

**SEC Interrogatory #1**

**Issue Number: 11.1**

**Issue:** Is OPG's approach to incentive rate-setting for establishing the regulated hydroelectric payment amounts appropriate?

**Interrogatory:**

**Reference:** Exhibit M2

[p.6 and 64] Please provide an estimate of the appropriate increase in the X factor if the CRVA is approved as proposed, and the basis for that estimate.

**Response (Revised):**

The following response was provided by PEG:

It is difficult for PEG to estimate the appropriate increase in the X factor without more information from OPG concerning the scale of plant additions it expects to address with the CRVA. Pending receipt of further information, PEG has recalculated the MFP trend of its featured large sample peer group excluding 25% and 50% of plant additions to show the directional effect of excluding additions. Results are presented in Attachment M2-11.1-SEC-1. It can be seen that, over the featured 1996-2014 sample period, the average annual MFP growth rate with 25% of plant additions excluded would rise by 32 basis points to 0.61% annually. With 50% of plant additions excluded, the average annual growth rate would rise by 66 basis points to 0.95%.

With receipt of better information from OPG's updated response to SEC-095, PEG prepared Table 1 which shows that approximately 35% of the Company's capital spending during the IR term would be addressed by the CRVA. Table 2 shows that, for PEG's featured "larger" sample over the featured 1996-2014 sample period, removing 35% of the capex of sampled utilities while keeping all of the declining cost of older plant would cause the capital quantity index to average a -1.06% annual decline rather than a -0.48% annual decline. The average annual MFP growth rate rises by 45 basis points to 0.74%. Further detail of these calculations is presented in Attachment M2-11.1-SEC-1-Updated.

Table 1

### Estimate of CRVA Plant Addition Share in Total Plant Additions

	<b>Total CRVA Plant Additions*</b>	<b>Total Plant Additions*</b>	<b>% CRVA in total plant additions</b>
2017	88	182	48%
2018	38	178	21%
2019	72	186	39%
2020	81.5	211	39%
2021	56.5	195	29%
Average for 2017-2021			35%

\*As found in OPG's updated response to SEC-095.

Table 2

**Hydroelectric Generation MFP Growth of US Investor-Owned Electric Utilities<sup>1</sup>**  
**(Larger Sample with 35% Capex Reduction for CRVA)**

Year	Outputs		Inputs			Multifactor Productivity	
	Capacity	Volume	Capital	O&M	Multifactor	Capacity	Volume
1996	-1.14%	1.29%	2.96%	6.88%	3.89%	-5.03%	-2.60%
1997	1.04%	-0.76%	-2.08%	-5.09%	-2.58%	3.61%	1.81%
1998	0.14%	6.75%	-1.71%	-4.55%	-2.14%	2.28%	8.89%
1999	-0.60%	-15.88%	-2.08%	8.22%	-0.84%	0.23%	-15.04%
2000	0.13%	-10.53%	-1.96%	-12.08%	-2.21%	2.34%	-8.32%
2001	0.38%	-13.21%	-2.02%	5.90%	-1.71%	2.09%	-11.49%
2002	-0.66%	10.02%	-1.98%	-0.17%	-1.90%	1.24%	11.93%
2003	0.12%	17.89%	-1.89%	4.68%	-0.98%	1.10%	18.86%
2004	-0.18%	-9.60%	-2.02%	5.08%	-0.95%	0.76%	-8.65%
2005	0.44%	5.18%	-1.71%	1.92%	-1.16%	1.61%	6.34%
2006	0.20%	0.75%	-0.42%	-5.77%	-1.16%	1.37%	1.91%
2007	1.52%	-32.12%	-1.76%	11.18%	0.71%	0.81%	-32.83%
2008	-0.11%	3.23%	-1.47%	2.09%	-0.53%	0.42%	3.76%
2009	0.10%	22.18%	-1.28%	4.65%	0.40%	-0.29%	21.78%
2010	-0.01%	-2.04%	-1.36%	3.70%	-0.15%	0.14%	-1.88%
2011	0.09%	2.42%	-0.25%	0.94%	0.26%	-0.17%	2.16%
2012	-0.05%	-21.05%	-0.43%	0.14%	-0.28%	0.23%	-20.77%
2013	1.74%	8.48%	0.26%	0.56%	0.37%	1.37%	8.11%
2014	0.69%	-13.20%	1.16%	0.59%	0.69%	0.00%	-13.89%
<b>Averages:</b>							
<b>1996-2014</b>	<b>0.20%</b>	<b>-2.11%</b>	<b>-1.06%</b>	<b>1.52%</b>	<b>-0.54%</b>	<b>0.74%</b>	<b>-1.57%</b>

<sup>1</sup> Growth rates are calculated logarithmically.

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