UNDERTAKING JT2.22

Undertaking

WITH REFERENCE TO JT2.21, TO CONSIDER THE REASON, IF KNOWN AND IDENTIFIABLE, WHY THE PUMP WASN'T PUMPING.

Response

OPG did not use the Sir Adam Beck Pump Generating Station ("PGS") in pump mode during the hours identified in JT2.21 due to the following reasons:

- Physical limitations: OPG was unable to use the PGS due to (i) an outage affecting the entire PGS facility or (ii) the PGS reservoir being full or approaching its operating capacity as described in Ex. JT2.18.

- Uneconomic operation: (iii) Having regard to the cost of shifting water using the PGS as described in Ex. JT2.26, OPG determined that there were insufficient price spreads based on forecasted market prices.

- Considerations for the safety of any person, equipment damage, or the violation of any applicable law ("SEAL")[1]: On-peak PGS generation was not supported due to (iv) the impact of high flows on water elevations downstream of Niagara Falls and the associated potential risk to public safety and property related to the operation of tourist vessels at the base of Niagara Falls, and (v) the impact of high crossover[2] elevation on equipment protection in the Sir Adam Beck 2 Generating Station cableway, and ability to achieve maximum diversion for river rescue operations, flood prevention in the event of load rejection and ice jam management.

Chart 1 and Chart 2 provide reasons why the PGS was not utilized during hours with SBG spill in 2018 and 2019, respectively, based on OPG's retrospective analysis. In approximately 81% of these hours, there were two or more concurrent reasons why the PGS was not utilized.

[1] IESO Market Manual 7, System Operations, p. 3.
[2] The crossover is the intersection point of the Power Canal, the three underground tunnels and the intake/discharge for the PGS.

Chart 1 - Reason for PGS Not Pumping During Hours of SBG Spill in 2018

	SBG Spill and Not Pumping[3]	Physical Limitations		Un-economic Operation	Safety, Equipment, Applicable Laws		Other
		PGS Outage	Storage Limit		Downstream Elevation	Crossover Elevation	
Jan	369	29	0	333	3	198	23
Feb	448	0	0	425	0	308	12
Mar	527	16	0	490	0	439	8
Apr	336	0	0	321	58	277	2
May	680	117	0	617	661	613	0
June	571	0	0	501	471	432	3
July	272	0	0	245	197	149	8
Aug	204	0	0	164	25	88	26
Sep	336	177	0	262	22	237	15
Oct	609	0	0	538	90	497	39
Nov	454	0	0	368	128	307	34
Dec	286	0	0	254	19	100	29

Chart 2 - Reason for PGS Not Pumping During Hours of SBG Spill in 2019

	SBG Spill and Not Pumping[3]	Physical Limitations		Un-economic Operation	Safety, Equipment, Applicable Laws		Other
		PGS Outage	Storage Limit		Downstream Elevation	Crossover Elevation	
Jan	265	0	0	243	51	122	20
Feb	146	0	0	132	38	42	8
Mar	185	26	0	184	0	138	0
Apr	510	0	0	489	106	491	1
May	636	0	0	604	432	602	3
June	646	0	149	615	646	587	0
July	402	0	0	372	402	112	0
Aug	469	0	0	422	469	214	0
Sep	535	0	0	472	523	425	0
Oct	680	158	0	630	644	635	0
Nov	399	78	0	371	200	229	3
Dec	378	0	0	344	5	213	26

[3] As defined in Ex. JT2.21.