

1 Q. Reference PUB-NLH-217, pages 9-10: Does the total power capacity of 1650MW to
2 1680MW include or exclude 300MW import from ML? If it does include the 300MW
3 from ML, what would be the LOLH resulting from one bipolar trip with a repair time
4 of 4 hours, 24 hours and 2 weeks without 300MW from ML in the years from 2020
5 forward?

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8 A. Reference PUB-NLH-217, pages 9-10: the total power capacity of 1650 MW to
9 1680 MW represents the Hydro Island Interconnected system capacity in the case
10 of a permanent LIL outage from the time Holyrood is retired until 2023. It includes
11 300 MW of import capacity over the ML.

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13 In order to calculate the LOLHs for the sensitivities requested, the LIL outages were
14 converted to an equivalent forced outage rate per pole for the LIL. From *GRK-NLH-*
15 *060 (Revision 1, Mar 2-15)*, the bipole is forecast to have 9.5 hours per year of
16 downtime (Table 3-2). For loss of a single pole (monopole), the forecast is
17 70.6 hours per year. This gives a total of 80.1 hours per year of downtime, which,
18 when divided by 8760 hours per year gives a base forced outage rate of 0.91%
19 (Table: Combined – Forced Outage Rates). This forced outage rate was used then
20 for each pole of the bipole.

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22 For the sensitivities requested, for example, one bipole trip per year with a four
23 hour repair time, gives a bipole outage downtime of four hours per year. From this,
24 the same procedure was then used to calculate the respective forced outage rates,
25 as shown in Table 1.

Calculation of Forced Outage Rates

Case	Downtime (hrs/yr)			Hours in one Year	Total Forced Outage Rate
	Bipole	Monopole	Total		
Base	9.5	70.6	80.1	8760	0.91%
4 Hours	4	70.6	74.6	8760	0.85%
24 Hours	24	70.6	94.6	8760	1.08%
2 Weeks	336	70.6	406.6	8760	4.64%

Table 1

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Table 2 shows the the LOLH resulting from one bipolar trip annually with a repair time of 4 hours, 24 hours and 2 weeks without 300MW from ML in the years from 2020 to 2035.

LOLHs Resulting From One Bipole Trip Annually - ML Not In-Service

	P-50 Peak Demand MW	Case			
		Base	4 Hours	24 Hours	2 Weeks
		LOLH	LOLH	LOLH	LOLH
2020	1725	0.14	0.12	0.19	0.04
2021	1733	0.15	0.13	0.21	0.15
2022	1744	0.16	0.14	0.23	0.53
2023	1754	0.17	0.15	0.24	0.65
2024	1767	0.18	0.16	0.26	0.77
2025	1783	0.20	0.18	0.29	0.97
2026	1803	0.32	0.28	0.44	2.02
2027	1821	0.37	0.33	0.51	2.47
2028	1842	0.47	0.42	0.63	3.23
2029	1862	1.04	0.94	1.33	7.97
2030	1874	1.18	1.07	1.50	9.05
2031	1894	1.38	1.26	1.76	10.48
2032	1911	1.53	1.40	1.94	11.26
2033	1927	1.84	1.69	2.31	13.30
2034	1944	2.24	2.06	2.77	15.48
2035	1961	2.62	2.43	3.19	16.84

Table 2