UNDERTAKING J15.10

Undertaking

To provide what the net impact on the forecast nuclear production would be in the case of a 12-month and 18-month delay on the Darlington Refurbishment Program.

Response

In order to respond to this undertaking, OPG has adhered to the assumptions requested, but OPG does not view these assumptions as reasonable. As noted in Ex. L-4.3-7 ED-004, OPG has learned significantly from the experiences of past large complex projects and has executed a robust planning process. The Release Quality Estimate (RQE) and schedule produced in 2015 is a high confidence cost and schedule estimate, including contingencies.

While there will be risks associated with the execution of the DRP, OPG as the general contractor will play an active role in monitoring the work and ensuring that all risks are actively managed. OPG would intervene and take appropriate actions to mitigate the schedule impacts long before the circumstances contemplated in this undertaking. The contractors are responsible and have incentives to mitigate and recover schedule delays. There are also off-ramps in the contracts that allow OPG to terminate contracts in situations where performance is not meeting expectations. OPG has full transparency on the status of the overall DRP, in terms of safety, quality, schedule, and cost performance, and would take corrective actions very early in the process, as required.

Chart 1 summarizes the hypothetical impact on the nuclear production forecast of delays to the in-service date of Darlington Unit 2. The assumptions used to estimate these impacts, which would be subject to change based on the actual drivers to a Unit 2 in-service delay, are provided below.

Chart 1

	6-month Delay	12-month Delay	18-month Delay
Net Impact of Delay on Production Forecast	Gain of 0.6 TWh (assuming no delay to start of Unit 1 refurbishment per Ex. L-5.1-15 SEC-049) Gain of 4.5 TWh (assuming a 6-month delay to start of Unit 1 refurbishment as described below)	Gain of 1.0 TWh	Loss of 1.8 TWh

In all scenarios, it is assumed that there would be no impact on the production forecast in 2017, 2018 or 2019.

In the 6-month delay scenario (Ex. L-5.1-15 SEC-049), OPG had assumed that the start of Unit 3 could be delayed by 6 months (to mid-August 2020). However, in the 12-month and 18-month delay scenarios, OPG has assumed that Unit 3 would be idled from mid-August 2020 onwards, consistent with the current end-of-life date for Unit 3 being early to mid-2020 (see Ex. L-4.3-8 GEC-009).

In the 6-month delay scenario (Ex. L-5.15-15 SEC-049), OPG had assumed no change in the start date for Unit 1. However, had Unit 1 refurbishment been assumed to be delayed by six months to December 2021, there would have been a gain of 183 days, representing about 3.9 TWh in addition to the 0.6 TWh identified in Ex. L-5.1-15 SEC-049. Under the 12-month and 18-month delay scenarios, the start date of Unit 1 refurbishment (currently June 2021) is assumed to be pushed to outside the rate period.

Based on the above assumptions, a 12-month delay would result in the following:

2020:

- For Unit 2, a loss of 10.5 months production from mid-Feb 2020 to end of 2020; slightly off-set by the first mini post commissioning outage for Unit 2 of 55 days being delayed from fall 2020 to fall 2021.
- For Unit 3, a gain in production compared to the base case of 6 months from February 15, 2020 to August 15, 2020, then Unit 3 being idled from August 15, 2020 to the end of 2020.
- For Units 1 & 4, no production impacts.

2021

- For Unit 2 there would be a loss of 1.5 months production from Jan 2021 to mid-Feb 2021, an outage days increase of 55 days for the first mini post commissioning outage shifting into 2021 and an outage days reduction for the second mini post commissioning outage of 31 days being delayed from fall 2021 to outside the rate period.
- For Unit 3, there would be no net change, as the Unit would have been on refurbishment for all of 2021. In this scenario, the refurbishment of Unit 3 is assumed to start on February 15, 2021.
- For Unit 1, the shift of Unit 1 refurbishment to outside the rate period would be a gain of production of 200 days in 2021.
- For Unit 4, there would be no production impacts.

Based on the above assumptions, an 18-month delay would result in the following:

2020:

- Production impacts are identical to the 12-month delay scenario.

2021

- For Unit 2 there would be a loss of 7.5 months production from Jan 2021 to mid-August 2021, and an outage days decrease of 55 days plus 31 days for both the first and second mini post commissioning outages shifting to outside the rate period.
- For Unit 3, there would be no net change, as the Unit would have been on refurbishment for all of 2021. In this scenario, the refurbishment of Unit 3 is assumed to start on August 15, 2021.
- For Unit 1, the shift of Unit 1 refurbishment to outside the rate period would be a gain of production of 200 days in 2021.
- For Unit 4, there would be no production impacts in the rate period.

UNDERTAKING J15.12

Undertaking

To update the total overtime values in table in parts c and d of L-6.6-2 AMPCO-135 for the 2016 actuals.

Response

Total actual overtime values for 2016 have been provided in Table 1 below:

Table 1

Total Nuclear	Actual ($M) (a)	Budget ($M) (b)	Variance ($M) (c) = (a)-(b)	Variance (d) = (c)/(b)
2013	159.2	127.0	32.2	25.3%
2014	117.6	109.3	8.2	7.5%
2015	132.1	122.3	9.7	7.9%
2016	136.4	111.7	24.7	22.1%

Actual overtime in 2016 was higher relative to budget to address labour declines experienced as a result of greater than anticipated attrition and hiring lags. Consistent with OPG's response to J14.3 in respect of Base OM&A, overtime is one part of the mix of resources OPG uses to carry out its work requirements and the actual mix between types of labour and overtime can vary by year depending on work requirements and existing staff levels.