur during the few hours in a year [115 hours] where system loads are high enough [>2600 MW] for it to be triggered.

2. Is NCLL reviewed yearly?

Periodic reviews used to identify potential NCLL use on the system are required annually by NERC reliability standard TPL-001-4.

3. What causes voltages to drop?

Voltages may drop because of:

- Unplanned events such as the tripping of generators, transmission lines, or other voltage support equipment.
- Naturally occurring events such as increasing load levels that result in increased grid losses.
- Planned events for correction of high voltages such as adjustments to transformer taps, generator voltage adjustments, or switching of voltage support equipment.

4. The Summary of NB Power Planned use of Non-Consequential Load Loss for the 2021 Planning Assessment states that the planned NCLL will affect both residential and commercial customers. Please provide a breakdown of what types of customers make up the "commercial" customer designation.

Commercial customers in the areas for the two planned uses of NCLL include the following categories:

- Institutional - hospitals, senior homes, care homes, clinics
- Educational – schools, vocational training services
- Fishery - Seafood processing plants, aquaculture
- Shopping - Shopping centres, grocery stores, hardware stores, convenience stores, pharmacies
- Public Services - transportation depots, RCMP depots, border services, postal offices, government departmental buildings
- Tourist lodging - Hotels, Motels, Cabins
- Associations - Clubs, Churches
- Other businesses - banks, auto shops, small enterprises

5. Under 2b) for both instances of planned use of NCLL, please provide an explanation of the effect of the use of Non-Consequential Load Loss under footnote 12 on the health, safety, and welfare of the community in the unlikely event that NCLL is utilized.

In its 2021 NCLL report (<https://www.nbpower.com/media/1491043/2021-tpl-001-4-planning-assessment-non-consequential-load-loss.pdf>), NB Power provided its explanation that the estimated low probabilities and estimated short durations for both events would have no measurable impact to the health, safety, and welfare of the community. NB Power also explained that the exposure to NCLL was relatively insignificant compared to the exposure to Consequential Load Loss (CLL). To supplement that response, the following is provided:

- a. For both instances, the estimated exposure to Consequential Load Loss (CLL) has been calculated using statistics from the 2016 Canadian Electricity Association report for Forced Outage Performance of Transmission Equipment. Exposure to CLL is the expected probability of substation outages due to unplanned outages of the transmission lines directly supplying them, and CLL is acceptable as a consequence of any contingency event as per TPL-001-4, Table 1, footnote b. The estimated exposure to CLL forms a baseline of comparison for which the exposure to NCLL can be relatively assessed.
- b. The estimated NCLL frequency as a percentage of estimated CLL frequency has been calculated to quantify the incremental outage risk to the substations for both instances of planned use of NCLL. The results are as follows:
 - For Manawagonish Road, expected NCLL frequency is 0.00% of expected CLL frequency.
 - For St. George, Deer Island, Campobello, Grand Harbour, expected NCLL frequency is 0.56% of expected CLL frequency.
 - For Eastern Maine Electric Coop, expected NCLL frequency is 2.60% of expected CLL frequency.

Row	Condition	Manawagonish Road	St. George Deer Island Campobello Grand Harbour	Eastern Maine Electric Coop
1	Estimate hours/year of Consequential Load Loss (CLL) exposure	100% (8760 hours/yr)	100% (8760 hours/yr)	100% (8760 hours/yr)
2	Applicable CLL contingencies	L1104, L1121, L1135, L1197, L1168, L1174, L1185	L0016, L0045	L0077, L0059
3	Total line distance of CLL contingencies	~ 200 km	~ 75 km	~ 16 km
4	Voltage class	138 kV	69 kV	69 kV
5	Sustained outage rate per 100 km per year*	0.8052	2.7850	2.7850
6	Estimate frequency of CLL = (Row 1) x (Row 3) x (Row 5) / (100 km)	1.6 events per year, or 1 event every 0.62 years	2.1 events per year, or 1 event every 0.48 years	0.45 events per year, or 1 event every 2.24 years
7	Estimated frequency of NCLL	0.000056 events per year	0.0116 events per year	0.0116 events per year
8	NCLL frequency as a percentage of CLL frequency = (Row 7) / (Row 6) * 100%	0.00%	0.56%	2.60%

* Canadian Electricity Association, Equipment Reliability Information System, Forced Outage Performance of Transmission Equipment 2016, August 24, 2017.
<https://electricity.ca/wp-content/uploads/2017/09/2016-All-Canada-ERIS-Report.pdf>

6. While the likelihood of an event occurring and the short event duration does mitigate the risk, it does not really explain what the risk is. Is there a risk, for instance that long term care facilities or hospitals could be affected? Could the planned use of NCLL impact natural gas distribution?

The effect of a short NCLL outage event on long term care facilities or hospitals is the same as the effect of a short CLL outage event, but the probability of the NCLL outage event on long term care facilities or hospitals is much lower than the probability of the CLL event. Strong NCLL mitigations, including remote switching and use of the quick-start Grand Manan generator, ensure that these rare NCLL events have short durations. For critical facilities, the effect of any power outage is further mitigated with planned backup generation and/or alternative heating sources.

NB Power has confirmed with Liberty Utilities that the planned use of NCLL has no impact on natural gas distribution to customers. As with CLL outages, but at significantly less frequency, operation of heating appliances such as natural gas furnaces would be disrupted during an NCLL outage unless the device is supplied with a backup electricity source.