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No. 33 / AUGUST 2019

PUBLIC CHOICE ALTERNATIVES

A Promising Giant Lurks in the Shadows

A VALUATION & STRATEGIC APPRAISAL OF
ONTARIO POWER GENERATION

BY IAN MADSEN



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Executive Summary	4	
Introduction:		
History and Current State of Ontario Power Generation and its Operating Environment	6	
Intrinsic Value: Valuation of OPG as a business, in its Current State	8	
Market-based Value: Valuation of OPG Using Stock Market and Financial Metrics	10	
Financial Performance of Ontario Power Generation, and Trends in Same	11	
Strategies and Alternatives for Optimization, Debt Restructuring, and Divestiture or Privatization	14	1.
1. Partial divestment	14	
2. Break-up: geographic, by asset type, or other	14	
3. Hydro One: complications and cautionary lessons	15	
4. Disruptions from evolving competitive and technological sources	16	
5. Readyng OPG for sale	17	
Conclusion	18	
Appendix I: Rationale for Divestiture or Privatization	19	
Appendix II: Financial Models	Available on request	
Endnotes	21	

EXECUTIVE SUMMARY

Ontario Power Generation (OPG) is Ontario's largest electric power generating utility. In 2016, OPG supplied electricity to approximately 50 percent of local and provincial power utilities. OPG's wide provincial geographic scope and vast array of productive generating assets would make a lucrative divestment for Ontario taxpayers—either in its entirety as a whole or through separated parts. With having only one predominant customer, Hydro One, reconfiguring and, possibly, splitting up OPG would be an extremely complex process.

It is not clear that a break-up of OPG would be feasible, nor that, if it was broken up, that the total proceeds would exceed those from divesting OPG as a single unit. It is not apparent that a break-up of OPG, by region or nature of generation technology, would make the then-disparate multiple firms more competitive, efficient, innovative or market- and customer-responsive.

The recent intervention of the Ontario government into Hydro One's corporate management compensation levels, and the subsequent resignation of its previously independent Board of Directors, may have made a partial or full divestment of OPG more appealing. Contrarily, has the political intervention reduced interest of prospective investors in OPG?

Using an **intrinsic value method** and discounting to the present value, the Province of Ontario's interest in OPG's projected future free cash flows, employing OPG's net income as a proxy for free cash flow (which is currently, and perhaps foreseeably negative as the company is today), and taxed at statutory rates, is estimated to be from a minimum of \$5.38B to a maximum of \$37.69B—with a tighter, more plausible range of a median (midpoint of all the relevant values) of \$9.42B to a mean (simple average of all the relevant values) of \$12.13B.

Under the **market-based valuation system**, and using five viable, standard valuation metrics (such as trailing and forward Price/Earnings, Price/Sales, Price/Book Value, Price/Operating Cash Flow), and employing comparisons with six Canadian and forty US publicly listed electric-dominated utilities with minor renewable energy generation capacities, the current value of OPG ranges from \$7.34B to \$26.02B—with a mean of \$17.07B and median of \$20.09B.

Only an intensive, meticulously minute appraisal of all of OPG's assets, including assessing its physical assets and all its accounts (including 'hidden' assets and liabilities), would provide an accurate valuation of the company, albeit one still dependent on subjective reasoning and assumptions. Even then, that valuation would not necessarily indicate what magnitude of proceeds could or would be garnered in a divestment (by way of either a public share offering, a partial or total sale to one or more institutional or private investment fund companies, or a sale to a corporate acquirer).

OPG, as currently situated and operated, produces negative free cash flow and low returns on assets, equity and capital employed. This suggests a period of

restructuring, reorientation and rationalization to improve OPG's margins, before the company should issue any equity to the public (so that higher value can be realized in a subsequent sale).

Utilities usually pay a dividend to their investors. While OPG reports sufficient income to pay a dividend, its current low cash generation may not allow sustainable dividends. However, if OPG could present a credible and viable plan of redirection towards future commercial success and strong resilience to challenges, share flotation could be successful, with a possible dividend later.

As OPG's debt level is relatively high with capital expenditure needs exceeding reported operating cash flow, much, if not all, of the proceeds of the first sale of treasury shares in a partial divestiture might or should be used to shore up OPG's liquidity, and not flow to the Province of Ontario's treasury.

Caveat: this appraisal document is in no way a prospectus, nor are the estimates, projections, observations, and analyses definitive or authoritative. Other analysts may have valid differences and ways of scrutinizing and valuing OPG.

INTRODUCTION

History and Current State of Ontario Power Generation and its Operating Environment

Ontario Power Generation (OPG), a former monopoly, is Ontario's largest electric energy generating utility. OPG's generation is sold to Hydro One, with which it was formerly amalgamated as Ontario Hydro until 1999 (Ontario Hydro - OH - commenced operations in 1906, initially named the Hydro-Electric Power Commission of Ontario).

OH's original largest generation facility was at Niagara Falls. The further expansion of OH was piece-meal, there being no legal requirement forcing other generating operations to sell out to OH. However, and with OH mainly using debt, most other generating capacity in the province was eventually acquired. In the 1960's, nuclear power supplanted coal plants that had been used to increase capacity after hydro-electric sites were exploited. In 1999, Ontario Hydro was split into five parts, two being commercial entities: OPG and what later became Hydro One.¹

OPG's nuclear power plants have proven to be both its greatest strength and weakness. The nuclear plants rely on what is now an orphan legacy technology, the Candu system, which was developed and commercialized by Atomic Energy of Canada, AEC.

The main advantage of the Candu system is that it does not require expensive enriched uranium. Candu plants use deuterium, 'heavy water'—water that has deuterium, a hydrogen isotope. Heavy water is expensive to produce and retrofitting older Candu reactors to other nuclear technologies appears not feasible.

It is not certain that replacing or renovating existing OPG Candu facilities with the latest version of AEC's Candu technology would make financial sense. Nevertheless, and according to OPG's 2017 Annual Report, OPG plans to invest in the latest Candu technology. SNC-Lavalin owns the rights to it.

Currently, over a third of OPG's generating capacity is renewable hydro-electric—the primary reason for overall system power costing 40 percent more than that of comparable generators.² The rest of OPG's capacity is 'thermal' plants, after nuclear and hydro-electric, one of which is biomass and one burning dual-fuel residual fuel oil and natural gas (targeted eventually for decommissioning due to pollution and carbon-dioxide-induced global warming concerns). While currently OPG has no natural gas facilities, other than those contracted for but operated by other companies, natural gas generation could play a bigger role in the future, with abundant nearby gas reserves in the United States and pipeline gas from western Canadian sources.

Manitoba and Quebec, Ontario's neighboring provinces, have 'excess' hydro-electric generation, currently sold to American utilities, so additional supply could be obtained by OPG. Such imports would require more investment than just buying the energy itself; there would be a need for more high voltage direct current 'HVDC' transmission lines to connect to the Ontario grid, and additional HVDC upgrading within the provincial grid.

Divestment of OPG by the Province would prove contentious, as Hydro One has become a 'political football'. Ontario power rates escalated dramatically during provincial Liberal governments due to contractual cover cost-overruns on power commitments Hydro One was compelled to make to buy interruptible power from solar and wind installations.

As customer rates soared—residential and industrial—it became a serious political problem for the previous Ontario government and was a key reason it lost power in last year's election to the Progressive Conservative Party.³ Ontario provincial governments have deferred needed significant rate hikes by borrowing, deferring rate increases far into the future while funding OPG required revenues through more borrowing.

Another political action has generated concern as to the independence of Hydro One, and OPG: Ontario's new government dictating the level of compensation of Hydro One's management, questioning the degree of independence from the demands of government of the utility's Board of Directors.

The Province of Ontario owns about 46 percent of the equity of Hydro One—having sold 54 percent of the shares to investors (the issue price was \$25, recent trading at \$20). The ability and tendency of the Ontario government to intervene in Hydro One's affairs (not just executive pay but bringing about an aborted acquisition) would complicate any discussion of Hydro One's sale of part or all of OPG.

INTRINSIC VALUE: VALUATION OF OPG AS A BUSINESS, IN ITS CURRENT STATE

In arriving at an estimate of OPG's intrinsic value, projecting future cash flow growth and bringing it to a net present value, a relatively conservative approach was taken which might have undervalued the company (Table 1). A 'simple' capitalization perpetuity formula was used, one more appropriate for a mature company such as OPG. OPG's free cash flow nominal (i.e., not adjusted for inflation) growth rate range was held within a restrained 2 to 4 percent range; the required rate of return or cost of capital range was set from 5 to 9 percent.

OPG has recently experienced higher growth rates, so forecasting higher growth in the future could be reasonable, if not probable. OPG's cost of capital, given current low expectations and relatively high current stock market valuations, could well be lower than the range used (and thus bring about a minor boost to OPG's estimated value), although there is also a chance that interest rates and the

rate of return investors demand for an equity (share) investment could increase.

The statutory tax rate used in the calculations could fall in the future; there has been continued global pressure to lower corporate tax rates, as exemplified by the recent drop in US corporation income tax rates. As capital expenditures in recent years has exceeded OPG's operating cash flow, the assumption is that future capital spending would be more restrained, but forecasts suggest it will remain higher than operating cash flow.

The proprietary model used in projecting the line items that determine the various inputs into the intrinsic value employ calculations based on recent and historic trends of those line items, and perform various analytics to then project the line item numbers for next year.

Table 1														
Intrinsic Value, Using Free Cash Flow														
METHOD 1: Present Value of Projected Fully Taxed Free Cash Flow for FY2018 (\$B)														
Present Value of Discounted Free Cash Flow = Estimated Next Year Free Cash Flow (Required Rate of Return [‘r’] = Growth Rate [‘g’])														
Projected Fully Taxed Free Cash Flow Estimate for FY2018 (\$B): \$ 0.880														
Matrix Values (\$B) g==v; r==>	4.00%		5.00%		6.00%		7.00%		8.00%		9.00%		10.00%	
0.00%	−\$	22.00	−\$	17.60	−\$	14.67	−\$	12.57	−\$	11.00	−\$	9.78	−\$	8.80
1.00%	−\$	29.33	−\$	22.00	−\$	17.60	−\$	14.67	−\$	12.57	−\$	11.00	−\$	9.78
2.00%	−\$	44.00	−\$	29.33	−\$	22.00	−\$	17.60	−\$	14.67	−\$	12.57	−\$	11.00
3.00%	−\$	87.99	−\$	44.00	−\$	29.33	−\$	22.00	−\$	17.60	−\$	14.67	−\$	12.57
4.00%		--	−\$	87.99	−\$	44.00	−\$	29.33	−\$	22.00	−\$	17.60	−\$	14.67
5.00%	\$	87.99		--	−\$	87.99	−\$	44.00	−\$	29.33	−\$	22.00	−\$	17.60
6.00%	\$	44.00	\$	87.99	\$	--	−\$	87.99	−\$	44.00	−\$	29.33	−\$	22.00
7.00%	\$	29.33	\$	44.00	\$	87.99	−\$	--	−\$	87.99	−\$	44.00	−\$	29.33
	Minimum				Maximum			Median			Mean (Average)			
Total Market Value (\$B)	−\$ 87.99				−\$ 12.57			−\$ 22.00			−\$ 28.31			

Source: Author's calculations based on reports made available by the company.

Table 1 shows that since free cash flow for the next reported fiscal year is calculated as negative, the first iteration of the discounted cash flow valuation was also negative and hence unusable.

Thus, net income was used as a proxy for OPG's free cash flow. This makes plausible conceptual sense, as, over time, a steady-state mature company will generally have capital expenditures

that roughly cover depreciation expense, which, arithmetically, would suggest a net income equal to free cash flow.

All main constituent line-item factors that determine net income, operating and free cash flow were projected on the basis of historic behavior and statistical analysis.

Using this alternative method, the calculations resulted in estimates of a minimum of \$5.38B to a maximum of \$37.69B, with a tighter, more plausible, range of a median (midpoint of all the relevant values) of \$9.42B to a mean (simple average of all the relevant values) of \$12.13B (see the results, below in Table 2).

Table 2

Intrinsic Value, Using Projected Net Income as a Proxy for Free Cash Flow

METHOD 2: Present Value of Projected Fully Taxed Net Income for FY2018 (\$B)

Projected Fully Taxed Net Income for FY2018 (\$B): \$ 0.377

Matrix Values (\$B) g=v; r=>	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
0.00%	\$ 9.42	\$ 7.54	\$ 6.28	\$ 5.38	\$ 4.71	\$ 4.19	\$ 3.77
1.00%	\$ 12.56	\$ 9.42	\$ 7.54	\$ 6.28	\$ 5.38	\$ 4.71	\$ 4.19
2.00%	\$ 18.85	\$ 12.56	\$ 9.42	\$ 7.54	\$ 6.28	\$ 5.38	\$ 4.71
3.00%	\$ 37.69	\$ 18.85	\$ 12.56	\$ 9.42	\$ 7.54	\$ 6.28	\$ 5.38
4.00%	--	\$ 37.69	\$ 18.85	\$ 12.56	\$ 9.42	\$ 7.54	\$ 6.28
5.00%	-\$ 37.69	--	\$ 37.69	\$ 18.85	\$ 12.56	\$ 9.42	\$ 7.54
6.00%	-\$ 18.85	-\$ 37.69	--	\$ 37.69	\$ 18.85	\$ 12.56	\$ 9.42
7.00%	-\$ 15.50	-\$ 18.85	-\$ 37.69	--	\$ 37.69	\$ 18.85	\$ 12.56
	Minimum		Maximum		Median		Mean (Average)
Total Market Value (\$B)	\$ 5.38		\$ 37.69		\$ 9.42		\$ 12.13

Note: 'g' is Growth Rate in Free Cash Flow or Proxy, 'r' is the Required Rate of Return; Bold font figures are used in the Mean, Median, Minimum and Maximum determinations.

MARKET-BASED VALUE: VALUATION OF OPG USING STOCK MARKET AND FINANCIAL METRICS

With respect to deriving a market-peer comparison valuation, there were a few complications. The Canadian electric utility sector includes a number of companies that currently have depressed net income and cash flow (Table 3). With OPG's US peers, the most similar companies have negative free cash flow, meaning they require further financial inflow (by debt or share issuance). Their recent net income is also depressed.

As noted in the Executive Summary, and using five standard valuation metrics (trailing and forward Price/Earnings, Price/Sales, Price/Book Value, Price/Operating Cash Flow), OPG's current value ranges from \$7.34B to \$26.02B, with a mean of \$17.07B and a median of \$20.09B (details of the models' results, Table 3).

Table 3

Market Valuation Using Financial Metrics from Comparable Companies

Valuation Metrics applied to OPG, i.e., Market Value of Common Equity (Subject company is "as is" fully taxed)

Valuation metrics applied to OPG Figures in \$B.	Trailing P/E (Market Value to Net Income)	Forward P/E (Market Value to Est. Net Income)	Price to Sales	Price to Book	Price to Operating Cash Flow
Average Six Canadian-listed Non-Renewable Utilities	\$ 23.93	\$ 16.12	\$ 9.98	\$ 15.80	\$ 6.70
Average Forty US-listed Renewable-light Utilities	\$ 18.58	\$ 15.27	\$ 11.27	\$ 24.38	\$ 7.97
Average of All the Above	\$ 21.25	\$ 26.02	\$ 10.62	\$ 20.09	\$ 7.34
	Minimum	Maximum	Median	Mean (Average)	
Total Market Value (\$B)	\$ 7.34	\$ 26.02	\$ 20.09	\$ 17.07	

Source: Calculations based on OPG Annual Report financial data, comparison company data from Capital IQ via Yahoo!Finance.

FINANCIAL PERFORMANCE OF OPG, AND TRENDS IN SAME

As displayed in Table 4, next page, OPG's returns on assets, equity, and capital employed improved over the past nine years when the numerator in the ratios is net income, but declined when operating cash flow and, especially, free cash flow are used. Also, the performance has been erratic, gyrating from year to year.

This is not a problem unique to OPG; other utilities present similar issues of low profitability, low returns on investment, and negative free cash flow.

This is likely because capital investment and legal reliability requirements have both increased, possibly because of legacy, i.e., established, utilities being mandated by governments to serve as the backup power provider for, and sometimes the obligatory buyer of, renewable energy—such as solar and wind power, and, sometimes, independently-produced or 'merchant' power.

In general, as Table 4 shows, OPG's returns on capital have been improving over time, whether net income or operating cash flow are used in the numerator, and whether or not assets, shareholders equity or capital employed are used in the denominator. However, these return ratios are still lower than the interest rates of 3 percent or more of OPG's debt.⁴

As shown on Table 5, page 13, the ratios of debt to equity, total debt to EBITDA, and the growth rate of debt divided by the growth in EBITDA have generally all shown slightly positive trends.

However, its liquidity, denoted by 'Quick Ratio,' has declined. The company, aside from having negative book value, is in healthy financial condition, and improving.

Table 4

Capital Efficiency Performance Metric

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1. RETURN ON ASSETS										
Return on Assets Using Fully Taxed Net Income										
Fully Taxed Net Income (\$M)	\$ 88	\$ 623	\$ 649	\$ 338	\$ 367	\$ 135	\$ 804	\$ 402	\$ 436	\$ 860
Average Assets (\$M)	\$ 25,209	\$ 26,582	\$ 28,581	\$ 32,010	\$ 36,002	\$ 37,846	\$ 39,872	\$ 42,952	\$ 44,311	\$ 46,597
RoA, NI	0.35%	2.34%	2.27%	1.06%	1.02%	0.36%	2.02%	0.94%	0.98%	1.85%
Percent Change		571.40%	-3.11%	-53.50%	-3.51%	-64.99%	465.29%	-53.58%	5.13%	87.57%
Proximate-year Weighted Average										84.91%
Return on Assets Using Fully Taxed Operating Cash Flow										
Fully Taxed Operating Cash Flow (\$M)	\$ 870	\$ 299	\$817	\$ 1,179	\$ 876	\$ 1,174	\$ 1,433	\$ 1,465	\$ 1,817	\$ 944
Average Assets (\$M)	\$ 25,209	\$ 26,582	\$ 28,581	\$ 32,010	\$ 36,022	\$ 37,846	\$ 39,872	\$ 42,952	\$ 44,311	\$ 46,597
RoA, OCF	3.45%	1.12%	2.86%	3.68%	2.43%	3.10%	3.59%	3.41%	4.10%	2.03%
Percent Change		-67.41%	154.13%	28.85%	-33.98%	27.56%	15.86%	-5.10%	20.22%	-50.60%
Proximate-year Weighted Average										2.44%
Return on Assets Using Fully Taxed Free Cash Flow										
Fully Taxed Free Cash Flow (\$M)	\$ 218	-\$ 24	-\$ 69	-\$ 890	-\$ 979	\$ 684	\$ 496	-\$ 319	-\$ 295	-\$ 295
Average Assets (\$M)	\$ 25,209	\$ 26,582	\$ 28,581	\$ 32,010	\$ 36,022	\$ 37,846	\$ 39,872	\$ 42,952	\$ 44,311	\$ 46,597
RoA, FCF	0.86%	-0.09%	-0.24%	-2.78%	-2.72%	1.81%	1.24%	-0.74%	-0.67%	-0.63%
Percent Change		-1,044%	-167.39%	-1,051.66%	2.25%	-166.50%	-31.17%	-159.70%	-10.36%	-4.91%
Proximate-year Weighted Average										28.35%
2. RETURN ON EQUITY										
Return on Equity Using Fully Taxed Net Income										
Fully Taxed Net Income (\$M)	\$ 88	\$ 623	\$ 649	\$ 338	\$ 367	\$ 135	\$ 804	\$ 402	\$ 436	\$ 860
Average Equity (\$M)	\$ 6,818	\$ 7,153	\$ 7,779	\$ 7,854	\$ 7,765	\$ 8,119	\$ 8,901	\$ 9,756	\$ 10,277	\$ 11,210
RoE, NI	1.29%	8.71%	8.34%	4.30%	4.73%	1.66%	9.03%	4.12%	4.24%	7.67%
Percent Change		574.80%	-4.21%	-48.41%	9.82%	-64.82%	443.26%	-54.38%	2.96%	80.83%
Proximate-year Weighted Average										81.19%
Return on Equity Using Fully Taxed Operating Cash Flow										
Fully Taxed Operating Cash Flow (\$M)	\$ 870	\$ 299	\$817	\$ 1,179	\$ 876	\$ 1,174	\$ 1,433	\$ 1,465	\$ 1,817	\$ 944
Average Equity (\$M)	\$ 6,818	\$ 7,153	\$ 7,779	\$ 7,854	\$ 7,765	\$ 8,119	\$ 8,901	\$ 9,756	\$ 10,277	\$ 11,210
RoE, OCF	-12.6%	4.18%	10.50%	15.01%	11.28%	14.46%	16.10%	15.02%	17.68%	8.42%
Percent Change		67.24%	151.26%	42.94%	-24.85%	28.17%	11.34%	-6.75%	17.75%	-52.37%
Proximate-year Weighted Average										2.49%
Return on Equity Using Fully Taxed Free Cash Flow										
Fully Taxed Free Cash Flow (\$M)	\$ 218	-\$ 24	-\$ 69	-\$ 890	-\$ 979	\$ 684	\$ 496	-\$ 319	-\$ 295	-\$ 295
Average Equity (\$M)	\$ 6,818	\$ 7,153	\$ 7,779	\$ 7,854	\$ 7,765	\$ 8,119	\$ 8,901	\$ 9,756	\$ 10,277	\$ 11,210
RoE, FCF	3.20%	-0.34	-0.89%	-11.33%	-12.61%	8.42%	5.57%	-3.27%	-2.87%	-2.63%
Percent Change		-110.49%	164.36%	1,177.62%	11.25%	-166.82%	-33.85%	-158.67%	-12.21%	-8.32%
Proximate-year Weighted Average										37.84%
3. RETURN ON CAPITAL EMPLOYED (Cash, Restricted Cash and Short Term Investments were Subtracted from Total Liabilities + Shareholders Equity)										
Return on Capital Employed Using Fully Taxed Net Income										
Fully Taxed Net Income (\$M)	\$ 88	\$ 623	\$ 649	\$ 338	\$ 367	\$ 135	\$ 804	\$ 402	\$ 436	\$ 860
Average Capital Employed (\$M)	\$ 25,264	\$ 27,513	\$ 29,297	\$ 33,813	\$ 37,188	\$ 37,529	\$ 41,043	\$ 43,786	\$ 43,974	\$ 47,406
RoCE, NI	0.35%	2.26%	2.22%	1.00%	0.99%	0.36%	1.96%	0.92%	0.99%	1.81%
Percent Change		550.08%	-2.17%	-54.88%	-1.27%	-63.55%	444.57%	-53.13%	7.99%	82.97%
Proximate-year Weighted Average										81.14%
Return on Capital Employed Using Fully Taxed Operating Cash Flow										
Fully Taxed Operating Cash Flow (\$M)	\$ 870	\$ 299	\$817	\$ 1,179	\$ 876	\$ 1,174	\$ 1,433	\$ 1,465	\$ 1,817	\$ 944
Average Capital Employed (\$M)	\$ 25,264	\$ 27,513	\$ 29,297	\$ 33,813	\$ 37,188	\$ 37,529	\$ 41,043	\$ 43,786	\$ 43,974	\$ 47,406
RoCE, OCF	3.44%	1.09%	2.79%	3.49%	2.36%	3.13%	3.49%	3.35%	4.13%	1.99%
Percent Change		-68.44%	156.61%	25.03%	-32.44%	32.80%	11.61%	-4.17%	23.50%	-51.81%
Proximate-year Weighted Average										2.98%
Return on Capital Employed Using Fully Taxed Free Cash Flow										
Fully Taxed Free Cash Flow (\$M)	\$ 218	-\$ 454	-\$ 128	-\$ 41	-\$ 527	-\$ 394	-\$ 112	-\$ 88	-\$ 102	-\$ 1,534
Average Capital Employed (\$M)	\$ 25,264	\$ 27,513	\$ 29,297	\$ 33,813	\$ 37,188	\$ 37,529	\$ 41,043	\$ 43,786	\$ 43,974	\$ 47,406
RoCE, FCF	0.86%	-1.65%	-0.44%	0.12%	-1.42%	-1.05%	-0.27%	-0.20%	-0.23%	-3.24%
Percent Change		-291.23%	-73.52%	-127.75%	-1,268.71%	-25.92%	-74.01%	-26.35%	15.41%	1,295.04%
Proximate-year Weighted Average										131.39%

Source: Company Financial Statements. Taxes were calculated using current federal and provincial rates applied retroactively for comparability.

Table 5

Solvency, Interest Coverage, Capital Expenditure Coverage

Financial Strength and Solvency	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Debt/Equity Percent Change	275%	269% -2.06%	266% -1.08%	352% 3.22%	376% 6.84%	357% -4.97%	340% -4.78%	341% 0.16%	322% -5.36%	310% -3.84%
Proximate-year Weighted Average										-0.26%
Debt/EBITDA Percent Change	1,590%	1,174% -26.19%	1,469% 25.18%	2,314% 57.48%	2,444% 5.64%	2,455% 0.45%	2,089% -14.99%	1,912% -8.46%	1,695% -11.35%	1,980% -16.89%
Proximate-year Weighted Average										3.42%
Debt/Operating Cash Flow Percent Change	2,155%	6,725% 212.03%	2,631% -60.87%	2,275% -13.55%	3,390% 49.04%	2,535% -25.23%	2,246% -11.39%	2,335% 3.95%	1,864% -20.18%	3,910% 109.80%
Proximate-year Weighted Average										23.22%
EBITDA/Interest Expense Percent Change	715%	926% 29.59%	831% -10.23%	753% -9.46%	1,033% 37.98%	1,409% 35.71%	1,926% 36.68%	984% -48.40%	1,665% 67.52%	1,962% 17.84%
Proximate-year Weighted Average										22.90%
Free Cash Flow/Net Income Percent Change	248%	-73% -129.42%	-20% -72.94%	12% -161.50%	-144% -1,283.80%	-292% 103.24%	-20% -93.24%	-21% 7.02%	-23% 6.70%	-174% 673.30%
Proximate-year Weighted Average										5.57%
Operating Cash Flow/Net Income Percent Change	989%	48% -95.15%	126% 162.30%	349% 177.09%	299% -31.57%	870% 264.33%	252% -70.99%	351% 39.25%	401% 14.17%	107% -73.29%
Proximate-year Weighted Average										32.27%
EBIT/Net Interest Expense Percent Change	264%	515% 94.95%	435% -15.62%	302% -30.53%	471% 55.97%	290% -38.52%	984% 239.77%	383% -61.09%	618% 61.32%	1,247% 102.00%
Proximate-year Weighted Average										62.13%
EBITDA/Interest Expense+Capex Percent Change	141%	191% 35.10%	165% -13.34%	104% -35.89%	83% -20.77%	76% -8.29%	92% 20.73%	109% 18.85%	96% -11.97%	69% -27.54%
Proximate-year Weighted Average										-8.05%
Operating Cash Flow/Capex Percent Change	133%	40% -70.24%	86% 117.83%	104% 19.83%	62% -39.73%	75% 19.92%	93% 23.88%	94% 1.71%	95% 0.37%	38% -59.77%
Proximate-year Weighted Average										-5.50%

Source: Calculations based on company financial statements.

STRATEGIES AND ALTERNATIVES FOR COMMERCIALIZATION, DIVESTITURE OR PRIVATIZATION

1. Partial divestment

Quite often when a state-owned enterprise is divested or 'privatized' it is not done entirely at once. This, because it may not be possible to sell the whole company into the stock market and get the maximum price for the seller, especially if the firm has assets in the billions of dollars, or either if there are unusual aspects to the nature of the company, or to the detailed circumstances in which it operates. In such cases, an initial small minority allotment of shares are sold to help establish at least a crude market valuation of the company's shares as it becomes openly traded.

However, having a majority stake retained by a government introduces doubts regarding its independence and the commercial status of a partially divested firm. Investors may fear interference by politicians in the company's strategy and operations. With the fear now present, a discount from the desired price of the firm's shares could

be reasonable. When there is actual interference, as in the case of Hydro One's Board of Directors confrontations with the Ontario government in 2018, the discount would likely widen and persist. This would drive the rest of the firm's shares lower than if there had been no intervention.

On the other hand, if it is made explicitly clear by the government that it will not interfere in the utility's future operations, then it is possible that OPG's valuation would rise prior to a sale. If so, sale proceeds could be closer to the maximum attainable. However, for this to occur, investors would have to be confident that OPG's operating independence would be respected. Only full divestment would guarantee this.

Again, the Hydro One case serves a cautionary example.

2. Break-up: geographic, by asset type, or other

As a way to increase competition in Ontario's power suppliers, OPG could be split into two or more companies. Ontario is a huge and diverse (geographically and economically) province, and breaking up OPG could be a way for the price of power to be more market-determined, rather than rate-base regulated.

A breakup of OPG could be on the basis of the source of energy used. There could be a company or companies created for the nuclear power division, the hydro-electric division, the natural gas-fired plants, and the alternative energy division. Investors may prefer 'pure plays' in each of these divisions.

Another tack could be a breakup based on geographic division. The Greater Toronto Area could be one such division, Eastern Ontario another, and Southwestern Ontario and Northern Ontario others. This could make the resultant mini-OPGs more responsive to local needs and opportunities but hurt their bargaining position with large buyers such as Hydro One.

Another course of action would be to divide the company into one stolid, basic utility, and one more, that to be an adventurous, growth vehicle of some kind based on biomass, merchant power, or some other strategy.

3. Hydro One: complications and cautionary lessons

If Ontario's former Liberal government's intention was to produce a more competitive, consumer-driven electrical energy market by divesting Hydro One, it has not turned out that way. Energy prices escalated, as Hydro One was required by provincial direction (law) to buy expensive interruptible, intermittent power generated from renewable energy sources—such as solar installations, wind turbines, small run-of-river and other hydro-electric projects, and biofuels (garbage, food waste, and other material).

While the cash operating costs of such renewable energy sources may be low, their capital costs are not. These capital costs are amortized (recognized and charged to profits over the lifetime of those capital assets), and included in the pricing of this intermittent, interruptible power.

Furthermore, to encourage more development of these renewable sources of energy, Hydro One, pursuant to the former Liberal provincial government policy, paid higher-than-market prices for energy from those sources. While 'green energy' produced only 6.3 percent of generated Ontario electricity in 2016, it represented 16.3 percent of the cost of that power.

According to Ontario's independent Auditor General, Ontario was still paying twice the market price for wind generation in 2014, and three and a half times the price for solar.⁵

Hydro One, like all electric utilities, is mandated by government fiat to provide reliable power to all customers at all times. And, it is also rate-base regulated, permitted to pass on all costs to those same customers. To provide power during periods when the renewable energy available was not enough to meet demand, Hydro One had to buy power from other sources at whatever prices were prevailing at the time. If these prices were higher than normal, they were passed through to customers.

Ontario consumers—households, businesses, institutions—bore huge increases (in some cases, over 200%) in power bills. For people in rural and northern communities, the cost of power needed to heat their homes became unaffordable.⁶ Energy costs are a key factor in attracting and retaining businesses and, if too high, electric power prices also hurt employment, economic growth, and the ability to pay off lower income consumers.

For all the reasons cited above, and for OPG or its successor firm or firms to be successfully divested and be a vibrant commercially viable and competitive player in the wider marketplace, they must have little meddling by government officials (elected or unelected).

If the provincial government chooses to retain a large block of equity of a new power company, it would make it too tempting for Queen's Park (Ontario's government) to intervene, as it has with Hydro One. There are already contentious decisions that must be made about either expanding, or decommissioning, nuclear generating facilities, and whether or not to build or buy more natural gas-consuming power plants (the most viable commercial generating facilities currently).

And, 'green' power advocates and activists concerned about climate change will oppose new or revamped facilities or expansions of older carbon emission ones.

4. Disruptions from evolving competitive and technological forces

The greatest current disruptions affecting the electrical power generating industry are a mix of commercial, regulatory, and technological developments. The cost of solar, wind, and other renewable energy has been steadily and substantially declining, and is projected to continue in this trajectory.⁷ New forms of energy storage and falling prices of batteries are making renewable energy sources more practical and commercially viable, as well as enable some other new developments outlined later on in this study.

Efficiency improvements in horizontal drilling and hydraulic fracturing, particularly ‘fracking’, have made American shale oil and gas production (and some Canadian output) soar. An abundance of gas, projected to remain in surplus for decades, provides a key competitor to many other forms of energy—even if gas, ‘LNG’, exports from North America increase.⁸

While low extraction cost is a major attractive feature of natural gas, the flexibility of gas-fired generation is another key factor in its increasing acceptance, bringing about a massive increase in the total generation capacity of North America natural gas in the past several years. These developments are also very helpful in dealing with the intermittent and undependable nature of renewable power, as gas generation can be ratcheted up or down without much disruption to the utility.

New and improved batteries will also make it easy for OPG and other utilities to handle demand fluctuation, as well as supply fluctuation, the latter from renewable sources. In the next few years, there could be even faster growth in capital expenditure on storage than generating capacity.⁹

However, the revolution in batteries will also enable customers, even relatively small businesses, hotels, hospitals, and apartment complexes to smooth out their electricity purchases, and ‘buy’ when costs are lower. It can also enable them to buy and deploy renewable sources such as rooftop solar panels, and potentially go ‘off-grid’. This could be a future challenge for OPG.

Other challenges are increasingly-affordable fuel cell-type small electric generating facilities using natural gas (there are several competing technologies commercially available), or larger, more conventional co-generation ones that also produce heat for industrial and other purposes. As natural gas is available in most of OPG’s geographic territory, this could become a rival to it, unless OPG gets involved in this line of business itself. Another threat, or opportunity, is merchant power (Hydro One already purchases power from sources other than OPG, several of them independent producers).

Not least of the worries that could beset OPG, and may even be a concern right now, is that Hydro One has other options; it may not have to buy OPG’s output forever. Indeed, it already does ‘buy outside’.

Merchant providers have flexibility as to their magnitude of output, in where they place their facilities, and in the arrangements they make to sell power. Some merchant providers do not even have all of some of their own ‘production’ (such as Just Energy and Spark Power Group).

In addition, Hydro Quebec and Manitoba Hydro, which have surplus electric generation, are building even more capacity—which could be sold into the Ontario market. While a potential option for Ontario consumers, businesses, and institutions would be import power, it could be a risk to OPG’s future profitability. That is, unless OPG becomes more flexible and versatile in the face of variable demand. With the right decisions, OPG could rise to the challenge, and become a merchant power producer itself (doing so would require yet more capital).

5. Ready for sale

Utilities usually pay an annual dividend to their shareholders. Unfortunately, while OPG reports sufficient income statement accounting-based net income to pay a dividend, OPG's currently low cash generation makes dividend sustainability questionable.

Investors expecting substantial and growing dividends from their investments may not find an investable OPG attractive. Currently, OPG reports negative free cash flow and low returns on assets, equity and capital employed. Accordingly, there would have to be a period of restructuring, reorientation and rationalization. This is to improve margins before OPG could issue shares to the public market, so that higher value could be realized in any such sale.

It is not crucial that OPG has positive free cash flow, though improving operating cash flow (cash income before capital expenditures) would be encouraging to prospective investors. If OPG has a credible plan to improve its fleet of assets and to address most, if not all, of the challenges (noted above in its competitive strategy), it improves its potential realizable value.

As well, OPG should demonstrate that it would be resilient if electric demand growth slowed, became more variable, or if its customers became 'fickle'. Then, it could be sold at an attractive valuation for the seller, even if OPG's growth outlook is modest and the array of threats is formidable. However, low metrics for returns on capital for OPG need to be improved, or there needs to be a logical confidence-inspiring plan to improve them.

Finally, OPG's current heavy debt load needs to be reduced. If OPG plans to sell treasury shares, diluting the Ontario government's ownership without directly selling the government's shares, perhaps a major portion of the money raised should be used to retire some of that debt, restructure the company, and enhance and augment its array of assets.

While doing so would reduce the proceeds that might have gone to the Ontario government in the case of privatization, it would greatly improve the chances that OPG would become a viable, strong competitor in the power business. Allowing for the remaining shares to be sold at a higher price later on.

These steps should not be rushed. Having a robust, efficient, competitive and dynamic utility sector is much more important for Ontario's economy and consumers, than having a temporary and illusory windfall for Queen's Park, one that might leave a 'limping' divested company to struggle to evolve and improve.

CONCLUSION

Private sector companies tend to perform better than those within the government orbit. Crown ownership exposes taxpayers, citizens, and even customers and suppliers to the risks of negative business and economic and technological trends that are unnecessary. In the past, these sorts of risks did not seem to apply to such a staid, dull, slow-change industry such as electric utilities. That is not true anymore.

Merchant power producers are stirring up change, and regional governments in North America, including the Province of Ontario, are encouraging them to compete with the established utilities such as OPG. In addition, large, and now even some smaller consumers of power are entertaining the idea of producing some or all of their own power. New advances in battery technology and natural gas generation are making that feasible.

OPG's nuclear facilities are a mixed bag, but both it and the Ontario government has decided to stay with them rather than abandoning them. While OPG's hydro-electric facilities are a low-cost set of crown jewels, they are hard to expand. Even harder will be to make OPG, whether or not it is divested in whole or in part, a flexible, versatile, dynamic, and fast-evolving competitive, customer-responsive player in the new energy marketplace.

This would require additional capital investment of the right kind, along with the right strategy if OAG is to become a successful and valuable company for its new owners. If not to be sold off, avoiding a burden for the Ontario government will be challenging.

As OPG seeks to rationalize and reorient itself to a new challenging future, it will need a transition phase if it is to take it to the point where its maximum divestment proceeds can be realized. Achieving this goal could take several years. OPG will have to learn how to cannibalize some of its own business before rivals—and former loyal customers—do it to them.

OPG may also need some of the divestment proceeds to fund its additional capital expenditures, and to reduce its debt burden. So, the Ontario government might not receive as much money as it would hope in an initial sale of OPG treasury shares—OPG needs the capital itself. However, if that means OPG is to become much more dynamic and conspicuously capable of evolving and growing in the future, then the remaining sale proceeds would bring higher prices than if the company is not financially-assisted in its reinvention. Then, it might even be able to afford a modest dividend.

A successful flotation requires explicit and credible declarations from the current owner that it will not meddle in any aspect of OPG's operations, strategy, or governance, no matter how tempting that may be for populist politicians. OPG may need a more interesting name, too; one that is not so generic-sounding. That could be part of its re-imagining. The state of Pennsylvania successfully deregulated its electricity markets many years ago, and has a fully competitive, vibrant power sector. Such changes to Ontario's market may make all utilities more valuable.

OPG's revamping and an eventual sale could assist reducing the debt pressure on Ontario. Such an outlook could also reduce the Province's inherent risks, by leaving it to the private sector to operate in a newly volatile, ever-changing and technologically driven power industry.

APPENDIX 1:

RATIONALE FOR DIVESTITURE OR PRIVATIZATION

While it is up to the people through their elected representatives to decide if a Crown corporation or other government agency or entity should be sold or otherwise privatized and the proceeds used for the benefit of all citizens and taxpayers, there are some established reasons to embark on such a path, some or all of which are cited for divestiture of such enterprises but may not be applicable in any single, specific case.

1. The government has no mandate to own or run a commercial enterprise. The provision of citizens' safety, security and justice is the government's primary role, and its involvement in the economy should generally not extend beyond this.
2. Regulation can usually accomplish any public policy reason for direct involvement in an industry. If regulation is not easily feasible, then a direct contract or subsidy to any affected individuals, entity or entities may be more efficient or effective and less economically disruptive or costly.
3. If a government-controlled or sponsored enterprise has a monopoly position, near-monopoly, or effective monopoly in a line or lines of business or businesses, then opportunities are lost in one or more commercial or potentially commercial sectors for entrepreneurs and investors to try to create and grow businesses to enrich and sustain themselves, employees, suppliers, and others.
4. A monopoly, near-monopoly, or effective monopoly market position by a government-owned or sponsored entity could result in far higher prices for customers, the general public, or a section of the public, than would be the case in a fully competitive marketplace for the industry involved.
5. A government-owned or -sponsored enterprise may compete directly against private sector firms, which are owned by or employ citizens, or against individual citizens, all of whom the government is supposed to serve, not disadvantage.
6. The government-owned or -sponsored enterprise may compete unfairly against its private sector rivals in that it had or has access to lower-cost government-sourced and -guaranteed capital (debt). It may have a much larger debt component in its capital versus that which would be tolerated in the private sector. Thus, it may not have to meet high standards for profit and cost control, allowing it to offer lower than true free market-based competitive pricing.
7. Government-owned firms may not need to pay provincial or federal income taxes. This can allow such firms to supply goods or services more cheaply than the private sector companies they are competing with.
8. Government-owned or -sponsored enterprises may not have any kind of profit orientation or target, may be used as public policy vehicles and may be given preference in their activities or even in their transgressions, such as labour or environmental abuses.
9. Government-owned or -sponsored enterprises, by virtue of being public sector vehicles overseen by bureaucrats and politicians, may be places where favoured individuals find employment, particularly at management levels.
10. Since profit is a secondary goal of a government-owned or -sponsored enterprise, it is difficult to evaluate the effectiveness, efficiency or productivity of the enterprise or its employees. Consequently, these employees and assets may not be very productive or effective.

11. Government-owned or -sponsored enterprises are often creations of certain time-fixed circumstances and outlive whatever use or public policy role their creators may have conceived. Often, advances in technology; the modernization of transport, telecommunication or information technology; the evolution of the economy and available products and services and the increasing standard of living make these enterprises potentially obsolete. In the private sector, firms and individuals must adapt and evolve, or decline.
12. Government-owned or -sponsored enterprises perpetuate their possibly obsolete existences by virtue of the constituencies that build up around them: employees, managers, directors and bureaucrats, customers, suppliers and associated advocates or consultants. They can lobby to keep the enterprise going, despite dysfunction or losses. They are far more motivated to do so than are the taxpayers, whose average cost is much less per person and may be indirect, hidden or difficult to calculate.
13. Because they are not profit-oriented, government-owned or -sponsored enterprises are usually less efficient, and thus they lower the overall efficiency of the entire economy. This can make a whole nation less competitive than its global rivals are, whether nations or individual companies. The effects are worse the greater the government involvement in the economy. When taken to its most extreme, as happened in 20th-century communist nations, the countries were unable to compete against capitalist companies, despite their immense direct and indirect subsidies, government support and the lack of profit requirement.
14. Funds tied up in the capital of government-owned or -sponsored enterprises could be used to reduce government debt or lower taxes on individuals or corporations, which they could then spend or invest as they freely choose, and thus they could inject money back into the economy in more-lucrative and -constructive ways.
15. Governments, generally, have a poor record of picking winners, or creating or owning enterprises that have market-competitive profitability, or attractive returns on assets, equity, or even returns that exceed governments' own cost of debt service. If, rarely, they actually do, it generally turns out that they have been provided unusually good market, operational, regulatory, or other conditions not available to other, investor-owned firms.
16. The greater the number and size of government owned or government sponsored enterprises in an economy, the greater the size and power of the government, which is usually the largest single entity in society, increasing the dangers of abuse of power, including injuring individual citizens, companies, or groups. Effective capacity of opposition or recourse against this power diminishes as the portion of the economy the government occupies increases.

ENDNOTES

1. See https://en.wikipedia.org/wiki/Ontario_Hydro.
2. See <https://www.opg.com/news-and-media/Reports/2017AnnualReport.pdf>, p.2.
3. See <https://www.cbc.ca/news/canada/toronto/ontario-hydro-bills-1.3860314>; <https://globalnews.ca/news/4226895/ontario-hydro-election-rising-prices/>.
4. See <https://www.opg.com/news-and-media/Reports/2017AnnualReport.pdf>, p.53.
5. See <https://www2.deloitte.com/insights/us/en/industry/power-and-utilities/global-renewable-energy-trends.html>.
6. *Ibid.*
7. See <http://www.reeem.org/wp-content/uploads/2018/04/Pablo-Ralon-IRENA.pdf>; <https://www.mckinsey.com/business-functions/sustainability/our-insights/battery-storage-the-next-disruptive-technology-in-the-power-sector>.
8. See <https://www.mckinsey.com/solutions/energy-insights/north-american-gas-outlook-to-2030>.
9. See <https://www.mckinsey.com/business-functions/sustainability/our-insights/battery-storage-the-next-disruptive-technology-in-the-power-sector>.

