



Pacific Economics Group, LLC
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***SENSITIVITY ANALYSIS ON EFFICIENCY
RANKING AND COHORTS FOR THE 2009 RATE
YEAR***

In July 2008, Pacific Economics Group (PEG) updated its benchmarking evaluations of the operations, maintenance and administrative (OM&A) costs of Ontario's electricity distributors to include 2007 data. We computed updated econometric benchmarks and unit cost benchmarks. These benchmarking evaluations were used to divide the Ontario industry into three efficiency "cohorts" for the purpose of assigning stretch factors to distributors for the 2009 rate year using a methodology described in the July 14, 2008 Report of the Board on 3rd Generation Incentive Regulation for Ontario's Electricity Distributors. The Board issued the results of our work on July 22, 2008.

Subsequent to the release of the September 17, 2008 Supplemental Report of the Board, Board staff asked PEG to undertake a sensitivity analysis of our July 2008 results to address two potential issues. The first was the sensitivity of benchmarking results where a firm may be incorrectly identified as being on the Canadian Shield; specifically, for the purposes of this test, Renfrew Hydro. The second was the treatment of charges billed by Hydro One to distributors "embedded" within its network for the use of low voltage (LV) facilities. In both cases, our benchmarking models were identical to those used in our original March 20, 2008 report and our July 2008 update. Any changes in results therefore reflect the impact of changes in distributor data only and not any changes in benchmarking techniques. Interested stakeholders can review the March 2008 PEG report for a description of these benchmarking methods.

The Canadian Shield

With respect to the Canadian Shield sensitivity, Staff selected Renfrew Hydro since there was a possibility that it could have been misclassified based on the physiography reference maps used. Our review of Ontario geography and Renfrew's service territory indicated that there was some uncertainty about whether Renfrew should or should not have been categorized as serving territory on the Canadian Shield. We therefore investigated the sensitivity of our benchmarking results to this uncertainty by estimating an econometric model in which Renfrew was classified as being "off" rather than "on" the Canadian Shield (*i.e.* the value of the Canadian Shield dummy variable for Renfrew was changed from a 1 to a zero). It should be noted that this sensitivity test affected the econometric benchmarking results only because the unit cost benchmarking results do not depend on the Canadian Shield variable.

It should also be noted that, even though this sensitivity test did not lead to changes in the econometric model itself, using different data for even a single company can lead to changes in the coefficients that are estimated for the independent variables in an econometric model. Carrying out this test did affect the coefficients. After making the change in Renfrew's data for the Canadian Shield variable, the coefficients in PEG's econometric model were very similar, although not identical, to what were obtained earlier and presented in our March 2008 report.

The results of the Renfrew Canadian Shield variable sensitivity test are summarized in Table 1. The groups of "statistically superior" and "statistically inferior" cost performers are demarcated by the bold lines in the table. It can be seen that there are 15 statistically superior distributors (*i.e.* those distributors above the first bold line), 12 statistically inferior distributors (*i.e.* those distributors below the second bold line), and the remaining 56 distributors are statistically average cost performers. In our July 2008 update, there were 17 statistically superior cost performers, 13 statistically inferior cost performers, and 53 statistically average cost distributors. Thus this sensitivity test moved two distributors (Kingston Electricity Distribution and Horizon Utilities) from statistically superior to average cost performance, and one distributor (Fort Frances Power) from statistically inferior to average cost performance. This change in the

econometric benchmarks would cause Kingston and Horizon to move from the top to the middle efficiency cohort, and Fort Frances from the bottom to the middle efficiency cohort.¹

In all three cases, the companies that moved were just on the edge of being classified in one cohort vis-à-vis another in our July 2008 study. The new Renfrew data used to re-estimate the econometric model led to small changes in estimated coefficients, and standard errors, which were nevertheless material enough to move these three distributors from one identified cohort into another. The classification for Renfrew itself was not impacted by this sensitivity test; the company was in the top efficiency cohort in the July 2008 update and in our current results, although the difference between its actual and predicted cost widened from -19.3% in July to -26.7% with the new data.

Low Voltage Charges

The second set of sensitivity tests concerned Hydro One's charges to distributors embedded within its territory for the use of low voltage (LV) facilities. A number of embedded distributors are currently charged by Hydro One for the use of its LV assets, but these charges are not reported as O&M costs in the distributors' RRR filings which were used as the basis for PEG's benchmarking results. This accounting treatment may lead to a lack of comparability among sampled companies, since the reported OM&A for non-embedded distributors in the Province do include the costs of LV facilities, which the non-embedded firms own, operate and maintain themselves.

¹ As described in the July 14 Report of the Board, a company will be in efficiency cohort 1 if it is statistically superior on the econometric benchmarking model and in the top quartile on the unit cost benchmarking model. A company will be in efficiency cohort 3 if it is statistically inferior on the econometric benchmarking model and in the bottom quartile on the unit cost benchmarking model. All other companies will be in efficiency cohort 2.

The forthcoming Tables 4 and 7 display the efficiency cohorts under two different sensitivity tests, for two different measures of LV costs. For both Table 4 and Table 7, the ordering of firms in the top and bottom cohorts is identical to that presented for the econometric rankings in the associated Tables 2 and 5, respectively, although it will be noted that not all firms identified as being statistically superior or inferior necessarily achieve top or bottom cohort performance. The rank ordering of companies within an efficiency cohort should also not itself be interpreted as evidence of relative performance *i.e.* the first firm appearing in the top efficiency cohort in Table 7 is not necessarily the "most" efficient, and the last firm appearing in the bottom cohort in Table 7 is not necessarily the "least" efficient, distributor in Ontario.

Hydro One does not segregate its charges for LV facilities into the associated capital and O&M costs so, to control for these costs in OM&A benchmarking, it was necessary to develop proxies for the O&M component of Hydro One's charges. OEB Staff developed two separate proxies for these O&M costs, using data from Hydro One's 2006 and 2008 electricity distribution rate (EDR) proceedings. The first proxy was equal to 26% of LV charges to each distributor. The second proxy was equal to 26% of LV charges for each distributor, divided by 2.354. Further details on these proxies are provided as part of the accompanying letter to this note. For both proxies, the proxy O&M costs were added to the OM&A costs which were benchmarked originally for each embedded distributor. After the proxy O&M costs were added in, PEG re-estimated the econometric model, re-computed unit cost indexes, and re-determined the efficiency cohorts for all distributors in the sample (again, separately for each of the proxy O&M costs associated with LV assets).

The results of the sensitivity tests for the first LV proxy (26% of LV charges) are presented in Tables 2, 3 and 4. Table 2 presents the updated econometric benchmarks, Table 3 the updated unit cost benchmarks, and Table 4 the updated efficiency cohort/stretch factor assignments. Comparing our July 2008 results with the results of the sensitivity test for the first LV proxy, PEG finds that efficiency cohort classifications have changed for five of the 83 distributors. ELK Energy and Hydro 2000 were in the top cohort in our July 2008 update but move to the middle cohort when these proxy LV charges are included in the analysis. Horizon Utilities moves from the middle cohort to the top cohort. Eastern Ontario Power and Whitby Hydro move from the bottom cohort to the middle cohort. Overall, with this sensitivity test, there are 11 distributors in the top efficiency cohort, 9 distributors in the bottom cohort, and 63 distributors in the middle cohort.

The results of the sensitivity tests for the second LV proxy (26% of LV charges, divided by 2.354) are presented in Tables 5, 6 and 7. Table 5 presents the updated econometric benchmarks, Table 6 the updated unit cost benchmarks, and Table 7 the updated efficiency cohort/stretch factor assignments. Comparing the results of the second sensitivity test for the LV proxy to the July 2008 results, PEG finds that efficiency cohort classifications have changed for two of the 83 distributors. Hydro 2000 moves

from the top cohort in our July 2008 to the middle cohort in the current results. Eastern Ontario Power moves from the bottom cohort to the middle cohort. Overall, with this sensitivity test, there are 10 distributors in the top efficiency cohort, 10 distributors in the bottom cohort, and 63 distributors in the middle cohort.

Concluding Comments

Overall, PEG believes that these sensitivity analyses show that the efficiency cohorts identified in our July 2008 update are robust. Our sensitivity tests show that relatively few distributors move from one efficiency cohort to another based on changes in accounting for LV charges or for whether or not Renfrew is classified as being on the Canadian Shield. These factors have a relatively small impact on any given firm's efficiency ranking. A principal reason is that LV costs and changes in Renfrew's Canadian Shield classification have little impact on the estimated coefficients for customer numbers, kWh, and km of line in our econometric model, and these variables continue to be the major drivers of distributors' OM&A costs. PEG's benchmarking models also control for labour prices and dimensions of capital cost (system undergrounding and asset age). Our previous econometric research also investigated whether distributors' ownership of high voltage transmission assets impacted OM&A cost performance, but we found that there was no statistically significant relationship between this variable and distributors' OM&A costs. However, PEG believes that further research on this, and on related issues, is warranted in the total cost benchmarking analysis to be undertaken.

Table 1

Updated Performance Rankings Based on Econometric Benchmarks: Renfrew Shield Sensitivity

	Years Benchmarked	Actual/Predicted ¹	Deviation		Cost surplus (savings) in \$ ¹	Rank ¹
			Percentage [A-1] ¹	P-Value		
Hydro Hawkesbury	2005-2007	0.644	-0.356	0.000	-414,148	1
Chatham-Kent Hydro	2005-2007	0.694	-0.306	0.001	-2,279,553	2
Northern Ontario Wires	2005-2007	0.714	-0.286	0.001	-694,271	3
Cambridge and North Dumfries Hydro	2005-2007	0.718	-0.282	0.002	-2,993,087	4
E.L.K. Energy	2005-2007	0.733	-0.267	0.003	-588,351	5
Renfrew Hydro	2005-2007	0.752	-0.248	0.006	-274,748	6
Grimby Power	2005-2007	0.769	-0.231	0.010	-466,280	7
Oshawa PUC Networks	2005-2007	0.781	-0.219	0.014	-2,301,101	8
Lakeland Power Distribution	2005-2007	0.787	-0.213	0.017	-567,598	9
Hydro One Brampton Networks	2005-2007	0.792	-0.208	0.019	-4,140,825	10
Kitchener-Wilmot Hydro	2005-2007	0.804	-0.196	0.027	-2,860,597	11
Barrie Hydro Distribution	2005-2007	0.810	-0.190	0.031	-1,910,174	12
Festival Hydro	2005-2007	0.827	-0.173	0.046	-724,315	13
Welland Hydro-Electric System	2005-2007	0.839	-0.161	0.060	-746,681	14
Hydro 2000	2005-2007	0.845	-0.155	0.068	-44,145	15
Kingston Electricity Distribution	2005-2007	0.868	-0.132	0.105	-758,836	16
Horizon Utilities	2005-2007	0.872	-0.128	0.113	-5,429,553	17
Hydro Ottawa	2005-2007	0.873	-0.127	0.114	-6,169,266	18
Kenora Hydro Electric	2005-2007	0.875	-0.125	0.118	-184,513	19
Peninsula West Utilities	2005-2007	0.877	-0.123	0.123	-546,752	20
Waterloo North Hydro	2005-2007	0.878	-0.122	0.125	-1,211,664	21
Lakefront Utilities	2005-2007	0.878	-0.122	0.125	-250,289	22
Hearst Power Distribution	2005-2007	0.891	-0.109	0.154	-77,297	23
Niagara-on-the-Lake Hydro	2005-2007	0.898	-0.102	0.170	-179,419	24
Rideau St. Lawrence Distribution	2005-2007	0.906	-0.094	0.190	-141,865	25
Halton Hills Hydro	2005-2007	0.908	-0.092	0.196	-436,259	26
Innisfil Hydro Distribution Systems	2005-2007	0.911	-0.089	0.204	-287,477	27
North Bay Hydro Distribution	2005-2007	0.916	-0.084	0.217	-476,888	28
Peterborough Distribution	2005-2007	0.919	-0.081	0.228	-538,363	29
Atikokan Hydro	2005-2007	0.922	-0.078	0.237	-58,235	30
Newmarket & Tay Hydro Electric	2005-2007	0.930	-0.070	0.260	-436,060	31
Orangeville Hydro	2005-2007	0.940	-0.060	0.291	-115,815	32
Espanola Regional Hydro Distribution	2005-2007	0.946	-0.054	0.310	-53,133	33
Energysource Hydro Mississauga	2005-2007	0.956	-0.044	0.344	-1,997,850	34
PUC Distribution	2005-2007	0.965	-0.035	0.377	-258,993	35
Middlesex Power Distribution	2005-2007	0.973	-0.027	0.405	-40,292	36
Newbury Power	2005-2007	0.982	-0.018	0.436	-898	37
Wasaga Distribution	2005-2007	0.984	-0.016	0.444	-27,289	38
Wellington North Power	2005-2007	0.991	-0.009	0.468	-9,071	39
Veridian Connections	2005-2007	0.995	-0.005	0.483	-90,656	40
Burlington Hydro	2005-2007	1.007	0.007	0.474	87,978	41
Haldimand County Hydro	2005-2007	1.012	0.012	0.457	72,889	42
Ottawa River Power	2005-2007	1.015	0.015	0.448	30,293	43
Brantford Power	2005-2007	1.018	0.018	0.438	124,150	44
Toronto Hydro-Electric System	2005-2007	1.019	0.019	0.433	3,023,054	45
Westario Power	2005-2007	1.022	0.022	0.424	90,555	46
London Hydro	2005-2007	1.026	0.026	0.411	581,290	47
Tillsonburg Hydro	2005-2007	1.027	0.027	0.406	40,269	48
Hydro One Networks	2005-2007	1.037	0.037	0.375	14,455,448	49
Parry Sound Power	2005-2007	1.038	0.038	0.372	36,657	50
Woodstock Hydro Services	2005-2007	1.043	0.043	0.356	130,213	51
Milton Hydro Distribution	2005-2007	1.043	0.043	0.354	175,667	52
Norfolk Power Distribution	2005-2007	1.051	0.051	0.329	204,224	53
Thunder Bay Hydro Electricity Distribution	2005-2007	1.057	0.057	0.313	590,500	54
Bluewater Power Distribution	2005-2007	1.059	0.059	0.305	518,326	55
Grand Valley Energy	2005-2007	1.060	0.060	0.302	12,507	56
West Perth Power	2005-2007	1.066	0.066	0.285	30,859	57
Oakville Hydro Electricity Distribution	2005-2007	1.075	0.075	0.260	789,087	58
COLLUS Power	2005-2007	1.076	0.076	0.257	212,036	59
Cooperative Hydro Embrun	2005-2007	1.077	0.077	0.254	26,650	60
Clinton Power	2005-2007	1.084	0.084	0.236	35,563	61
St. Thomas Energy	2005-2007	1.092	0.092	0.218	283,250	62
Dutton Hydro	2004-2006	1.092	0.092	0.217	14,222	63
Brant County Power	2005-2007	1.096	0.096	0.207	226,601	64
Sioux Lookout Hydro	2005-2007	1.097	0.097	0.206	94,721	65
Orillia Power Distribution	2005-2007	1.098	0.098	0.204	302,147	66
Powerstream	2005-2007	1.110	0.110	0.178	4,068,260	67
Greater Sudbury-West Nipissing	2005-2007	1.126	0.126	0.147	1,263,951	68
Fort Erie (CNP)	2005-2007	1.127	0.127	0.145	510,713	69
Guelph Hydro Electric Systems	2005-2007	1.129	0.129	0.141	1,048,137	70
Fort Frances Power	2005-2007	1.129	0.129	0.141	124,738	71
Niagara Falls Hydro	2005-2007	1.185	0.185	0.066	1,305,368	72
Eastern Ontario Power (CNP)	2005-2007	1.198	0.198	0.055	222,538	73
Centre Wellington Hydro	2005-2007	1.205	0.205	0.049	251,171	74
Midland Power Utility	2005-2007	1.207	0.207	0.048	296,257	75
Essex Powerlines	2005-2007	1.253	0.253	0.023	1,230,214	76
ENWIN Powerlines	2005-2007	1.253	0.253	0.023	4,955,747	77
Whitby Hydro Electric	2005-2007	1.257	0.257	0.021	1,573,246	78
Chapleau Public Utilities	2005-2007	1.273	0.273	0.017	117,909	79
Erie Thames Powerlines	2005-2007	1.376	0.376	0.002	1,243,487	80
West Coast Huron Energy	2005-2007	1.392	0.392	0.002	374,936	81
Great Lakes Power	2005-2007	1.475	0.475	0.000	2,562,492	82
Port Colborne (CNP)	2005-2007	1.540	0.540	0.000	1,479,192	83

¹ Lower values imply better performance.

Table 2

Updated Performance Rankings Based on Econometric Benchmarks: Sensitivity to 26% Allocation for LV Charges

	Years Benchmarked	Actual/Predicted ¹	Deviation		Cost surplus (savings) in \$ ¹	Rank ¹
			Percentage [A-1] ¹	P-Value		
Hydro Hawkesbury	2005-2007	0.657	-0.343	0.000	-408,749	1
Northern Ontario Wires	2005-2007	0.712	-0.288	0.001	-718,742	2
Chatham-Kent Hydro	2005-2007	0.713	-0.287	0.001	-2,166,482	3
Cambridge and North Dumfries Hydro	2005-2007	0.718	-0.282	0.001	-3,022,314	4
Grimsby Power	2005-2007	0.754	-0.246	0.005	-511,755	5
E.L.K. Energy	2005-2007	0.764	-0.236	0.007	-533,464	6
Oshawa PUC Networks	2005-2007	0.773	-0.227	0.009	-2,403,215	7
Hydro One Brampton Networks	2005-2007	0.790	-0.210	0.015	-4,195,978	8
Kitchener-Wilmot Hydro	2005-2007	0.800	-0.200	0.020	-2,929,348	9
Renfrew Hydro	2005-2007	0.811	-0.189	0.026	-201,915	10
Welland Hydro-Electric System	2005-2007	0.825	-0.175	0.037	-827,476	11
Lakeland Power Distribution	2005-2007	0.826	-0.174	0.038	-474,941	12
Festival Hydro	2005-2007	0.827	-0.173	0.039	-733,550	13
Barrie Hydro Distribution	2005-2007	0.841	-0.159	0.055	-1,595,357	14
Horizon Utilities	2005-2007	0.865	-0.135	0.090	-5,793,991	15
Niagara-on-the-Lake Hydro	2005-2007	0.865	-0.135	0.090	-245,746	16
Waterloo North Hydro	2005-2007	0.873	-0.127	0.105	-1,270,042	17
Hydro Ottawa	2005-2007	0.875	-0.125	0.109	-6,086,182	18
Atikokan Hydro	2005-2007	0.877	-0.123	0.113	-96,263	19
Kingston Electricity Distribution	2005-2007	0.879	-0.121	0.115	-708,032	20
Kenora Hydro Electric	2005-2007	0.883	-0.117	0.124	-171,281	21
Peninsula West Utilities	2005-2007	0.896	-0.104	0.154	-477,491	22
Lakefront Utilities	2005-2007	0.909	-0.091	0.189	-189,665	23
Hydro 2000	2005-2007	0.910	-0.090	0.190	-27,648	24
North Bay Hydro Distribution	2005-2007	0.911	-0.089	0.193	-508,157	25
Newmarket & Tay Hydro Electric	2005-2007	0.918	-0.082	0.214	-518,999	26
Rideau St. Lawrence Distribution	2005-2007	0.919	-0.081	0.217	-125,210	27
Innisfil Hydro Distribution Systems	2005-2007	0.925	-0.075	0.236	-247,523	28
Hearst Power Distribution	2005-2007	0.926	-0.074	0.237	-52,499	29
Peterborough Distribution	2005-2007	0.926	-0.074	0.239	-497,864	30
Halton Hills Hydro	2005-2007	0.926	-0.074	0.240	-356,121	31
Espanola Regional Hydro Distribution	2005-2007	0.957	-0.043	0.343	-42,640	32
Wellington North Power	2005-2007	0.958	-0.042	0.347	-44,607	33
PUC Distribution	2005-2007	0.961	-0.039	0.358	-288,257	34
Newbury Power	2005-2007	0.963	-0.037	0.363	-2,104	35
Orangeville Hydro	2005-2007	0.966	-0.034	0.374	-66,434	36
Middlesex Power Distribution	2005-2007	0.969	-0.031	0.387	-47,080	37
Enersource Hydro Mississauga	2005-2007	0.979	-0.021	0.424	-913,262	38
Tillsonburg Hydro	2005-2007	0.985	-0.015	0.443	-23,786	39
Hydro One Networks	2005-2007	0.988	-0.012	0.456	-4,913,023	40
Wasaga Distribution	2005-2007	0.988	-0.012	0.456	-21,019	41
Haldimand County Hydro	2005-2007	1.001	0.001	0.498	3,572	42
Burlington Hydro	2005-2007	1.004	0.004	0.485	49,908	43
Toronto Hydro-Electric System	2005-2007	1.004	0.004	0.484	701,223	44
Brantford Power	2005-2007	1.007	0.007	0.472	53,331	45
Veridian Connections	2005-2007	1.011	0.011	0.460	209,832	46
Woodstock Hydro Services	2005-2007	1.017	0.017	0.437	54,165	47
London Hydro	2005-2007	1.022	0.022	0.419	505,509	48
Milton Hydro Distribution	2005-2007	1.031	0.031	0.387	131,044	49
Westario Power	2005-2007	1.045	0.045	0.343	189,419	50
Norfolk Power Distribution	2005-2007	1.045	0.045	0.340	185,752	51
Cooperative Hydro Embrun	2005-2007	1.047	0.047	0.334	17,253	52
Bluewater Power Distribution	2005-2007	1.050	0.050	0.326	442,850	53
Grand Valley Energy	2005-2007	1.050	0.050	0.324	11,207	54
Thunder Bay Hydro Electricity Distribution	2005-2007	1.051	0.051	0.324	531,267	55
Ottawa River Power	2005-2007	1.060	0.060	0.293	123,180	56
West Perth Power	2005-2007	1.064	0.064	0.282	31,380	57
Brant County Power	2005-2007	1.068	0.068	0.270	166,005	58
Parry Sound Power	2005-2007	1.070	0.070	0.267	68,808	59
St. Thomas Energy	2005-2007	1.073	0.073	0.258	227,723	60
Oakville Hydro Electricity Distribution	2005-2007	1.078	0.078	0.243	827,086	61
Fort Erie (CNP)	2005-2007	1.097	0.097	0.196	402,268	62
Dutton Hydro	2004-2006	1.101	0.101	0.187	16,619	63
COLLUS Power	2005-2007	1.103	0.103	0.182	292,651	64
Orillia Power Distribution	2005-2007	1.104	0.104	0.181	328,563	65
Powerstream	2005-2007	1.117	0.117	0.153	4,338,038	66
Fort Frances Power	2005-2007	1.124	0.124	0.139	120,606	67
Guelph Hydro Electric Systems	2005-2007	1.125	0.125	0.138	1,017,931	68
Greater Sudbury-West Nipissing	2005-2007	1.127	0.127	0.133	1,285,955	69
Clinton Power	2005-2007	1.133	0.133	0.123	58,953	70
Eastern Ontario Power (CNP)	2005-2007	1.141	0.141	0.111	169,144	71
Sioux Lookout Hydro	2005-2007	1.144	0.144	0.107	145,710	72
Niagara Falls Hydro	2005-2007	1.169	0.169	0.074	1,210,326	73
Centre Wellington Hydro	2005-2007	1.181	0.181	0.061	229,733	74
Midland Power Utility	2005-2007	1.229	0.229	0.028	339,212	75
ENWIN Powerlines	2005-2007	1.234	0.234	0.026	4,653,631	76
Whitby Hydro Electric	2005-2007	1.257	0.257	0.017	1,594,140	77
Essex Powerlines	2005-2007	1.272	0.272	0.013	1,352,504	78
Chapleau Public Utilities	2005-2007	1.280	0.280	0.011	122,604	79
West Coast Huron Energy	2005-2007	1.340	0.340	0.003	337,309	80
Erie Thames Powerlines	2005-2007	1.388	0.388	0.001	1,309,837	81
Great Lakes Power	2005-2007	1.402	0.402	0.001	2,281,522	82
Port Colborne (CNP)	2005-2007	1.484	0.484	0.000	1,377,226	83

¹ Lower values imply better performance.

Table 3

Updated Performance Rankings Based on Unit Cost Indexes: Sensitivity to 26% Allocation for LV Charges

	Average / Group Average ¹ [A]	Percentage Differences ¹ [A - 1]	Efficiency Ranking ¹
Hydro Hawkesbury	0.405	-59.5%	1
Hydro One Brampton Networks	0.524	-47.6%	2
Barrie Hydro Distribution	0.594	-40.6%	3
Renfrew Hydro	0.602	-39.8%	4
Lakefront Utilities	0.610	-39.0%	5
Cambridge and North Dumfries Hydro	0.616	-38.4%	6
Kitchener-Wilmot Hydro	0.657	-34.3%	7
Hydro Ottawa	0.662	-33.8%	8
Horizon Utilities	0.706	-29.4%	9
Chatham-Kent Hydro	0.715	-28.5%	10
Oshawa PUC Networks	0.730	-27.0%	11
PowerStream	0.735	-26.5%	12
Festival Hydro	0.749	-25.1%	13
Waterloo North Hydro	0.751	-24.9%	14
Guelph Hydro Electric Systems	0.757	-24.3%	15
London Hydro	0.763	-23.7%	16
Northern Ontario Wires	0.774	-22.6%	17
Hydro 2000	0.778	-22.2%	18
Milton Hydro Distribution	0.787	-21.3%	19
Hearst Power Distribution	0.798	-20.2%	20
E.L.K. Energy	0.803	-19.7%	21
Parry Sound Power	0.809	-19.1%	22
Enersource Hydro Mississauga	0.810	-19.0%	23
Fort Frances Power	0.815	-18.5%	24
Burlington Hydro	0.827	-17.3%	25
Veridian Connections	0.828	-17.2%	26
Oakville Hydro Electricity Distribution	0.831	-16.9%	27
Newmarket Hydro & Tay Hydro	0.832	-16.8%	28
Middlesex Power Distribution	0.833	-16.7%	29
Espanola Regional Hydro Distribution	0.845	-15.5%	30
Brantford Power	0.852	-14.8%	31
Toronto Hydro-Electric System	0.852	-14.8%	32
Peterborough Distribution	0.857	-14.3%	33
Welland Hydro-Electric System	0.861	-13.9%	34
Rideau St. Lawrence Distribution	0.865	-13.5%	35
Kingston Electricity Distribution	0.867	-13.3%	36
Norfolk Power Distribution	0.872	-12.8%	37
Grimsby Power	0.875	-12.5%	38
Wellington North Power	0.875	-12.5%	39
Sioux Lookout Hydro	0.909	-9.1%	40
Orangeville Hydro	0.913	-8.7%	41
Niagara-on-the-Lake Hydro	0.922	-7.8%	42
Halton Hills Hydro	0.928	-7.2%	43
Midland Power Utility	0.930	-7.0%	44
West Perth Power	0.946	-5.4%	45
Woodstock Hydro Services	0.950	-5.0%	46
Whitby Hydro Electric	0.950	-5.0%	47
North Bay Hydro Distribution	0.960	-4.0%	48
Innisfil Hydro Distribution Systems	0.982	-1.8%	49
Orillia Power Distribution	0.983	-1.7%	50
Haldimand County Hydro	0.988	-1.2%	51
PUC Distribution	1.000	0.0%	52
COLLUS Power	1.000	0.0%	53
Westario Power	1.013	1.3%	54
St. Thomas Energy	1.014	1.4%	55
Lakeland Power Distribution	1.016	1.6%	56
Thunder Bay Hydro Electricity Distribution	1.020	2.0%	57
Greater Sudbury Hydro & West Nipissing	1.021	2.1%	58
Peninsula West Utilities	1.033	3.3%	59
Atikokan Hydro	1.035	3.5%	60
Bluewater Power Distribution	1.046	4.6%	61
Tillsonburg Hydro	1.051	5.1%	62
Ottawa River Power	1.058	5.8%	63
Clinton Power	1.060	6.0%	64
Niagara Falls Hydro	1.077	7.7%	65
Wasaga Distribution	1.105	10.5%	66
West Coast Huron Energy	1.105	10.5%	67
Brant County Power	1.118	11.8%	68
Kenora Hydro Electric	1.128	12.8%	69
Newbury Power	1.134	13.4%	70
Cooperative Hydro Embrun	1.142	14.2%	71
Fort Erie	1.143	14.3%	72
ENWIN Powerlines	1.144	14.4%	73
Centre Wellington Hydro	1.148	14.8%	74
Essex Powerlines	1.156	15.6%	75
Eastern Ontario Power	1.166	16.6%	76
Chapleau Public Utilities	1.240	24.0%	77
Port Colborne	1.254	25.4%	78
Erie Thames Powerlines	1.389	38.9%	79
Dutton Hydro	1.395	39.5%	80
Grand Valley Energy	1.474	47.4%	81
Great Lakes Power	1.972	97.2%	82

¹ Lower values imply better performance.

² Hydro One Networks has no peer group and is not included in this analysis.

Table 4

Stretch Factor Assignments with 2007 Data Update: Sensitivity to 26% Allocation for LV Charges

Company	Group	Stretch Factor
Hydro Hawkesbury	1	0.20%
Northern Ontario Wires	1	0.20%
Chatham-Kent Hydro	1	0.20%
Cambridge and North Dumfries Hydro	1	0.20%
Oshawa PUC Networks	1	0.20%
Hydro One Brampton Networks	1	0.20%
Kitchener-Wilmot Hydro	1	0.20%
Renfrew Hydro	1	0.20%
Festival Hydro	1	0.20%
Barrie Hydro Distribution	1	0.20%
Horizon Utilities	1	0.20%
Niagara-on-the-Lake Hydro	2	0.40%
Waterloo North Hydro	2	0.40%
E.L.K. Energy	2	0.40%
Grimsby Power	2	0.40%
Welland Hydro-Electric System	2	0.40%
Lakeland Power Distribution	2	0.40%
Hydro Ottawa	2	0.40%
Atikokan Hydro	2	0.40%
Kingston Electricity Distribution	2	0.40%
Kenora Hydro Electric	2	0.40%
Peninsula West Utilities	2	0.40%
Lakefront Utilities	2	0.40%
Hydro 2000	2	0.40%
North Bay Hydro Distribution	2	0.40%
Newmarket & Tay Hydro Electric	2	0.40%
Rideau St. Lawrence Distribution	2	0.40%
Innisfil Hydro Distribution Systems	2	0.40%
Hearst Power Distribution	2	0.40%
Peterborough Distribution	2	0.40%
Halton Hills Hydro	2	0.40%
Espanola Regional Hydro Distribution	2	0.40%
Wellington North Power	2	0.40%
PUC Distribution	2	0.40%
Newbury Power	2	0.40%
Orangeville Hydro	2	0.40%
Middlesex Power Distribution	2	0.40%
Enersource Hydro Mississauga	2	0.40%
Tilsonburg Hydro	2	0.40%
Hydro One Networks	2	0.40%
Wasaga Distribution	2	0.40%
Haldimand County Hydro	2	0.40%
Burlington Hydro	2	0.40%
Toronto Hydro-Electric System	2	0.40%
Brantford Power	2	0.40%
Veridian Connections	2	0.40%
Woodstock Hydro Services	2	0.40%
London Hydro	2	0.40%
Milton Hydro Distribution	2	0.40%
Westario Power	2	0.40%
Norfolk Power Distribution	2	0.40%
Cooperative Hydro Embrun	2	0.40%
Bluewater Power Distribution	2	0.40%
Grand Valley Energy	2	0.40%
Thunder Bay Hydro Electricity Distribution	2	0.40%
Ottawa River Power	2	0.40%
West Perth Power	2	0.40%
Brant County Power	2	0.40%
Parry Sound Power	2	0.40%
St. Thomas Energy	2	0.40%
Midland Power Utility	2	0.40%
Whitby Hydro Electric	2	0.40%
Oakville Hydro Electricity Distribution	2	0.40%
Fort Erie (CNP)	2	0.40%
Dutton Hydro	2	0.40%
COLLUS Power	2	0.40%
Orillia Power Distribution	2	0.40%
Powerstream	2	0.40%
Fort Frances Power	2	0.40%
Guelph Hydro Electric Systems	2	0.40%
Greater Sudbury-West Nipissing	2	0.40%
Clinton Power	2	0.40%
Eastern Ontario Power (CNP)	2	0.40%
Sioux Lookout Hydro	2	0.40%
Niagara Falls Hydro	3	0.60%
Centre Wellington Hydro	3	0.60%
ENWIN Powerlines	3	0.60%
Essex Powerlines	3	0.60%
Chapleau Public Utilities	3	0.60%
West Coast Huron Energy	3	0.60%
Erie Thames Powerlines	3	0.60%
Great Lakes Power	3	0.60%
Port Colborne (CNP)	3	0.60%

Table 5

Updated Performance Rankings Based on Econometric Benchmarks: Sensitivity to 26% Allocation for LV Charges Divided by 2.35

	Years Benchmarked	Actual/Predicted ¹	Deviation		Cost surplus (savings) in \$ ¹	Rank ¹
			Percentage [A-1] ¹	P-Value		
Hydro Hawkesbury	2005-2007	0.648	-0.352	0.000	-414,337	1
Chatham-Kent Hydro	2005-2007	0.700	-0.300	0.001	-2,261,733	2
Northern Ontario Wires	2005-2007	0.712	-0.288	0.001	-707,063	3
Cambridge and North Dumfries Hydro	2005-2007	0.716	-0.284	0.001	-3,038,147	4
E.L.K. Energy	2005-2007	0.743	-0.257	0.004	-574,868	5
Grimsby Power	2005-2007	0.759	-0.241	0.006	-494,168	6
Oshawa PUC Networks	2005-2007	0.781	-0.219	0.013	-2,300,828	7
Hydro One Brampton Networks	2005-2007	0.792	-0.208	0.017	-4,130,014	8
Kitchener-Wilmot Hydro	2005-2007	0.803	-0.197	0.024	-2,876,870	9
Lakeland Power Distribution	2005-2007	0.804	-0.196	0.024	-527,715	10
Renfrew Hydro	2005-2007	0.810	-0.190	0.028	-198,645	11
Festival Hydro	2005-2007	0.822	-0.178	0.038	-751,080	12
Barrie Hydro Distribution	2005-2007	0.826	-0.174	0.042	-1,737,710	13
Welland Hydro-Electric System	2005-2007	0.829	-0.171	0.045	-803,081	14
Horizon Utilities	2005-2007	0.865	-0.135	0.094	-5,796,353	15
Kingston Electricity Distribution	2005-2007	0.866	-0.134	0.096	-780,338	16
Hydro 2000	2005-2007	0.870	-0.130	0.103	-38,498	17
Hydro Ottawa	2005-2007	0.876	-0.124	0.114	-6,048,161	18
Waterloo North Hydro	2005-2007	0.877	-0.123	0.117	-1,227,900	19
Niagara-on-the-Lake Hydro	2005-2007	0.880	-0.120	0.123	-215,522	20
Peninsula West Utilities	2005-2007	0.886	-0.114	0.136	-513,725	21
Lakefront Utilities	2005-2007	0.888	-0.112	0.141	-232,423	22
Kenora Hydro Electric	2005-2007	0.895	-0.105	0.157	-151,067	23
Rideau St. Lawrence Distribution	2005-2007	0.907	-0.093	0.187	-142,819	24
Atikokan Hydro	2005-2007	0.908	-0.092	0.191	-69,900	25
North Bay Hydro Distribution	2005-2007	0.914	-0.086	0.208	-485,343	26
Innisfil Hydro Distribution Systems	2005-2007	0.915	-0.085	0.209	-278,554	27
Peterborough Distribution	2005-2007	0.918	-0.082	0.219	-552,568	28
Halton Hills Hydro	2005-2007	0.918	-0.082	0.219	-390,685	29
Newmarket & Tay Hydro Electric	2005-2007	0.926	-0.074	0.242	-466,313	30
Hearst Power Distribution	2005-2007	0.930	-0.070	0.255	-48,349	31
Orangeville Hydro	2005-2007	0.949	-0.051	0.317	-99,472	32
Espanola Regional Hydro Distribution	2005-2007	0.960	-0.040	0.356	-38,870	33
Wellington North Power	2005-2007	0.962	-0.038	0.362	-40,033	34
PUC Distribution	2005-2007	0.962	-0.038	0.364	-281,696	35
Enersource Hydro Mississauga	2005-2007	0.966	-0.034	0.377	-1,523,713	36
Middlesex Power Distribution	2005-2007	0.968	-0.032	0.384	-48,910	37
Newbury Power	2005-2007	0.970	-0.030	0.391	-1,585	38
Wasaga Distribution	2005-2007	0.986	-0.014	0.448	-24,922	39
Veridian Connections	2005-2007	1.001	0.001	0.496	20,357	40
Tillsonburg Hydro	2005-2007	1.002	0.002	0.491	3,598	41
Burlington Hydro	2005-2007	1.006	0.006	0.478	72,941	42
Hydro One Networks	2005-2007	1.007	0.007	0.476	2,699,080	43
Brantford Power	2005-2007	1.008	0.008	0.472	54,477	44
Haldimand County Hydro	2005-2007	1.010	0.010	0.463	61,121	45
Toronto Hydro-Electric System	2005-2007	1.015	0.015	0.445	2,418,152	46
London Hydro	2005-2007	1.026	0.026	0.409	579,234	47
Westario Power	2005-2007	1.027	0.027	0.405	113,171	48
Woodstock Hydro Services	2005-2007	1.027	0.027	0.403	85,452	49
Milton Hydro Distribution	2005-2007	1.040	0.040	0.361	164,865	50
Norfolk Power Distribution	2005-2007	1.048	0.048	0.334	194,955	51
Bluewater Power Distribution	2005-2007	1.049	0.049	0.333	430,846	52
Thunder Bay Hydro Electricity Distribution	2005-2007	1.050	0.050	0.328	527,330	53
Grand Valley Energy	2005-2007	1.051	0.051	0.327	10,895	54
Ottawa River Power	2005-2007	1.051	0.051	0.325	103,197	55
West Perth Power	2005-2007	1.062	0.062	0.292	29,639	56
Cooperative Hydro Embrun	2005-2007	1.064	0.064	0.286	22,597	57
Parry Sound Power	2005-2007	1.066	0.066	0.280	64,208	58
Oakville Hydro Electricity Distribution	2005-2007	1.077	0.077	0.251	808,528	59
Brant County Power	2005-2007	1.078	0.078	0.247	187,522	60
St. Thomas Energy	2005-2007	1.080	0.080	0.244	247,923	61
COLLUS Power	2005-2007	1.084	0.084	0.232	237,071	62
Orillia Power Distribution	2005-2007	1.093	0.093	0.210	292,300	63
Dutton Hydro	2004-2006	1.096	0.096	0.201	15,308	64
Clinton Power	2005-2007	1.103	0.103	0.186	44,522	65
Fort Erie (CNP)	2005-2007	1.107	0.107	0.178	440,409	66
Powerstream	2005-2007	1.121	0.121	0.151	4,438,710	67
Sioux Lookout Hydro	2005-2007	1.121	0.121	0.151	119,334	68
Greater Sudbury-West Nipissing	2005-2007	1.124	0.124	0.145	1,250,692	69
Guelph Hydro Electric Systems	2005-2007	1.127	0.127	0.139	1,033,392	70
Fort Frances Power	2005-2007	1.144	0.144	0.112	137,181	71
Eastern Ontario Power (CNP)	2005-2007	1.158	0.158	0.092	184,978	72
Niagara Falls Hydro	2005-2007	1.175	0.175	0.072	1,242,985	73
Centre Wellington Hydro	2005-2007	1.191	0.191	0.056	238,026	74
Midland Power Utility	2005-2007	1.211	0.211	0.041	307,783	75
ENWIN Powerlines	2005-2007	1.232	0.232	0.029	4,623,144	76
Essex Powerlines	2005-2007	1.257	0.257	0.019	1,267,489	77
Whitby Hydro Electric	2005-2007	1.260	0.260	0.018	1,596,569	78
Chapleau Public Utilities	2005-2007	1.310	0.310	0.007	131,020	79
West Coast Huron Energy	2005-2007	1.363	0.363	0.003	354,574	80
Erie Thames Powerlines	2005-2007	1.373	0.373	0.002	1,251,681	81
Great Lakes Power	2005-2007	1.432	0.432	0.001	2,398,637	82
Port Colborne (CNP)	2005-2007	1.502	0.502	0.000	1,410,683	83

¹ Lower values imply better performance.

Table 6

Updated Performance Rankings Based on Unit Cost Indexes: Sensitivity to 26% Allocation for LV Charges Divided by 2.35

	Average / Group Average ¹ [A]	Percentage Differences ¹ [A - 1]	Efficiency Ranking ¹
Hydro Hawkesbury	0.402	-59.8%	1
Renfrew Hydro	0.592	-40.8%	2
Lakefront Utilities	0.604	-39.6%	3
Chatham-Kent Hydro	0.728	-27.2%	4
Hydro 2000	0.732	-26.8%	5
Hydro One Brampton Networks	0.741	-25.9%	6
Barrie Hydro Distribution	0.750	-25.0%	7
Hydro Ottawa	0.760	-24.0%	8
Festival Hydro	0.771	-22.9%	9
Northern Ontario Wires	0.772	-22.8%	10
Cambridge and North Dumfries Hydro	0.791	-20.9%	11
Parry Sound Power	0.796	-20.4%	12
Hearst Power Distribution	0.797	-20.3%	13
E.L.K. Energy	0.804	-19.6%	14
Fort Frances Power	0.820	-18.0%	15
Espanola Regional Hydro Distribution	0.838	-16.2%	16
Middlesex Power Distribution	0.839	-16.1%	17
Kitchener-Wilmot Hydro	0.848	-15.2%	18
Rideau St. Lawrence Distribution	0.866	-13.4%	19
Norfolk Power Distribution	0.875	-12.5%	20
Grimsby Power	0.880	-12.0%	21
Sioux Lookout Hydro	0.880	-12.0%	22
Peterborough Distribution	0.881	-11.9%	23
Kingston Electricity Distribution	0.886	-11.4%	24
Wellington North Power	0.886	-11.4%	25
Orangeville Hydro	0.897	-10.3%	26
Welland Hydro-Electric System	0.897	-10.3%	27
Midland Power Utility	0.922	-7.8%	28
Niagara-on-the-Lake Hydro	0.937	-6.3%	29
West Perth Power	0.939	-6.1%	30
Veridian Connections	0.944	-5.6%	31
Oshawa PUC Networks	0.948	-5.2%	32
North Bay Hydro Distribution	0.960	-4.0%	33
Waterloo North Hydro	0.971	-2.9%	34
Orillia Power Distribution	0.972	-2.8%	35
Innisfil Hydro Distribution Systems	0.973	-2.7%	36
Guelph Hydro Electric Systems	0.974	-2.6%	37
Toronto Hydro-Electric System	0.981	-1.9%	38
Woodstock Hydro Services	0.988	-1.2%	39
Horizon Utilities	0.997	-0.3%	40
Lakeland Power Distribution	0.999	-0.1%	41
Haldimand County Hydro	1.000	0.0%	42
PUC Distribution	1.000	0.0%	43
Milton Hydro Distribution	1.014	1.4%	44
COLLUS Power	1.015	1.5%	45
Greater Sudbury Hydro & West Nippissing	1.018	1.8%	46
Thunder Bay Hydro Electricity Distribution	1.022	2.2%	47
Peninsula West Utilities	1.025	2.5%	48
Clinton Power	1.027	2.7%	49
Westario Power	1.030	3.0%	50
PowerStream	1.038	3.8%	51
Atikokan Hydro	1.049	4.9%	52
Ottawa River Power	1.054	5.4%	53
St. Thomas Energy	1.054	5.4%	54
Burlington Hydro	1.065	6.5%	55
Oakville Hydro Electricity Distribution	1.066	6.6%	56
Newmarket Hydro & Tay Hydro	1.077	7.7%	57
Tilsonburg Hydro	1.082	8.2%	58
London Hydro	1.083	8.3%	59
Bluewater Power Distribution	1.083	8.3%	60
Newbury Power	1.091	9.1%	61
Brantford Power	1.096	9.6%	62
Niagara Falls Hydro	1.121	12.1%	63
West Coast Huron Energy	1.127	12.7%	64
Cooperative Hydro Embrun	1.136	13.6%	65
Enersource Hydro Mississauga	1.140	14.0%	66
Wasaga Distribution	1.142	14.2%	67
Centre Wellington Hydro	1.150	15.0%	68
Kenora Hydro Electric	1.150	15.0%	69
Brant County Power	1.151	15.1%	70
Fort Erie	1.155	15.5%	71
Essex Powerlines	1.180	18.0%	72
Halton Hills Hydro	1.181	18.1%	73
Eastern Ontario Power	1.195	19.5%	74
Whitby Hydro Electric	1.221	22.1%	75
Chapleau Public Utilities	1.237	23.7%	76
Port Colborne	1.294	29.4%	77
ENWIN Powerlines	1.315	31.5%	78
Dutton Hydro	1.378	37.8%	79
Erie Thames Powerlines	1.420	42.0%	80
Grand Valley Energy	1.465	46.5%	81
Great Lakes Power	2.016	101.6%	82

¹ Lower values imply better performance.

² Hydro One Networks has no peer group and is not included in this analysis.

Table 7

**Stretch Factor Assignments with 2007 Data
Update: Sensitivity to 26% allocation of LV
charges divided by 2.35**

Company	Group	Stretch Factor
Hydro Hawkesbury	1	0.20%
Chatham-Kent Hydro	1	0.20%
Northern Ontario Wires	1	0.20%
Cambridge and North Dumfries Hydro	1	0.20%
E.L.K. Energy	1	0.20%
Hydro One Brampton Networks	1	0.20%
Kitchener-Wilmot Hydro	1	0.20%
Renfrew Hydro	1	0.20%
Festival Hydro	1	0.20%
Barrie Hydro Distribution	1	0.20%
Grimsby Power	2	0.40%
Oshawa PUC Networks	2	0.40%
Lakeland Power Distribution	2	0.40%
Welland Hydro-Electric System	2	0.40%
Horizon Utilities	2	0.40%
Kingston Electricity Distribution	2	0.40%
Hydro 2000	2	0.40%
Hydro Ottawa	2	0.40%
Waterloo North Hydro	2	0.40%
Niagara-on-the-Lake Hydro	2	0.40%
Peninsula West Utilities	2	0.40%
Lakefront Utilities	2	0.40%
Kenora Hydro Electric	2	0.40%
Rideau St. Lawrence Distribution	2	0.40%
Atikokan Hydro	2	0.40%
North Bay Hydro Distribution	2	0.40%
Innisfil Hydro Distribution Systems	2	0.40%
Peterborough Distribution	2	0.40%
Halton Hills Hydro	2	0.40%
Newmarket & Tay Hydro Electric	2	0.40%
Hearst Power Distribution	2	0.40%
Orangeville Hydro	2	0.40%
Espanola Regional Hydro Distribution	2	0.40%
Wellington North Power	2	0.40%
PUC Distribution	2	0.40%
Enersource Hydro Mississauga	2	0.40%
Middlesex Power Distribution	2	0.40%
Newbury Power	2	0.40%
Wasaga Distribution	2	0.40%
Veridian Connections	2	0.40%
Tillsonburg Hydro	2	0.40%
Burlington Hydro	2	0.40%
Hydro One Networks	2	0.40%
Brantford Power	2	0.40%
Haldimand County Hydro	2	0.40%
Toronto Hydro-Electric System	2	0.40%
London Hydro	2	0.40%
Westario Power	2	0.40%
Woodstock Hydro Services	2	0.40%
Milton Hydro Distribution	2	0.40%
Norfolk Power Distribution	2	0.40%
Bluewater Power Distribution	2	0.40%
Thunder Bay Hydro Electricity Distribution	2	0.40%
Grand Valley Energy	2	0.40%
Ottawa River Power	2	0.40%
West Perth Power	2	0.40%
Cooperative Hydro Embrun	2	0.40%
Parry Sound Power	2	0.40%
Oakville Hydro Electricity Distribution	2	0.40%
Brant County Power	2	0.40%
St. Thomas Energy	2	0.40%
COLLUS Power	2	0.40%
Orillia Power Distribution	2	0.40%
Dutton Hydro	2	0.40%
Clinton Power	2	0.40%
Fort Erie (CNP)	2	0.40%
Powerstream	2	0.40%
Sioux Lookout Hydro	2	0.40%
Greater Sudbury-West Nipissing	2	0.40%
Guelph Hydro Electric Systems	2	0.40%
Fort Frances Power	2	0.40%
Eastern Ontario Power (CNP)	2	0.40%
Midland Power Utility	2	0.40%
Niagara Falls Hydro	3	0.60%
Centre Wellington Hydro	3	0.60%
ENWIN Powerlines	3	0.60%
Essex Powerlines	3	0.60%
Whitby Hydro Electric	3	0.60%
Chapleau Public Utilities	3	0.60%
West Coast Huron Energy	3	0.60%
Erie Thames Powerlines	3	0.60%
Great Lakes Power	3	0.60%
Port Colborne (CNP)	3	0.60%