

1 Q. **Reference: Reliability and Resource Adequacy Study – 2022 Update, October 3, 2022, page 2,**
2 **lines 8-10.**

3 The reliability of the LIL is a crucial driver for the reliability of the Island
4 Interconnected System. Since the 2018 Filing and 2019 Update, the LIL has had
5 reliability challenges as a result of structural and software issues.

6 Please provide a table summarizing all LIL component damage or failures (i.e. tower hardware,
7 conductor, optical ground wire (“OPGW”), electrode lines, insulators, synchronous condenser,
8 etc.) since January 1, 2020. In the table, please include:

- 9 i. description of component(s) affected;
- 10 ii. date identified;
- 11 iii. location;
- 12 iv. time required to access the location;
- 13 v. root cause;
- 14 vi. actions taken to make repairs;
- 15 vii. time required to make repairs;
- 16 viii. whether repairs were temporary or permanent;
- 17 ix. whether the damage caused an outage to the LIL;
- 18 x. whether the repairs required an outage to the LIL;
- 19 xi. duration of any outages;
- 20 xii. whether the outage was monopole or bipole.

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22 A. Please refer to NP-NLH-065, Attachment 1.

23 In the provided data, a forced outage is defined as the state in which equipment is
24 unavailable for normal operation but is not in the scheduled outage state (i.e., an
25 outage that is not a scheduled outage). A planned outage, also referred to as a

1 scheduled outage, is an outage that can be scheduled at least one week in advance. This
2 includes planned maintenance, which is normally conducted on annual basis, and
3 unplanned maintenance or repair, which can be deferred at least one week subsequent
4 to the discovery of the need for maintenance or repair. If the outage is extended due to
5 additional work, which would have otherwise caused a forced outage, the excess period
6 is counted as a forced outage. Per the definition, planned outages in the attachment
7 include maintenance activities and repairs.

Line Incident	Date Identified in the Field	Components Affected	Root Cause	Repair Type	Outage date	Outage Duration (hours)	Cause LL Outage	Outage Type for Repair	Time Required to Access Location	Actions Taken to Make Repairs	Time Required to Make Repairs
2021011-P1-DCE-EL 20210207-P1-DCE-EL	11-Jan-2021	- Electrode line 1 conductor and tower crossarm damage - Electrode line 2 conductor and tower crossarm damage - OPGW Conductor Slippage in design for region. Clamp -Vibration Dampers and Insulator Damage	Component overloading and unbalanced loading - Electrode line 2 conductor and tower crossarm damage in excess of line design for region.	Permanent	11-Jan-2021 to 19-Feb-2021	1350	Only after ELL failed while EL2 and Pole 2 were out of service.	Bipole during repairs	Various work fronts. Was able to access some close work fronts over snow in a few hours. 1) Engaged contractor to clear 40 km from the highway to the site. 2) Staged materials - several times as much as needed to reach the work site. This failure changed our approach from the plan to travel long distances over snow to clear access roads to bring in equipment and materials to perform the work.	1) Bladed crews travelled to Labrador the highway 2) Travelled over snow to work sites near the repair. 3) Staged materials - several times as much as needed to reach the work site. 4) Adjusted approach to clear snow to work sites to improve access for safety, effectiveness and efficiency. 5) Coordinated work at multiple locations to utilize available equipment and personnel.	Between 17 day and 5 days for each individual repair depending on the nature of the repair.
20210093-P2-TL-OH	4-Feb-2021 and 12-Feb-2021	- Broken Deadend Turnbuckle on two towers Pole 2	Fatigue failure due to bending of turnbuckles due to continuous conductor galloping	Permanent	3-Feb-2021 to 18-Feb-2021	357	Caused a pole 2 outage. Able to operate on Pole 1 and EL2 until the EL2 failure	Bipole during repairs	Identified failure location within 3 hours after daylight from the time of failure. Snow cleared to site within one day. Small crew on site within 2 days to secure the conductor to prevent further damage. Repair contractor was on-site within one week.	1) Initiated multiple crews to patrol the line in various sections to identify the location, pole 2 days to preventatively replace turnbuckles in the area 2) Travelled over snow to work sites near the repair. 3) Staged materials - several times as much as needed to reach the work site. 4) Adjusted approach to clear snow to work sites to improve access for safety, effectiveness and efficiency. 5) Coordinated work at multiple locations to utilize available equipment and personnel.	Two days per structure to repair damage plus 1 day to perform preventative turnbuckle replacements in the area.
20212015-P2-TL-OH	2-Dec-2022	- Broken Deadend Turnbuckle on one tower Pole 2	Investigation On-going	Permanent	1-Dec-2022 to 11-Dec-2022	234.5	Pole 1 outage	Bipole during repairs	1) member of public found and reported the failure 1 day after the fault. It took two days after the fault to access the location by helicopter (due to weather) to locate and ground the conductor. 2) Snow clearing started 5 hours after public report and took 5 days to reach the structure. 3) Crews to widen access road to float material and equipment to site completion.	1) Initiated a heli patrol of the island to search for the location. 2) Placed snow-clearing contractor on standby / preparation mode and mobilized them when area was identified. 3) Defined work scope. 4) Engaged repair contractors and internal personnel to perform repairs. 5) Mobilized equipment and materials to align with snow clearing completion.	Two days to repair damage plus 1 day to perform preventative turnbuckle replacements in the area.
20212144-P2-TL-OH	14-Dec-2022	- Damage to 2 OPGW tower Peaks	Investigation On-going	Permanent	14-Dec-2022 to 15-Dec-2022	35.4	No - only a communications path A loss of redundancy. One of two path A fiber bundles was damaged. The cable is still in back and path A stayed in service.	Bipole during repairs	1) The location was identified the next morning through ground patrol by the local Hydro crew. 2) Engaged snow clearing crew 3) Defined work scope 4) Snow clearing was able to clear to site the following day.	1) Initiated a ground patrol (Snowmobile / Truck) of the identified fault location. 2) Engaged snow clearing crew 3) Defined work scope 4) Mobilized internal personnel, equipment and materials.	It took 1 day to set up site and secure the OPGW to the entry electrode wings to prevent further damage. We experienced weather delay days (high wind and low visibility). The snow clearing took 2 days to complete. The OPGW to the original mounting location.
N/A	20-Dec-2022	- Damage to 3 OPGW tower Peaks	Investigation On-going	Permanent			No - only a communications path A outage	Bipole during repairs	1) The location was identified the next morning through a heli patrol. 2) Snow clearing was able to clear to site within 2 days from the time the location was identified.	1) Initiated a heli patrol of the identified fault location. 2) Engaged snow clearing crew 3) Defined work scope 4) Engaged a contractor to perform the repairs. 5) Mobilized personnel, equipment and materials	It took 1 day to secure the OPGW to prevent further damage. It took 3 days to conduct repairs to structural steel and splice the fiber. The majority of days between achieving site access and repair was spent waiting for the snow clearing to be too windy to work from a crane basket.
20212259-P1-TL-OH	29-Dec-2022	- Broken Deadend Turnbuckle on one tower Pole 1	Investigation On-going	Permanent	29-Dec-2022 to 31-Jan-2023	263.2	No - Pole 1 was already out of service	Bipole during repairs	1) Location was identified by a member of the public on a recreational snowmobile trip. 2) It took 3 days to clear snow to reach site.	1) Initiated snow clearing 2) Sent local crew to site to secure the scene. 3) Defined the scope of work. 4) Mobilized additional internal personnel, equipment and materials.	It took two days to complete the primary repairs, plus an extra two days to complete preventative repairs and install flow spallers to reduce future issues.
20212274-P1-TL-OH	30-Dec-2022	- Broken Deadend Turnbuckle on one tower Pole 1	Investigation On-going	Permanent	27-Dec-2022 to 19-Jan-2023	551	No LL outage - caused a pole 1 outage	Bipole during repairs	1) Location was identified by a heli patrol on the 3rd day after the fault 2) I took 7 days to clear snow to the failure area. Extreme snow depth and poor visibility in blowing snow hindered progress. Struggled to keep the interior section of the road open for 4 days to advance equipment to site. Then a snow storm occurred and the equipment was trapped additional 4 days before the road was reopened to the failure site.	1) Initiated a heli patrol (and dispatched people with snowmobiles as a back-up alternative. 2) Snow clearing was initiated when the fault was identified and the best route to the failure was chosen. 3) Scope of work was defined 4) Contractor was engaged 5) Mobilized equipment and materials were mobilized to align with when access to site was open.	Primary repairs were completed in one day and additional preventative replacements were performed the following day to prevent further failures.
20212124-P2-DCE-EL	2-Jan-2023	- Electrode line 2 conductor -Vibration Dampers	Investigation On-going	Permanent	31-Dec-2022 to 3-Jan-2023	76.1	Yes - LL was operating in Monopole (pole 2) at this time due to previous damage with Pole 1. When EL2 conductor failed, it resulted in a bipole outage until the system was cleared by the failed position of the electrode line. The LL was then restored in a monopole configuration operating with Pole 2 and ELL.	Bipole during repairs	1) Location was identified by a snowmobile patrol the second day into the failure. 2) Snow clearing opened the road to the failure location in one day (light snow conditions). 3) Helicopters were used to transport crew from P1 and equipment from the island when freed up from another job). Crew had to attend a 2 day NL fall protection course upon arrival. Repairs started 9 days after the failure was located.	1) Initiated a snowmobile patrol since a heli was not available the first day. Followed up with a heli patrol for areas not covered by the snowmobile patrol. 2) Helicopters were used to transport crew from P1 and equipment from the island when freed up from another job). 3) Helicopters were used to transport crew from P1 and equipment from the island when freed up from another job). 4) Scope of work was defined 5) Contractor was engaged 6) Materials, personnel and equipment were mobilized to site.	The full repair scope of work was completed in 7 days.

Outage Start	Outage End	Duration (hours)	Type	Site	Equipment Impacted	Description
13-Aug-2020	8-Jan-2021	3,552.0	Forced	Soldier's Pond Converter Station	Pole 2	Valve Module beam experienced insulation degradation and arced upon re-energization. Fire system tripped link. Investigation determined systematic issue with beams being improperly manufactured. All beams were tested and ones failing infrared (IR) tests were 'baked'
22-Aug-2020	18-Dec-2020	2,818.0	Forced	Muskkrat Falls Converter Station	Pole 1	Valve Module beam experienced insulation degradation and arced upon re-energization. Thyristor loss of redundancy trip link. Investigation determined systematic issue with beams being improperly manufactured. All beams were tested and ones failing IR test returned to service.
29-Dec-2020	30-Dec-2020	19.0	Forced	Soldier's Pond Converter Station	Pole 1	DC Pole Differential Trip. Trip only present on Lane 2 (L2). L2 was placed into maintenance mode and returned to service.
11-Jan-2021	19-Feb-2021	939.0	Planned	DC electrode lines	Pole 1	Record of total time for Electrode Line 1 (EL1) repair due to Ice Damage. Not intended for calculation purposes.
13-Jan-2021	14-Jan-2021	25.0	Planned	DC electrode lines	Pole 1	Planned outage to repair STR 340 EL1 wing failure after ice storm.
14-Jan-2021	14-Jan-2021	10.5	Planned	DC electrode lines	Pole 1	Outage to Pole 1 (P1) for restart of Pole 2 (P2) commissioning after EL1 wing repair. Upon de-block of P2 EL imbalance protection asserted. P2 moved into Metallic Return (MR) until planned blocking at 1030. P1 was scheduled to return to service at 1830.
14-Jan-2021	15-Jan-2021	23.2	Forced	DC electrode lines	Pole 1	Outage to P1 continuing from planned outage for P2 commissioning. P1 not returned to service since condition of line was unknown after ice storm. Line patrols on Jan 14 / 15 confirmed EL1 down / broken at STR 526/27. No damage on HV conductors, P1 returned.
18-Jan-2021	18-Jan-2021	0.5	Planned	Muskkrat Falls Converter Station	Pole 1	Protection asserted when ramping power above 200MW. Link did not trip as non-urgent trip only occurred on 1 of 4 protection sub racks. Link was de-blocked and jumper on series V measurement card was adjusted to provide correct scale factor.
19-Jan-2021	19-Jan-2021	15.9	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work. P2 commissioning also delayed.
20-Jan-2021	20-Jan-2021	12.4	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work. P2 commissioning also delayed.
21-Jan-2021	21-Jan-2021	13.3	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work. P2 commissioning also delayed.
22-Jan-2021	22-Jan-2021	-	Planned	DC electrode lines	Pole 1	Outage to change config to ground return.
25-Jan-2021	25-Jan-2021	7.3	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work.
26-Jan-2021	28-Jan-2021	66.1	Planned	Both Converter Stations	Pole 1	Planned outage after P1 225MW heat run. Valve hall inspection and beam IR measurements completed throughout both valve halls
29-Jan-2021	29-Jan-2021	14.0	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work.
30-Jan-2021	30-Jan-2021	13.6	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work.
31-Jan-2021	31-Jan-2021	14.9	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work.
1-Feb-2021	1-Feb-2021	14.7	Planned	DC electrode lines	Pole 1	Outage to P1 for EL1 repair work
2-Feb-2021	2-Feb-2021	14.2	Planned	DC electrode lines	Pole 1	Repair work on EL1
3-Feb-2021	18-Feb-2021	357.0	Forced	DC lines	Pole 2	P2 HV Conductor severed near Forteau Point. Bipole commissioning on hold. Conductor break did not cause any outage to P1.
4-Feb-2021	4-Feb-2021	11.0	Planned	DC electrode lines	Pole 1	Repair work on EL1
5-Feb-2021	5-Feb-2021	14.5	Planned	DC electrode lines	Pole 1	Repair work on EL1
6-Feb-2021	6-Feb-2021	13.9	Planned	DC electrode lines	Pole 1	Repair work on EL1
7-Feb-2021	7-Feb-2021	9.3	Planned	DC electrode lines	Pole 1	Repair work on EL1
7-Feb-2021	24-Feb-2021	411.6	Planned	DC electrode lines	Pole 1	Record of total time for EL2 Repair. Related to storm which also damaged EL1. Outage concurrent in part with EL1 and P2 HV repair.
7-Feb-2021	18-Feb-2021	270.0	Forced	DC electrode lines	Pole 1	Outage period where EL1 / EL2 and P2 are all unavailable. P1 in forced outage state due to lack of return path. This outage ends upon P2 HV repair is complete.
18-Feb-2021	21-Feb-2021	75.7	Planned	Both Converter Stations	Pole 1	Link not returned to service as it was not authorized by GE. GE not not site due to Covid - 19 precautions. Returned to service 2/21/21 due to high island loads and issues with HRD generators. GE support remotely.
23-Feb-2021	23-Feb-2021	14.0	Planned	DC electrode lines	Pole 1	Repair Work EL1/EL2
24-Feb-2021	24-Feb-2021	12.8	Planned	DC electrode lines	Pole 1	Final outage for repair work on EL1 / EL2
25-Feb-2021	25-Feb-2021	1.4	Forced	L'Anse au Diabie Electrode	Pole 1	UL shutdown (Bipole) to prevent pole fire due to observed arcing near surge arrester (SA).
25-Feb-2021	25-Feb-2021	1.1	Forced	L'Anse au Diabie Electrode	Pole 1	L'Anse Au Diabie (LAD) surge arrester arcing present with P1 in service. Link shutdown again for investigation. Determined EL2 was ungrounded and capacitive coupling creating potential higher than SA rating and conducting to ground. Switch closed to create path to ground and Bipole returned
26-Feb-2021	26-Feb-2021	12.5	Planned	L'Anse au Diabie Electrode	Pole 2	Planned outage to P2 to isolate LAD and replace surge arrestors due to arcing from previous day.
1-Mar-2021	1-Mar-2021	1.7	Forced	Soldier's Pond Converter Station	Pole 1	High inrush on energization of transformer T5 caused trip on P1. P2 restored at 10:26 and then P1 afterwards.
3-Mar-2021	3-Mar-2021	1.2	Forced	Soldier's Pond Converter Station	Bipole	Bipole commissioning Lane changeover test caused pole disconnect sequence on P2.
5-Mar-2021	5-Mar-2021	0.2	Forced	Soldier's Pond Converter Station	Pole 1	High inrush on energization of T5 caused trip on P1.
5-Mar-2021	19-Mar-2021	333.9	Planned	Both Converter Stations	Bipole	Link out of service for punch item work prior to start of low power trial operations.
20-Mar-2021	20-Mar-2021	1.1	Forced	Muskkrat Falls Converter Station	Pole 1	P1 blocked on manual Bipole (BP) lane change over from L2 to L1.
1-Apr-2021	1-Apr-2021	8.6	Forced	Muskkrat Falls Converter Station	Bipole	On Ramp down to 90 MW from above 150 MW filter configuration resulted in power limit of 0MW.
30-Apr-2021	4-May-2021	99.6	Forced	Soldier's Pond Converter Station	Pole 2	P2 tripped from HVDC bushing stage 2 low SF6.
6-May-2021	31-May-2021	601.8	Planned	L'Anse au Diabie Electrode	Pole 2	Planned outage for repairs at LAD from Fall 2020 storm. P2 unavailable during this time period, P1 ran in MR when system conditions permitted.
3-Jun-2021	3-Jun-2021	12.0	Forced	Soldier's Pond Converter Station	Pole 1	Converter differential trip on P1. Measurement issue apparent on one lane.

Outage Start	Outage End	Duration (hours)	Type	Site	Equipment Impacted	Description
4-Jun-2021	27-Jul-2021	1,257.6	Planned	Both Converter Stations	Pole 2	Valve hall isolated for inspection and IR measurements on beams followed by beam replacement. GE determined not to reenergize valve hall until replacement complete
11-Jun-2021	17-Aug-2021	1,605.6	Planned	Both Converter Stations	Pole 1	Valve hall isolated for inspection and IR measurements on beams followed by beam replacement. GE determined not to reenergize valve hall until replacement complete
3-Aug-2021	3-Aug-2021	2.0	Forced	AC system (External to MFA/SOP)	Pole 2	No generation unit available at Muskrat Falls (MF). Recapture available at 12:30.
4-Aug-2021	17-Aug-2021	305.0	Planned	DC lines	Pole 2	Line repair work related to Ice Storm Winter 2021
17-Aug-2021	17-Aug-2021	6.9	Forced	Muskat Falls Converter Station	Bipole	energization of transformer T8 caused filter trips on F1, F2, F4.
20-Aug-2021	20-Aug-2021	0.3	Forced	Soldier's Pond Sync. Condenser	Bipole	Lightning activity tripped Synchronous Condensers 2 and 3 (SC2 / SC3). LLL required to come offline
20-Aug-2021	20-Aug-2021	1.6	Forced	Soldier's Pond Converter Station	Bipole	DC Line Fault (DCLF) protection operated due to a simultaneous commutation failure and interned telecom loss
20-Aug-2021	21-Aug-2021	14.5	Forced	Soldier's Pond Sync. Condenser	Bipole	SC2/SC3 tripped due to lightning activity. LLL brought offline until storm passed.
22-Aug-2021	3-Sep-2021	284.7	Planned	DC lines	Bipole	Line repair work related to ice storm winter 2021
11-Sep-2021	11-Sep-2021	7.2	Forced	Soldier's Pond Sync. Condenser	Bipole	Synchronous Condensers tripped off due to system voltage issues. B
17-Sep-2021	17-Sep-2021	14.5	Planned	Soldier's Pond Converter Station	Bipole	Outage to reconnect and complete static checks on Electrode Line Fault Locator (ELFL) system.
21-Sep-2021	30-Sep-2021	217.1	Forced	Soldier's Pond Converter Station	Bipole	Filter Bus 2 switch unavailable after arcing damage discovered on contacts and jaw assembly
22-Sep-2021	23-Sep-2021	15.7	Forced	AC system (External to MFA/SOP)	Bipole	Less than 2 units available in MF with reactor R1 out of service. LLL ramped to OMW
4-Oct-2021	15-Oct-2021	272.0	Planned	Both Converter Stations	Bipole	Only 1 unit available in MF with no reactor in service. LLL not able to run
15-Oct-2021	22-Oct-2021	170.3	Forced	Muskat Falls Converter Station	Bipole	Fire in ELFI interface cabinet upon deblock of LLL. Risers removed from LV bus to isolate equipment before returning to service.
2-Nov-2021	3-Nov-2021	38.9	Planned	AC system (External to MFA/SOP)	Bipole	Only 1 unit available in MF.
3-Nov-2021	6-Nov-2021	65.9	Planned	Both Converter Stations	Bipole	GE requesting delay due to ongoing protection investigations
22-Nov-2021	23-Nov-2021	38.6	Planned	Both Converter Stations	Bipole	GE Punch Closure outage
26-Nov-2021	27-Nov-2021	16.3	Forced	Muskat Falls Converter Station	Bipole	Loss of station service and diesel did not start before valve cooling trip issued (30 sec).
26-Jan-2022	27-Jan-2022	29.8	Forced	Soldier's Pond Converter Station	Pole 2	Emergency Stop (E stop) of P1 for runback testing caused P2 trip
26-Jan-2022	29-Jan-2022	75.0	Forced	Soldier's Pond Converter Station	Pole 1	P1 out of service following previous runback testing. Out of service until protection issues addressed.
28-Jan-2022	29-Jan-2022	22.5	Forced	Muskat Falls Converter Station	Pole 2	Protection mis-operated when switching from MR to Ground Return (GR) to allow for P1 to be brought back online.
14-Feb-2022	15-Feb-2022	36.1	Planned	Muskat Falls Converter Station	Pole 1	Planned outage for repair to transformer T7 disconnect
18-Feb-2022	19-Feb-2022	26.2	Forced	Soldier's Pond Converter Station	Pole 2	DCLF tripped P2 in Soldiers Pond Converter Station (SOPCS). No restarts enabled. Line patrolled and no evidence of fault found. Line manually re-energized.
20-Feb-2022	25-Feb-2022	120.1	Forced	Muskat Falls Converter Station	Pole 1	P1 tripped on Valve Hall Flame detector.
25-Feb-2022	1-Apr-2022	835.0	Forced	Muskat Falls Converter Station	Pole 1	Switching error resulted in open neutral on P1.
26-Feb-2022	24-Mar-2022	635.5	Forced	Muskat Falls Converter Station	Pole 2	Following open circuit on P1, P2 control lanes failed. Power was intended to be ramped down as per scheduling page and power increased from 170 to 225MW. Pole brought offline via E Stop as power could not be controlled.
1-Apr-2022	1-Apr-2022	5.7	Planned	Soldier's Pond Converter Station	Pole 2	Interlocking issue caused loss of config and P1 could not be deblocked until both poles were out of service.
12-Apr-2022	12-Apr-2022	12.6	Forced	Muskat Falls Converter Station	Pole 1	DCCT noise cause converter differential on P1.
23-Apr-2022	25-Apr-2022	50.5	Planned	Muskat Falls Converter Station	Bipole	Outage to implement corrective actions on DCCTs to reduce noise on signals.
25-Apr-2022	19-May-2022	577.3	Planned	Muskat Falls Converter Station	Pole 1	Safety Standown due to protection blocking issues with previous bipole outage.
18-May-2022	18-May-2022	3.3	Forced	Muskat Falls Converter Station	Pole 2	Error in restoring protection blocking on P1 resulted in trip of P2 (trip block inserted incorrectly)
19-May-2022	31-May-2022	292.0	Forced	Both Converter Stations	Bipole	Monopole (MP) limits applied until root cause analysis (RCA) for DCCT noise issues submitted.
21-May-2022	21-May-2022	4.0	Planned	Muskat Falls Converter Station	Pole 1	Replacement of failed Valve Based Electronics (VBE) card
21-May-2022	21-May-2022	4.0	Forced	Muskat Falls Converter Station	Pole 2	Tripped on block from P1 during planned outage of P1 to replace VBE card.
24-May-2022	27-May-2022	74.0	Planned	Both Converter Stations	Pole 1	P1 brought offline to allow for increased Maritime Link (ML) exports while operating at MP limits
29-May-2022	31-May-2022	54.7	Forced	Muskat Falls Converter Station	Pole 1	DCCT noise on P1 caused converter differential protection to misoperate
4-Jun-2022	14-Jun-2022	243.6	Planned	Muskat Falls Converter Station	Pole 1	Replacement of HV DCCT on pole 1 after continued noise and protection operations
16-Jun-2022	20-Jul-2022	811.7	Forced	Muskat Falls Converter Station	Pole 1	P1 unavailable after Neutral Bus Switch (NBS) opened under load during dynamic commissioning.
16-Jun-2022	24-Jun-2022	192.0	Forced	Muskat Falls Converter Station	Pole 2	P2 unable to deblock due to block discrepancy issue.
6-Jul-2022	7-Jul-2022	10.9	Planned	Soldier's Pond Sync. Condenser	Pole 2	Planned outage to synchronous condensers. No other large units available on Avalon so LLL required to be offline.
4-Aug-2022	13-Aug-2022	212.1	Planned	DC lines	Pole 1	Planned outage for L3501 work.
30-Aug-2022	1-Sep-2022	38.4	Planned	Both Converter Stations	Bipole	Repairs to DCCT in MF completed.
28-Sep-2022	30-Sep-2022	58.0	Forced	Both Converter Stations	Bipole	Maintenance on filters at Muskrat Falls Terminal Station 2 (MFATS2) resulted in a 271MW limit on the LLL.
8-Oct-2022	8-Oct-2022	5.5	Planned	Forteau Point Transition Compound	Pole 1	Replacement of media converter in Forteau Point (FPT).
9-Oct-2022	9-Oct-2022	20.0	Planned	Muskat Falls Converter Station	Pole 2	Replacement of disconnect associated with T8 in (MFATS2).
12-Oct-2022	12-Oct-2022	11.2	Planned	Muskat Falls Converter Station	Pole 2	Repair of ground switch in MFATS2.
20-Oct-2022	21-Oct-2022	35.5	Planned	DC lines	Pole 2	Repair of ground switch maintenance.
27-Oct-2022	27-Oct-2022	5.3	Forced	Soldier's Pond Sync. Condenser	Bipole	Synchronous condenser units tripped resulting in no synchronous condenser available.
22-Oct-2022	22-Oct-2022	3.5	Forced	Soldier's Pond Sync. Condenser	Bipole	SC2 & SC3 tripped. LLL did not trip, but was taken offline in a controlled fashion as a result.
3-Nov-2022	12-Nov-2022	217.2	Planned	Interstation Telecommunications	Pole 1	Pole 1 outage to facilitate work on the Optical Ground Wire (OPGW). EL1 and EL2 isolations required. Weather delays extended outage.
18-Nov-2022	20-Nov-2022	58.8	Planned	Both Converter Stations	Bipole	Valve hall inspections after 495MW test, gamma calibration tests, and heat run. Outage excluded from calculations.
22-Nov-2022	23-Nov-2022	30.7	Planned	Soldier's Pond Converter Station	Pole 1	Wiring modifications completed for current noise prior to 700MW high power testing.
24-Nov-2022	1-Dec-2022	174.9	Forced	Both Converter Stations	Pole 2	P2 tripped during 700MW pole compensation test. Gamma measurement error caused commutation failures.

Outage Start	Outage End	Duration (hours)	Type	Site	Equipment	Description
1-Dec-2022	1-Dec-2022	4.7	Forced	Soldier's Pond Converter Station	Pole 1	P1 tripped on asymmetry protection due to high inrush currents when energizing T5.
1-Dec-2022	11-Dec-2022	234.5	Forced	Both Converter Stations	Pole 2	P2 tripped as a result of a conductor break.
2-Dec-2022	3-Dec-2022	21.3	Planned	DC lines	Pole 1	P1 outage to facilitate repairs to P2. No issues with P1, so excluded from calculations.
8-Dec-2022	10-Dec-2022	62.1	Planned	DC lines	Pole 1	Continuation of P1 outage to facilitate repairs on P2 conductor.
11-Dec-2022	11-Dec-2022	13.2	Planned	DC lines	Pole 1	Continuation of P1 outage to facilitate repairs to P2 conductor.
14-Dec-2022	15-Dec-2022	35.4	Forced	DC lines	Pole 2	DCLF on P2. OPGW heavily iced and hit P2 conductor.
16-Dec-2022	17-Dec-2022	16.9	Planned	DC lines	Pole 2	OPGW iced and came closer to P2 conductor. P2 taken offline to reduce chances of trip in case OPGW contacted P2 conductor.
17-Dec-2022	17-Dec-2022	7.7	Planned	DC lines	Bipole	Bipole outage to secure OPGW.
18-Dec-2022	18-Dec-2022	9.4	Planned	DC lines	Bipole	Planned outage to repair OPGW.
20-Dec-2022	20-Dec-2022	5.4	Planned	DC lines	Bipole	Continuation of outage to facilitate OPGW repairs.
21-Dec-2022	21-Dec-2022	14.7	Planned	DC lines	Bipole	Continuation of outage to facilitate repair of the OPGW.
21-Dec-2022	23-Dec-2022	51.0	Forced	DC lines	Pole 1	Pole 1 tripped on DCLF.
21-Dec-2022	23-Dec-2022	50.9	Forced	DC lines	Pole 2	P2 tripped on DCLF.
24-Dec-2022	24-Dec-2022	0.7	Forced	Muskkrat Falls Converter Station	Pole 1	Disturbances in Labrador system resulted in overvoltages at MFACS leading to the tripping of the valve cooling.
24-Dec-2022	27-Dec-2022	0.8	Forced	AC system (External to MFA/SOP)	Pole 1	Instability of Labrador system caused overvoltages leading to trip of pole 1.
24-Dec-2022	27-Dec-2022	71.5	Planned	AC system (External to MFA/SOP)	Bipole	LIL remained offline due to issues with Labrador system.
27-Dec-2022	19-Jan-2023	551.0	Forced	DC lines	Pole 1	Downed P1 conductor between Shoal Cove (SOC) and SOP.
27-Dec-2022	28-Dec-2022	14.1	Forced	Muskkrat Falls Converter Station	Pole 2	T8A OILTC locked out and LIL limited to 168MW. Transformer could not tap, alpha at minimum angle.
28-Dec-2022	28-Dec-2022	11.8	Planned	DC lines	Pole 2	Outage to facilitate repairs on OPGW. Pole 1 out of service at this time due to conductor issues. Repairs require both poles offline.
29-Dec-2022	29-Dec-2022	9.7	Planned	DC lines	Pole 2	Continuation of outage to facilitate OPGW repairs. Pole 1 out of service at this time due to conductor issues. Repairs require both poles offline.
29-Dec-2022	9-Jan-2023	263.2	Forced	DC lines	Pole 1	P1 downed conductor between FTP and MFA. Concurrent with downed conductor on island portion of LIL, therefore excluded from calculation.
30-Dec-2022	30-Dec-2022	12.4	Planned	DC lines	Pole 2	Continuation of outage to facilitate OPGW repairs. Pole 1 out of service at this time due to conductor issues. Repairs require both poles offline.
31-Dec-2022	31-Dec-2022	3.6	Forced	Shoal Cove Transition Compound	Pole 1	Current measurement spike while P1 was blocked. Issue was only seen on lane 1, suspected issue with DCCT.
31-Dec-2022	3-Jan-2023	76.7	Forced	DC electrode lines	Pole 2	Pole 2 tripped due to EL2 conductor break. No MR available due to ongoing P1 conductor issues. P2 returned to service once line patrol was completed and EL2 was isolated. EL2 repair completed on 17-Jan-2023.
4-Jan-2023	4-Jan-2023	13.0	Planned	DC lines	Pole 2	Pole 2 outage to facilitate the repair on P1 and EL2.
5-Jan-2023	5-Jan-2023	14.4	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
6-Jan-2023	6-Jan-2023	13.0	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
7-Jan-2023	7-Jan-2023	11.6	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
8-Jan-2023	8-Jan-2023	11.8	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
9-Jan-2023	9-Jan-2023	11.5	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
10-Jan-2023	10-Jan-2023	12.1	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
11-Jan-2023	11-Jan-2023	10.9	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
12-Jan-2023	12-Jan-2023	8.1	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
13-Jan-2023	13-Jan-2023	12.3	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
14-Jan-2023	14-Jan-2023	11.7	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
15-Jan-2023	15-Jan-2023	11.7	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
16-Jan-2023	16-Jan-2023	13.8	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
17-Jan-2023	17-Jan-2023	10.6	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
18-Jan-2023	18-Jan-2023	10.1	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
19-Jan-2023	19-Jan-2023	11.6	Planned	DC lines	Pole 2	Continuation of P2 outage to facilitate the repair on P1 and EL2.
31-Jan-2023	1-Feb-2023	11.4	Forced	Muskkrat Falls Converter Station	Pole 1	Converter differential operated on P1 L2. Apparent measurement issue.
2-Feb-2023	2-Feb-2023	15.6	Forced	Muskkrat Falls Converter Station	Pole 2	Converter differential operated on P2 L2. Apparent measurement issue.
3-Feb-2023	3-Feb-2023	5.3	Forced	Soldier's Pond Converter Station	Pole 1	Converter differential operated on P1 L2. Apparent measurement issue.