Board Staff Interrogatory #202

Interrogatory

Reference:
Exhibit F2 / Tab 1 / Schedule 1 / Attachment 3 / pp. 9, 13

Preamble:

OPG provided the following normalization summary for the TGC / MWh metric.

Normalization Summary - TGC/MWh		
3-Year (2016-2018)	**Darlington**	**Pickering**
TGC/MWh - Non-Normalized	59.06	67.76
Total Generating Costs [TGC] (C $K)		
Non-Normalized TGC	3,847,416	4,215,170
Refurbishment Adjustment	(512,734)	-
Reactor Type Adjustment	(852,100)	(852,100)
Unit Age Adjustment	93,935	(55,131)
Normalized TGC	2,576,517	3,307,938
Generation (GWh)		
Non-Normalized Generation	65,147	62,210
Outage Adjustment	3,287	4,901
Normalized Generation	68,434	67,111
TGC/MWh - Fully Normalized	37.65	49.29

Question(s):

a) Please confirm that the above normalization summary is based on 2018 information (three-year rolling average - 2016-2018).

b) Please provide a normalization summary for each year 2017, 2018 and 2019 (using annual information as opposed to a rolling average).

c) Please provide a normalization summary for 2017 and 2019 on a rolling average basis (similar to the 2018 normalization summary reproduced above).

d) Please provide a normalization summary for 2017, 2018 and 2019 on a rolling average basis (similar to the 2018 normalization summary reproduced above)

showing the impact of the normalizations on the indicator for first, second and third quartile performance.

e) Please provide the refurbishment adjustment breakdown as shown in Table 3 of Exhibit F2 / Tab 1 / Schedule 1 / Attachment 3 for 2017 and 2019.

f) Please identify whether ScottMadden has completed a normalization analysis for any of the other nuclear operators that have contracted its services in the past. In the response, please identify whether normalization is standard practice when benchmarking nuclear operators.

Response

a) Confirmed.

b), c) and d)

Chart 1 (Darlington) and Chart 2 (Pickering) below have been expanded to show the 2017, 2018 and 2019 total generating cost per megawatt-hour ("TGC/MWh") normalized summary on a rolling average basis as well as the normalization summary for each of the annual years reflected in the 2017, 2018 and 2019 rolling average summary. The normalization summary for the first, second and third quartiles for 2017 to 2019 on a rolling average basis are also shown in Chart 1 and Chart 2 below.

e) Chart 3 shows the Darlington TGC/MWh refurbishment normalization adjustment breakdown for 2017, 2018 and 2019.

f) The following response has been provided by ScottMadden:

ScottMadden has supported many other nuclear operator clients in adjusting benchmark data to increase comparability. While not a standard practice, normalization is helpful and appropriate in cases where circumstances (e.g., Refurbishment) make comparison difficult. The ScottMadden normalization methodology has been prepared for OPG to normalize for OPG's circumstances.

Chart 1: Expanded TGC/MWh Normalization Summary for 2017, 2018 & 2019 Rolling Average Basis – Darlington

	3-Year Rolling			Annual				
	2015-2017	2016-2018	2017-2019	2015	2016	2017	2018	2019
TGC/MWh - Non-Normalized	54.40	59.06	67.00	52.31	46.11	67.91	67.00	66.12
Total Generating Costs [TGC] (C $K)								
Non-Normalized TGC	3,713,194	3,847,416	3,979,262	1,219,245	1,181,369	1,312,580	1,353,467	1,313,215
Refurbishment Adjustment	(263,342)	(512,734)	(761,492)	-	-	(263,342)	(249,392)	(248,758)
Reactor Type Adjustment	(840,323)	(852,100)	(866,494)	(276,618)	(279,759)	(283,946)	(288,395)	(294,152)
Unit Age Adjustment	104,956	93,935	82,828	38,638	34,974	31,344	27,617	23,866
Normalized TGC	2,714,485	2,576,517	2,434,103	981,265	936,584	796,636	843,297	794,171
Generation (GWh)								
Non-Normalized Generation	68,256	65,147	59,388	23,310	25,619	19,327	20,201	19,860
Outage Adjustment	3,287	3,287	3,287	1,096	1,096	1,096	1,096	1,096
Normalized Generation	71,543	68,434	62,675	24,406	26,715	20,423	21,297	20,956
TGC/MWh - Fully Normalized	37.94	37.65	38.84	40.21	35.06	39.01	39.60	37.90

TGC/MWh Quartiles - Normalized			
1st Quartile	$34.78	$33.14	$30.83
2nd Quartile	$39.52	$37.75	$36.12
3rd Quartile	$49.35	$46.80	$44.84

Chart 2: Expanded TGC/MWh Normalization Summary for 2017, 2018 & 2019 Rolling Average Basis – Pickering

	3-Year Rolling			Annual				
	2015-2017	2016-2018	2017-2019	2015	2016	2017	2018	2019
TGC/MWh - Non-Normalized	67.22	67.76	62.39	63.91	71.75	66.29	65.44	56.17
Total Generating Costs [TGC] (C $K)								
Non-Normalized TGC	4,207,516	4,215,170	4,108,897	1,356,104	1,432,077	1,419,335	1,363,758	1,325,804
Reactor Type Adjustment	(840,323)	(852,100)	(866,494)	(276,618)	(279,759)	(283,946)	(288,395)	(294,152)
Unit Age Adjustment	(42,050)	(55,131)	(68,757)	(9,754)	(13,967)	(18,329)	(22,835)	(27,593)
Normalized TGC	3,325,142	3,307,939	3,173,646	1,069,732	1,138,351	1,117,060	1,052,528	1,004,059
Generation (GWh)								
Non-Normalized Generation	62,589	62,210	65,857	21,220	19,958	21,411	20,841	23,605
Outage Adjustment	4,901	4,901	4,901	1,634	1,634	1,634	1,634	1,634
Normalized Generation	67,490	67,111	70,758	22,854	21,592	23,045	22,475	25,239
TGC/MWh - Fully Normalized	49.27	49.29	44.85	46.81	52.72	48.47	46.83	39.78

TGC/MWh Quartiles - Normalized			
1st Quartile	$34.78	$33.14	$30.83
2nd Quartile	$39.52	$37.75	$36.12
3rd Quartile	$49.35	$46.80	$44.84

Chart 3: Breakdown of 2017-2019 Refurbishment Normalization Adjustments

The 2017 amounts shown in Chart 3 are also shown at Ex. F2-1-1, Attachment 4, pp. 13-14.

Group	OPG Method of Cost Attribution to DNGS	2017	2018	2019
Nuclear Station & Support	OM&A costs assigned to DNGS that are reasonably attributable to the unit(s) in Refurbishment should be removed: Cyclical Outage Costs	(57,894)	(63,768)	(50,633)
Chief Administrative Office		**(18,304)**	**(20,826)**	**(21,544)**
Environment	Scenario 1: Management Assignment or Proportionate Support Allocation	(685)	(629)	(968)
	Scenario 2: Full-Time Equivalents			(881)
	Scenario 3: OM&A & Capital Blend	(629)	(856)	(512)
Legal, Ethics & Compliance (Less Enviro & Reg Affairs)	Scenario 1: Management Assignment or Proportionate Support Allocation	(590)	(478)	(414)
	Scenario 2: Full-Time Equivalents			(108)
	Scenario 3: OM&A & Capital Blend	(1,531)	(2,072)	(2,021)
Real Estate & Services	Scenario 1: Management Assignment or Proportionate Support Allocation	(8,552)	(9,929)	(9,790)
	Scenario 3: OM&A & Capital Blend	(320)	(68)	(90)
Regulatory Affairs	Scenario 1: Management Assignment or Proportionate Support Allocation	(262)	(235)	(462)
	Scenario 3: OM&A & Capital Blend	(51)	(55)	(218)
Supply Chain	Scenario 1: Management Assignment or Proportionate Support Allocation	(5,012)	(5,474)	(5,464)
	Scenario 3: OM&A & Capital Blend	(673)	(850)	(619)
SVP & OPG 2025	Scenario 3: OM&A & Capital Blend		(180)	
Corporate Office		**(4,036)**	**(3,643)**	**(3,897)**
Corporate Affairs	Scenario 1: Management Assignment or Proportionate Support Allocation	(1,837)	(1,568)	(1,669)
	Scenario 3: OM&A & Capital Blend	(1,734)	(1,926)	(2,087)
Executive Office	Scenario 3: OM&A & Capital Blend	(465)	(149)	(141)
Finance		**(9,561)**	**(10,141)**	**(10,125)**
Assurance & Enterprise Risk Mgmt	Scenario 1: Management Assignment or Proportionate Support Allocation	(290)	(326)	(252)
	Scenario 3: OM&A & Capital Blend	(683)	(775)	(797)
Corp Business Development & Strategy	Scenario 1: Management Assignment or Proportionate Support Allocation	(95)	(48)	(14)
	Scenario 3: OM&A & Capital Blend	(866)	(1,081)	(1,095)
Fund Management	Scenario 3: OM&A & Capital Blend	(256)	(283)	(305)
Treasury	Scenario 1: Management Assignment or Proportionate Support Allocation	(2,036)	(2,229)	(2,378)
	Scenario 3: OM&A & Capital Blend	(519)	(537)	(500)
Business Planning & Reporting	Scenario 1: Management Assignment or Proportionate Support Allocation	(81)	(96)	(52)
	Scenario 3: OM&A & Capital Blend	(1,233)	(1,319)	(1,289)
External Reporting & Policy	Scenario 3: OM&A & Capital Blend	(959)	(1,107)	(1,026)
Income Tax	Scenario 1: Management Assignment or Proportionate Support Allocation		(70)	
	Scenario 3: OM&A & Capital Blend	(533)	(383)	(506)
Nuclear & Corporate Finance	Scenario 1: Management Assignment or Proportionate Support Allocation	(1,344)	(1,144)	(592)
	Scenario 3: OM&A & Capital Blend	(510)	(496)	(1,224)
SVP Office & Chief Controller Office	Scenario 1: Management Assignment or Proportionate Support Allocation	(158)	(246)	(94)
Chief Information Office		**(19,373)**	**(19,051)**	**(18,921)**
CIO	Scenario 1: Management Assignment or Proportionate Support Allocation	(13,241)	(14,534)	(16,450)
	Scenario 3: OM&A & Capital Blend	(6,132)	(4,517)	(2,471)
People & Culture		**(13,964)**	**(9,034)**	**(3,443)**
People & Culture *	Scenario 1: Management Assignment or Proportionate Support Allocation	(9,423)	(5,821)	(1,648)
	Scenario 2: Full-Time Equivalents	(4,541)	(3,213)	(1,794)
Nuclear Support		**(63,463)**	**(62,969)**	**(64,270)**
Direct Report	Scenario 4: Number of Operating Units	(746)	(2,821)	(1,972)
Fleet Ops Maintenance	Scenario 4: Number of Operating Units	(6,679)	(5,159)	(5,004)
Inspection & Reactor Innovation	Scenario 4: Number of Operating Units	(4,363)	(3,462)	(4,146)
Nuclear Engineering	Scenario 4: Number of Operating Units	(25,041)	(23,418)	(21,453)
Nuclear Oversight	Scenario 4: Number of Operating Units	(532)	(565)	(582)
Nuclear Reg Affairs & Stakeholder	Scenario 4: Number of Operating Units	(3,772)	(4,424)	(4,842)
Nuclear Training	Scenario 4: Number of Operating Units		(3,597)	(6,578)
Nuclear Waste Management	Scenario 4: Number of Operating Units	(121)	(157)	(182)
Projects & Modifications and Enterprise Projects	Scenario 4: Number of Operating Units	(12,291)	(9,489)	(9,150)
Security & Emergency Services	Scenario 3: OM&A & Capital Blend	(141)	(143)	(27)
	Scenario 4: Number of Operating Units	(9,776)	(9,733)	(10,334)
Nuclear Station		**(76,748)**	**(59,960)**	**(75,926)**
PNGS	Scenario 4: Number of Operating Units	(5)	(15)	(62)
Nuclear Sustaining Capital Cost	Sustaining Capital Cost Common to All Units at DNGS	(76,743)	(59,945)	(75,863)
Grand Total		**(263,342)**	**(249,392)**	**(248,758)**

** Due to reorganizations, People & Culture is now combined into one line item*