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April 30, 2019

VIA EMAIL

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, Suite 2700
Toronto, ON
M4P 1E4

Dear Ms. Walli:

Re: OPG Reporting and Record Keeping Requirements

Further to the OEB's direction in EB-2010-0008 (p. 151) and maintained in subsequent OPG applications, please find attached the following information:

1) By April 30, information on FTEs, Construction Work in Progress (CWIP) capital and in-service additions; and,
2) Within 120 days of December year-end, OPG's MD&A and Financial Statements filed with the OSC, OPG's nuclear unit capability factors and the hydroelectric availability for its regulated facilities.

Further to the OEB's direction in EB-2016-0152 (p. 149 and p. 151), please find attached the 2019 regulated hydroelectric and nuclear performance reports.

OPG's revised normalization methodology for Darlington and OPG Nuclear for the years impacted by the Darlington Refurbishment Program, in accordance with its December 7, 2018 submission, is reflected in the attached nuclear performance report.

Yours truly,

[Original signed by]

Matt Kirk

Att.

cc: Cathy Nguyen, OEB
Stephanie Chan, OEB

Numbers may not add due to rounding.

Submitted: April 30, 2019

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Table 1
Full-Time Equivalents (FTEs) by Representation
Year Ended December 31, 2018

Representation	Nuclear[1,2]		Regulated Hydro[1,2]		Total
	Regular	Non-Regular	Regular	Non-Regular	
Management Group	911	56	143	4	1,115
Power Workers Union[3]	3,568	1,431	666	44	5,709
Society of Energy Professionals	2,619	206	383	15	3,223
Total	7,097	1,694	1,192	63	10,046

Notes:

1 Corporate group FTEs are allocated to OPG's business units using the percentage of labour dollars allocated to each business. This results in the Corporate FTEs being allocated 80% to the nuclear facilities and 12% to the regulated hydroelectric facilities.

2 Consistent with the FTE allocation methodology in EB-2013-0321 and EB-2016-0152.

3 Non-Regular includes members from Electrical Power Systems Construction Association (EPSCA).

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Table 2
Continuity of Construction Work-In-Progress (CWIP) and In-Service Additions[1] ($M)
Year Ended December 31, 2018

Operating Group	CWIP Opening Balance (a)	Capital Expenditures (b)	In-Service Additions[2] (c)	Retirements, Transfers & Adjustments (d)	CWIP Closing Balance (e)= a+b+c+d
Regulated Hydroelectric	155.1	166.0	(143.6)	(0.4)	177.1
Nuclear	3,825.3	1,406.4	(369.6)	(6.5)	4,855.6
Corporate Support Services[3]	31.5	30.8	(34.7)	0.0	27.6
Total	4,011.9	1,603.2	(547.9)	(6.9)	5,060.3

Notes:
1 All amounts include both fixed and intangible assets, as appropriate.
2 The amounts do not include other in-service additions of $54.7M for nuclear and $1.0M for regulated hydroelectric. The excluded other in-service additions include purchased minor fixed assets, capital spares and other amounts entering in-service assets directly rather than through CWIP.
3 The amounts do not include corporate support services fixed and intangible assets that are recovered via the Asset Service Fee.

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Table 3 Management's Discussion & Analysis (MD&A), Financial Statements, Nuclear Unit Capability Factors and Hydroelectric Availability		
Report	**Reporting Period**	**Particulars**
MD&A filed with the Ontario Securities Commission	Year Ended December 31, 2018	OPG's MD&A is filed with the Ontario Securities Commission and is posted on OPG's website at the following link: https://www.opg.com/document/2018-financial-results-pdf/
Financial Statements filed with the Ontario Securities Commission	Year Ended December 31, 2018	OPG's financial statements are filed with the Ontario Securities Commission and are posted on OPG's website at the following link: https://www.opg.com/document/2018-financial-results-pdf/
Nuclear Unit Capability Factors	Year Ended December 31, 2018	OPG's nuclear unit capability factors are provided on page 39 of OPG's MD&A, which is available at the following link: https://www.opg.com/document/2018-financial-results-pdf/
Availability for the Regulated Hydroelectric Facilities	Year Ended December 31, 2018	Availability for the regulated hydroelectric facilities is provided on page 41 of OPG's MD&A, which is available at the following link: https://www.opg.com/document/2018-financial-results-pdf/

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Table 4
Pickering Performance Report

Metric	Actuals 2014	2015	2016	2017	2018 [4]	Metric	Annual Targets 2018	2019
Safety								
1-Year Total Recordable Injury Frequency (#/200k hours worked) [1]	0.22	0.44	0.49	0.06	0.16	Total Recordable Injury Frequency (#/200k hours worked)	0.22	0.20
Rolling Average[2] Industrial Safety Accident Rate (#/200k hours worked)	0.03	0.05	0.04	0.05	0.05	Industrial Safety Accident Rate (#/200k hours worked)	0.10	0.10
Rolling Average[2] Collective Radiation Exposure (Person-rem per unit)	82.24	97.72	97.23	83.96	81.65	Collective Radiation Exposure (Person-rem per unit)	110.30	92.30
1-Year Airborne Tritium Emissions (Curies) per Unit	2,390	2,409	3,067	3,103	2,772	Airborne Tritium Emissions (Curies) per Unit	2,666	2,500
Fuel Reliability Index (microcuries per gram) [5]	0.001580	0.000421	0.000261	0.000584	0.000837	Fuel Reliability Index (microcuries per gram)	0.000500	0.000500
2-Year Reactor Trip Rate (# per 7,000 hours)	0.36	0.17	0.25	0.26	0.33	Reactor Trip Rate (# per 7,000 hours)	0.50	0.50
3-Year Auxiliary Feedwater System Unavailability (#)	0.0181	0.0115	0.0070	0.0000	0.0039	Auxiliary Feedwater System Unavailability (#)	0.0200	0.0200
3-Year Emergency AC Power Unavailability (#)	0.0000	0.0030	0.0030	0.0030	0.0000	Emergency AC Power Unavailability (#)	0.0250	0.0250
3-Year High Pressure Safety Injection Unavailability (#)	0.0000	0.0000	0.0000	0.0000	0.0000	High Pressure Safety Injection Unavailability (#)	0.0200	0.0200
Reliability								
Rolling Average[2] WANO NPI (Index)	64.3	68.5	76.3	76.7	74.9	WANO NPI (Index)	75.5	74.3
Rolling Average[2] Forced Loss Rate (%)	10.08	6.85	3.76	5.01	5.20	Forced Loss Rate (%)	3.50	3.50
Rolling Average[2] Unit Capability Factor (%)	74.50	77.32	77.03	77.36	79.55	Unit Capability Factor (%)	74.60	80.56
Rolling Average[2] Chemistry Performance Indicator (Index)	1.04	1.06	1.04	1.02	1.02	Chemistry Performance Indicator (Index)	1.02	1.03
1-Year On-line Deficient Maintenance Backlog (work orders per unit)	276	251	350	383	279	On-line Deficient Maintenance Backlog (work orders per unit)	153	133
1-Year On-line Deficient Critical Maintenance Backlog (work orders per unit)				41	9	On-line Deficient Critical Maintenance Backlog (work orders per unit)	15	9
1-Year On-line Corrective Maintenance Backlog (work orders per unit)	160	125	116	25	17	On-line Corrective Maintenance Backlog (work orders per unit)	20	12
1-Year On-line Corrective Critical Maintenance Backlog (work orders per unit)				0	0	On-line Corrective Critical Maintenance Backlog (work orders per unit)	0	0
Value for Money								
3-Year Total Generating Cost per MWh ($ per Net MWh)	68.00	67.36	68.06	67.22	67.82	Total Generating Cost per MWh ($ per Net MWh)	73.17	64.89
3-Year Total Generating Cost per Unit (M $ per Unit)	228.38	228.04	231.63	233.75	234.40	Total Generating Cost per Unit (M $ per Unit)	243.03	232.93
3-Year Non-Fuel Operating Cost per MWh ($ per Net MWh)	57.01	56.49	57.12	56.89	57.92	Non-Fuel Operating Cost per MWh ($ per Net MWh)	64.75	56.67
3-Year Fuel Cost per MWh ($ per Net MWh)	5.74	5.71	5.75	5.31	4.85	Fuel Cost per MWh ($ per Net MWh)	5.59	4.12
3-Year Capital Cost per MW DER (k$ per MW)	34.20	33.86	34.23	33.91	33.83	Capital Cost per MW DER (k$ per MW)	26.22	28.55
Human Performance								
18-Month Human Performance Error Rate (# per 200k ISAR and contractor hours) [3]	0.17800	0.11000	0.03840	0.11600	0.14000	18-Month Human Performance Error Rate (# per 200k ISAR and contractor hours)	0.06000	0.08000

Notes
1. In 2018, Ontario Power Generation has selected Total Recordable Injury Frequency (replacing All Injury Rate) as a measure for evaluating Health and Safety performance, and reflects a change instituted by the Canadian Electrical Association. Total Recordable Injury Frequency is the average number of fatalities, lost time injuries, medical treatment injuries and restricted work injuries per 200,000 hours worked. Data prior to 2018 are All Injury Rate figures (#/200k hours worked).
2. Indicates a 2-Year Rolling Average for Pickering and a 3-Year Rolling Average for Darlington.
3. 2014-2016 figures have been restated from 10k ISAR and contractor hours to 200k ISAR and contractor hours.
4. 2018 actuals data is preliminary and subject to final confirmation
5. Indicates performance in the most recent quarter

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Table 5
Darlington Performance Report

Metric	Actuals 2014	2015	2016	2017	2018 [4]	Metric	Annual Targets 2018	2019
Safety								
1-Year Total Recordable Injury Frequency (#/200k hours worked) [1]	0.31	0.22	0.23	0.40	0.32	Total Recordable Injury Frequency (#/200k hours worked)	0.22	0.20
Rolling Average[2] Industrial Safety Accident Rate (#/200k hours worked)	0.06	0.08	0.06	0.04	0.04	Industrial Safety Accident Rate (#/200k hours worked)	0.10	0.10
Rolling Average[2] Collective Radiation Exposure (Person-rem per unit)	69.06	79.55	68.77	91.80	85.43	Collective Radiation Exposure (Person-rem per unit)	79.80	80.00
1-Year Airborne Tritium Emissions (Curies) per Unit	1,831	1,313	846	875	982	Airborne Tritium Emissions (Curies) per Unit	800	900
Fuel Reliability Index (microcuries per gram) [5]	0.000158	0.000122	0.000343	0.000179	0.000187	Fuel Reliability Index (microcuries per gram)	0.000500	0.000500
2-Year Reactor Trip Rate (# per 7,000 hours)	0.00	0.13	0.24	0.29	0.15	Reactor Trip Rate (# per 7,000 hours)	0.50	0.50
3-Year Auxiliary Feedwater System Unavailability (#)	0.0000	0.0000	0.0000	0.0000	0.0000	Auxiliary Feedwater System Unavailability (#)	0.0200	0.0200
3-Year Emergency AC Power Unavailability (#)	0.0000	0.0000	0.0000	0.0000	0.0026	Emergency AC Power Unavailability (#)	0.0250	0.0250
3-Year High Pressure Safety Injection Unavailability (#)	0.0000	0.0000	0.0000	0.0000	0.0000	High Pressure Safety Injection Unavailability (#)	0.0200	0.0200
Reliability								
Rolling Average[2] WANO NPI (Index)	92.1	83.7	87.8	82.0	90.7	WANO NPI (Index)	91.3	92.1
Rolling Average[2] Forced Loss Rate (%)	2.85	3.65	3.10	3.47	1.94	Forced Loss Rate (%)	1.00	1.00
Rolling Average[2] Unit Capability Factor (%)	89.41	83.96	86.16	82.17	86.89	Unit Capability Factor (%)	86.00	89.00
Rolling Average[2] Chemistry Performance Indicator (Index)	1.00	1.00	1.00	1.01	1.03	Chemistry Performance Indicator (Index)	1.01	1.10
1-Year On-line Deficient Maintenance Backlog (work orders per unit)	176	174	170	119	124	On-line Deficient Maintenance Backlog (work orders per unit)	134	115
1-Year On-line Deficient Critical Maintenance Backlog (work orders per unit)				15	9	On-line Deficient Critical Maintenance Backlog (work orders per unit)	29	6
1-Year On-line Corrective Maintenance Backlog (work orders per unit)	20	24	14	13	6	On-line Corrective Maintenance Backlog (work orders per unit)	7	4
1-Year On-line Corrective Critical Maintenance Backlog (work orders per unit)				1	0	On-line Corrective Critical Maintenance Backlog (work orders per unit)	2	0
Value for Money								
3-Year Total Generating Cost per MWh ($ per Net MWh)	37.29	44.38	45.63	54.40	59.24	Total Generating Cost per MWh ($ per Net MWh)	70.26	65.24
Normalized 3-Year Total Generating Cost per MWh ($ per Net MWh)				50.54	51.37	Normalized Total Generating Cost per MWh ($ per Net MWh)	51.66	53.61
3-Year Total Generating Cost per Unit (M $ per Unit)	252.77	282.37	292.49	337.56	428.81	Total Generating Cost per Unit (M $ per Unit)	451.54	433.95
Normalized 3-Year Total Generating Cost per Unit (M $ per Unit)				313.62	371.84	Normalized Total Generating Cost per Unit (M $ per Unit)	347.34	356.60
3-Year Non-Fuel Operating Cost per MWh ($ per Net MWh)	28.10	33.19	33.00	39.62	42.14	Non-Fuel Operating Cost per MWh ($ per Net MWh)	49.01	45.30
Normalized 3-Year Non-Fuel Operating Cost per MWh ($ per Net MWh)				36.89	36.37	Normalized Non-Fuel Operating Cost per MWh ($ per Net MWh)	35.13	36.77
3-Year Fuel Cost per MWh ($ per Net MWh)	5.13	5.18	5.31	5.19	4.92	Fuel Cost per MWh ($ per Net MWh)	5.92	4.51
3-Year Capital Cost per MW DER (k$ per MW)	31.30	43.52	53.47	62.11	75.32	Capital Cost per MW DER (k$ per MW)	91.11	87.65
Human Performance								
18-Month Human Performance Error Rate (# per 200k ISAR and contractor hours) [3]	0.12400	0.06200	0.06940	0.05200	0.03500	18-Month Human Performance Error Rate (# per 200k ISAR and contractor hours)	0.06000	0.04000

Notes
1. In 2018, Ontario Power Generation has selected Total Recordable Injury Frequency (replacing All Injury Rate) as a measure for evaluating Health and Safety performance, and reflects a change instituted by the Canadian Electrical Association. Total Recordable Injury Frequency is the average number of fatalities, lost time injuries, medical treatment injuries and restricted work injuries per 200,000 hours worked. Data prior to 2018 are All Injury Rate figures (#/200k hours worked).
2. Indicates a 2-Year Rolling Average for Pickering and a 3-Year Rolling Average for Darlington.
3. 2014-2016 figures have been restated from 10k ISAR and contractor hours to 200k ISAR and contractor hours.
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5. Indicates performance in the most recent quarter

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Table 6
OPG Nuclear Performance Report

	Actuals						Annual Targets	
Metric	**2014**	**2015**	**2016**	**2017**	**2018 [2]**	**Metric**	**2018**	**2019**
Reliability								
Rolling Average[1] WANO NPI (Index)	75.5	74.6	80.9	78.5	80.1	WANO NPI (Index)	80.8	80.2
Rolling Average[1] Unit Capability Factor (%)	80.50	80.00	80.70	78.96	82.00	Unit Capability Factor (%)	79.92	84.47
Value for Money								
3-Year Total Generating Cost per MWh ($ per Net MWh)	50.38	54.58	55.57	60.53	63.43	Total Generating Cost per MWh ($ per Net MWh)	71.74	65.06
Normalized 3-Year Total Generating Cost per MWh ($ per Net MWh)				58.52	59.41	Normalized Total Generating Cost per MWh ($ per Net MWh)	60.82	59.46
3-Year Total Generating Cost per Unit (M $ per Unit)	238.14	249.77	255.97	273.13	299.20	Total Generating Cost per Unit (M $ per Unit)	312.54	299.94
Normalized 3-Year Total Generating Cost per Unit (M $ per Unit)				264.05	280.21	Normalized Total Generating Cost per Unit (M $ per Unit)	284.78	274.15

Notes
1. Indicates a 2-Year Rolling Average for Pickering and a 3-Year Rolling Average for Darlington.
2. 2018 actuals data is preliminary and subject to final confirmation

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Table 7

2018 Regulated Hydroelectric Performance Reporting

		Historical Actuals				2018		2019
Category	**Measure**	**2014**	**2015**	**2016**	**2017**	**Act**	**Tar**	**Tar**
Safety / Environment	**All Injury Rate (per 200k hours)[1]/ Total Recordable Injury Frequency**	1.17	0.84	1.27	2.05	1.68	1.23	1.21
	Environmental Performance Index (%)	135%	115%	150%	145%	135%	100%	100%
Reliability	**Availability Factor (%)**	91.4%	91.2%	89.0%	88.0%	86.0%	89.2%	88.0%
	Equivalent Forced Outage Rates (%)	1.1%	1.8%	2.4%	3.3%	4.2%	1.7%	1.8%
Cost Effectiveness	**OM&A Unit Energy Cost ($/MWh)[2]**	7.1	8.3	8.1	8.1	8.7	8.3	8.4
	3-Year Total Generating Cost ($/MWh)[3,4]	21.0	21.5	22.3	22.9	23.4	N/A	N/A

Notes:

1: In 2018, Ontario Power Generation has selected Total Recordable Injury Frequency (replacing All Injury Rate) as a measure for evaluating Health and Safety performance, and reflects a change instituted by the Canadian Electrical Association. Total Recordable Injury Frequency is the average number of fatalities, lost time injuries, medical treatment injuries and restricted work injuries per 200,000 hours worked.

2: Minor corrections to underlying data were made since the 2017 Regulated Hydroelectric Performance Reporting Submission. These revision resulted in minor changes to the 2015 - 2017 OM&A Unit Energy Cost. Previously reported results were 8.2, 8.0, and 7.9 for 2015, 2016, and 2017 repsectively.

3: 2013 is the earliest year that OPG has provided Total Generating Cost for the regulated hydroelectric facilities. Accordingly, the 3-year average begins in 2015 with 2014 showing the 2-year average of the 2013 and 2014 results.

4: Per EB-2016-0152 Decision and Order P. 149-150 no target is filed for TGC.