

1 **UNDERTAKING J14.5**

2
3 **Undertaking**

4
5 TO PROVIDE RESULTS FOR 2012-2016 FOR BOTH METRICS IN STAFF 106,
6 COLOUR-CODING THE RESULTS TO SHOW THE QUARTILE FOR EACH METRIC
7 FALLS INTO DURING THAT PERIOD.

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9 **Response**

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11 Chart 1 and Chart 2 below update results for scope stability and schedule adherence
12 metrics for the years 2015 and 2016.

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14 As noted in Scott Madden's Evaluation of OPG Nuclear Benchmarking report (Ex. F2-1-
15 1, Attachment 3, p. 12), these metrics are relatively new for the industry and data is not
16 yet consistently reported.

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18 Ontario Power Generation as an International member of the Institute of Nuclear Power
19 Operators ("INPO") participates in the work management working group meetings each
20 year. The top quartile benchmark data provided below was obtained through OPG's
21 participation in these working meetings. However detailed benchmark data for quartile
22 comparison is not currently available and therefore colour coding by quartiles is not
23 possible.

24
25 A benchmark survey of Candu operators in Canada was also completed by OPG for
26 Scope Stability and Schedule Adherence (completion) in the fourth quarter of 2016.
27 The Candu averages are noted below for reference.

28
29 Top quartile (INPO working group) for scope stability is benchmarked at 92%. OPG
30 targets performance of 80 per cent for Darlington and 75 per cent for Pickering. These
31 targets are based on:

- 32 • Past performance: Darlington has averaged 73% and Pickering has averaged
33 63% since 2012. There are initiatives currently underway to improve
34 performance on this metric.
- 35 • Technology: Scope stability tracks the amount of work that stays on schedule for
36 eight weeks out prior to execution of the task (Tr. Vol. 14, p.110). Scope stability
37 is critical to successful completion of a work management program because
38 scope additions or changes will lead to schedule delays and failure to complete
39 schedule tasks. The INPO working group is primarily made up of PWR/BWR
40 reactors. The number of tasks under work management programs for
41 PWR/BWR reactors are typically less than CANDU reactors because of different
42 technology. For example CANDU technology requires online fuelling to be
43 incorporated into work management program, adding to complexity and potential
44 for the need for changes in scope.

- Single-unit versus multi-unit stations: In a multi-unit station each unit is dependent on the other to facilitate the execution of the work on the schedule. In particular, for electrical and channelized maintenance if components become unavailable during the eight week period it will impact the availability of work that can be scheduled and cause work to be removed from scope. For multi unit stations this factor affects the stability of the working schedule. By comparison, the INPO top quartile reflects a number of single unit stations where the number of incoming work orders are minimal.

Chart 1 - Scope Stability

	2012				2013				2014			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
DN	83%	84%	80%	69%	84%	75%	72%	67%	61%	71%	61%	68%
PN	62%	55%	60%	54%	51%	53%	68%	56%	64%	63%	65%	62%
Candu Avg.	67%				67%				64%			

	2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
DN	70%	78%	69%	72%	64%	82%	74%	76%
PN	67%	70%	66%	70%	69%	63%	70%	70%
Candu Avg.	75%				73%			

For Schedule Adherence, OPG uses Schedule Completion to benchmark performance. Top quartile (INPO working group) is benchmarked at 95%. OPG targets performance of 95% for Darlington and 91% for Pickering. Pickering's target reflects the impact of emergent corrective work that in some cases diverts resources from planned work. Darlington's target of 95% is top quartile performance.

Chart 2 - Schedule Adherence

	2012				2013				2014			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
DN	89%	90%	88%	88%	93%	88%	88%	88%	84%	86%	87%	88%
PN	89%	88%	87%	88%	85%	88%	88%	85%	86%	86%	86%	86%
Candu Avg	89%				88%				88%			

	2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
DN	87%	88%	86%	86%	87%	90%	88%	88%
PN	88%	87%	87%	87%	91%	89%	88%	88%
Candu Avg	84%				87%			