Exhibit 2:

RATE BASE

Exhibit 2: Rate Base

Tab 1 (of 8): Overview

RATE BASE OVERVIEW

Burlington Hydro's Rate Base is determined by taking the average of the balances at the beginning and the end of the 2014 Test Year, plus a working capital allowance of 13% of the sum of the cost of power and controllable expenses. The use of a 13% rate is consistent with the Board's letter of April 12, 2012.

The net fixed assets include those distribution assets associated with activities that enable the conveyance of electricity for distribution purposes. Burlington Hydro does not have non-distribution assets. Controllable expenses include operations and maintenance, billing and collecting and administration expenses. The table below shows the details of the proposed 2014 Rate Base.

Table 2-1:Rate Base and Working Capital Allowance

Particulars	Test Year 2014 (CGAAP)	
Test Year Net Fixed Asset Opening Balance	$105,132,271	
Test Year Net Fixed Asset Closing Balance	$108,295,856	
Average Balance		$106,714,064
Allowance for Working Capital		$25,207,987
Total Rate Base		$131,922,050

Table 2-2:Rate Base Comparison to 2010 Board Approved

	CGAAP	NewCGAAP	
Particulars	**Actual 2010**	**Test Year 2014**	**Variance from Board Appr**
Net Capital Assets in Service:			
Opening Balance		105,132,271	
Ending Balance		108,295,856	
Average Balance	$82,592,244	106,714,064	$24,121,820
Working Capital Allowance	$22,593,651	25,207,987	$2,614,335
Total Rate Base	**$105,185,895**	**131,922,050**	**$26,736,155**

Burlington Hydro projects that its 2014 Rate Base will amount to $ 131,922,050. The proposed Rate Base consists of a net average of $106,714,064 in Property, Plant and Equipment and General Plant and $ 25,207,987 of Working Cash Allowance. The 2014 Test Year Rate Base is $28.8M greater than the 2010 Actual Rate Base. The increase is due to an average net fixed asset increase of $23.0M relied on to support the distribution system. $5.9M of this increase is attributable to changes to the working capital allowance.

This evidence is organized as follows:

- Gross investment in Property, Plant and Equipment and General Plant including additions and removals and explanations of material changes;
- Accumulated depreciation of Property, Plant and Equipment and General Plant
- Net Book Value of Property, Plant and Equipment and General Plant;
- Overview of the applicable accounting policies
- Deemed Working Capital Allowance values and explanations for year over year changes.

The Rate Base Trend table including variances is presented at Exhibit 2, Tab 1 Schedule 2 Burlington Hydro's historical rate base and Burlington Hydro's rate base for both the Bridge Year (2013) and the Test Year (2014). Comparisons are also provided for the 2010 Board Approved and 2010 actual data, 2011 and 2012 actual data.

RATE BASE TREND

The Rate Base Trend Table below summarizes Burlington Hydro's prudent, reasonable and paced investment in distribution assets over the past 3 years. This trend will continue into the 2013 Bridge Year and 2014 Teat Year.

Table 2-3: Rate Base Trend Table

	CGAAP	**CGAAP**	**CGAAP**	**CGAAP**	**NewCGAAP**	**NewCGAAP**
Particulars	**Board Appr 2010**	**Actual 2010**	**Actual 2011**	**Actual 2012**	**Bridge Year 2013**	**Test Year 2014**
Net Capital Assets in Service:						
Opening Balance	-	83,392,293	84,073,401	85,796,933	101,713,892	105,132,271
Ending Balance	-	84,073,401	85,796,933	101,713,892	105,132,271	108,295,856
Average Balance	82,592,244	83,732,847	84,935,167	93,755,413	103,423,082	106,714,064
Working Capital Allowance	22,593,651	19,388,704	19,375,776	19,779,434	27,503,172	25,207,987
Total Rate Base	105,185,895	103,121,551	104,310,943	113,534,847	130,926,253	131,922,050

	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP	NewCGAAP
Expenses for Working Capital	Board Appr 2010	Actual 2010	Actual 2011	Actual 2012	Bridge Year 2013	Test Year 2014
<u>Eligible Distribution Expenses:</u>						
3500-Distribution Expenses - Operation	4,464,122	4,047,491	4,643,079	4,387,015	5,621,434	6,283,903
3550-Distribution Expenses - Maintenance	2,864,348	2,275,554	2,544,531	3,149,391	3,602,291	3,722,797
3650-Billing and Collecting	2,305,153	2,396,557	2,001,083	3,114,375	2,221,235	2,310,532
3700-Community Relations	41,584	14,894	18,589	16,073	19,158	19,500
3800-Administrative and General Expenses	4,671,786	5,266,558	5,319,521	5,492,207	6,008,031	6,216,618
Total Eligible Distribution Expenses	14,346,993	14,001,054	14,526,803	16,159,061	17,472,149	18,553,350
3350-Power Supply Expenses	136,277,349	115,256,976	114,645,038	115,703,834	165,882,328	175,354,240
Total Expenses for Working Capital	150,624,342	129,258,030	129,171,841	131,862,895	183,354,477	193,907,590
Working Capital factor	15%	15%	15%	15%	15%	13%
Total Working Capital	22,593,651	19,388,704	19,375,776	19,779,434	27,503,172	25,207,987

RATE BASE VARIANCE ANALYSIS

The following paragraphs provide a narrative on the changes that have driven the increase in rate base since BHI's 2010 cost of service.

Table 2-4: 2014 Test Year vs. 2013 Bridge Year:

	NewCGAAP	**NewCGAAP**		
Particulars	**Bridge Year 2013**	**Test Year 2014**	**Var $**	**Var %**
Net Capital Assets in Service:				
Opening Balance	101,713,892	105,132,271	3,418,379	3%
Ending Balance	105,132,271	108,295,856	3,163,585	3%
Average Balance	103,423,082	106,714,064	3,290,982	3%
Working Capital Allowance	27,503,172	25,207,987	- 2,295,185	-8%
Total Rate Base	**130,926,253**	**131,922,050**	**995,797**	**1%**
	NewCGAAP	**NewCGAAP**		
Expenses for Working Capital	**Bridge Year 2013**	**Test Year 2014**	**Var $**	**Var %**
Eligible Distribution Expenses:				
3500-Distribution Expenses - Operation	5,621,434	6,283,903	662,469	12%
3550-Distribution Expenses - Maintenance	3,602,291	3,722,797	120,506	3%
3650-Billing and Collecting	2,221,235	2,310,532	89,297	4%
3700-Community Relations	19,158	19,500	342	2%
3800-Administrative and General Expenses	6,008,031	6,216,618	208,587	3%
Total Eligible Distribution Expenses	17,472,149	18,553,350	1,081,201	6%
3350-Power Supply Expenses	165,882,328	175,354,240	9,471,913	6%
Total Expenses for Working Capital	183,354,477	193,907,590	10,553,113	6%
Working Capital factor	15%	13%		
Total Working Capital	**27,503,172**	**25,207,987**	**- 2,295,185**	**-8%**

The variance between 2014 Test Year and the Bridge Year is $1M or 1%. The total projected average net fixed asset balance in 2014 of $106.7M million is $3.3M or 3% greater than 2013. In 2014, the utility's investment in its distribution system is required in order to keep the system running in a safe and reliable manner. This increase is offset by the removal of stranded conventional meters from Rate Base. The utility is also planning on replacing aging infrastructures as a result of its asset assessment. Details regarding asset management can be found in the Distribution System Plan at Exhibit 2, Tb 5 Schedule 3. The rest of the increase can be attributed to regular maintenance of the distribution system. The working capital allowance saw a decrease due to the reduction in rate from 15% to 13%.

Table 2-5: 2013 Bridge Year vs. 2012 Actual:

	CGAAP	**NewCGAAP**		
Particulars	**Actual 2012**	**Bridge Year 2013**	**Var $**	**Var %**
Net Capital Assets in Service:		-		
Opening Balance	85,796,933	101,713,892	15,916,959	19%
Ending Balance	101,713,892	105,132,271	3,418,379	3%
Average Balance	93,755,413	103,423,082	9,667,669	10%
Working Capital Allowance	19,779,434	27,503,172	7,723,737	39%
Total Rate Base	**113,534,847**	**130,926,253**	**17,391,406**	**15%**
		-		
		-		
	CGAAP	**NewCGAAP**		
Expenses for Working Capital	**Actual 2012**	**Bridge Year 2013**	**Var $**	**Var %**
Eligible Distribution Expenses:		-		
3500-Distribution Expenses - Operation	4,387,015	5,621,434	1,234,419	28%
3550-Distribution Expenses - Maintenance	3,149,391	3,602,291	452,900	14%
3650-Billing and Collecting	3,114,375	2,221,235	- 893,140	-29%
3700-Community Relations	16,073	19,158	3,085	19%
3800-Administrative and General Expenses	5,492,207	6,008,031	515,824	9%
Total Eligible Distribution Expenses	16,159,061	17,472,149	1,313,088	8%
3350-Power Supply Expenses	115,703,834	165,882,328	50,178,494	43%
Total Expenses for Working Capital	131,862,895	183,354,477	51,491,582	39%
Working Capital factor	15%	15%		
Total Working Capital	**19,779,434**	**27,503,172**	**7,723,737**	**39%**

The variance between 2013 Bridge Year and the 2012 historical is $17.4M or 15%. The total projected average net fixed asset balance in 2013 of $104 million is $9.6 million or 10% greater than 2012. The increase is primarily due to the inclusion of Smart Meters in

Rate. Similarly to 2014, the utility is planning to replace aging assets as a result of its asset assessment. Details regarding asset management can be found in the Distribution System Plan at Exhibit 2, Tb 5 Schedule 3. Various capital projects have also contributed to the increase in capital spending. Details of these projects can be found at Appendix E of the Distribution System Plan. The rest of the increase is attributed to the ongoing expansion of the distribution system to be able to serve new customers, the ongoing renewal of the distribution system through rebuilding activates. The working capital allowance saw an increase proportional to the increase in OM&A. Details of the OM&A expenditures are presented at Exhibit 4.

Table 2-6: 2012 Actual vs. 2011 Actual:

	CGAAP	**CGAAP**		
Particulars	**Actual 2011**	**Actual 2012**	**Var $**	**Var %**
Net Capital Assets in Service:		-		
Opening Balance	84,073,401	85,796,933	1,723,532	2%
Ending Balance	85,796,933	101,713,892	15,916,959	19%
Average Balance	84,935,167	93,755,413	8,820,246	10%
Working Capital Allowance	19,375,776	19,779,434	403,658	2%
Total Rate Base	**104,310,943**	**113,534,847**	**9,223,904**	**9%**
		-		
		-		
	CGAAP	**CGAAP**		
Expenses for Working Capital	**Actual 2011**	**Actual 2012**	**Var $**	**Var %**
Eligible Distribution Expenses:		-		
3500-Distribution Expenses - Operation	4,643,079	4,387,015	- 256,064	-6%
3550-Distribution Expenses - Maintenance	2,544,531	3,149,391	604,860	24%
3650-Billing and Collecting	2,001,083	3,114,375	1,113,292	56%
3700-Community Relations	18,589	16,073	- 2,516	-14%
3800-Administrative and General Expenses	5,319,521	5,492,207	172,686	3%
Total Eligible Distribution Expenses	14,526,803	16,159,061	1,632,258	11%
3350-Power Supply Expenses	114,645,038	115,703,834	1,058,796	1%
Total Expenses for Working Capital	129,171,841	131,862,895	2,691,054	2%
Working Capital factor	15%	15%		
Total Working Capital	**19,375,776**	**19,779,434**	**403,658**	**2%**

The variance between 2012 historical and the 2011 historical is $9.2M or 9%. The total projected average net fixed asset balance in 2012 of $93.7 million is $8.8M or 10% greater than 2011. The increase is attributed to the expansion of the system to be able to accommodate new growth and support ongoing system renewal through rebuilding. The working capital allowance saw an increase proportional to the increase in OM&A. Details of the OM&A expenditures are presented at Exhibit 4.

Table 2-7: 2011Actual vs. 2010 Actual:

	CGAAP	CGAAP		
Particulars	**Actual 2010**	**Actual 2011**	**Var $**	**Var %**
Net Capital Assets in Service:		-		
Opening Balance	83,392,293	84,073,401	681,108	1%
Ending Balance	84,073,401	85,796,933	1,723,532	2%
Average Balance	83,732,847	84,935,167	1,202,320	1%
Working Capital Allowance	19,388,704	19,375,776	- 12,928	0%
Total Rate Base	**103,121,551**	**104,310,943**	**1,189,392**	**1%**

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	CGAAP	CGAAP		
Expenses for Working Capital	**Actual 2010**	**Actual 2011**	**Var $**	**Var %**
Eligible Distribution Expenses:		-		
3500-Distribution Expenses - Operation	4,047,491	4,643,079	595,588	15%
3550-Distribution Expenses - Maintenance	2,275,554	2,544,531	268,977	12%
3650-Billing and Collecting	2,396,557	2,001,083	- 395,474	-17%
3700-Community Relations	14,894	18,589	3,695	25%
3800-Administrative and General Expenses	5,266,558	5,319,521	52,963	1%
Total Eligible Distribution Expenses	14,001,054	14,526,803	525,749	4%
3350-Power Supply Expenses	115,256,976	114,645,038	- 611,938	-1%
Total Expenses for Working Capital	129,258,030	129,171,841	- 86,189	0%
Working Capital factor	15%	15%		
Total Working Capital	**19,388,704**	**19,375,776**	**- 12,928**	**0%**

2011 shows a marginal increase in net fixed assets. Additions in capital spending are offset by the removal of stranded meters in the amount of $4M. Details of capital investments are presented at Appendix E of the Distribution System Plan while details of BHI 'stranded meters are presented at Exhibit 2, Tab 4 Schedule 1. The working capital allowance mirrors the increase in OM&A as detailed at Exhibit 4.

Table 2-8:2010 Actual vs. 2010 Board-Approved:

	CGAAP	CGAAP		
Particulars	**Board Appr 2010**	**Actual 2010**	**Var $**	**Var %**
Net Capital Assets in Service:				
Opening Balance	-	83,392,293		
Ending Balance	-	84,073,401		
Average Balance	82,592,244	83,732,847	1,140,603	1%
Working Capital Allowance	22,593,651	19,388,704	- 3,204,947	-14%
Total Rate Base	**105,185,895**	**103,121,551**	**- 2,064,344**	**-2%**

	CGAAP	CGAAP		
Expenses for Working Capital	**Board Appr 2010**	**Actual 2010**	**Var $**	**Var %**
Eligible Distribution Expenses:				
3500-Distribution Expenses - Operation	4,464,122	4,047,491	- 416,631	-9%
3550-Distribution Expenses - Maintenance	2,864,348	2,275,554	- 588,794	-21%
3650-Billing and Collecting	2,305,153	2,396,557	91,404	4%
3700-Community Relations	41,584	14,894	- 26,690	-64%
3800-Administrative and General Expenses	4,671,786	5,266,558	594,772	13%
Total Eligible Distribution Expenses	14,346,993	14,001,054	- 345,939	-2%
3350-Power Supply Expenses	136,277,349	115,256,976	-21,020,373	-15%
Total Expenses for Working Capital	150,624,342	129,258,030	-21,366,312	-14%
Working Capital factor	15%	15%	0%	0%
Total Working Capital	**22,593,651**	**19,388,704**	**- 3,204,947**	**-14%**

The average of actual net fixed assets in 2010 was $1.14M more than Board Approved, as incremental capital investment was required despite the fact that it would not be recognized in 2010 rates

Exhibit 2: Rate Base

Tab 2 (of 8): Gross Assets

GROSS ASSET VARIANCE ANALYSIS

Burlington Hydro proposes to use an average net book value of its 2014 Test Year Property, Plant and Equipment and General Plant of $106,714,064. The Table below provides Burlington Hydro opening, closing and average Net Book Value of its Property, Plant and Equipment and General Plant.

Table 2-9:Derivation of Average Net Book Value of Property, Plant and Equipment and General Plant

	CGAAP	CGAAP	CGAAP	CGAAP	NewCGAAP	NewCGAAP
Particulars	**Board Appr 2010**	**Actual 2010**	**Actual 2011**	**Actual 2012**	**Bridge Year 2013**	**Test Year 2014**
Net Capital Assets in Service:						
Opening Balance	-	83,392,293	84,073,401	85,796,933	101,713,892	105,132,271
Ending Balance	-	84,073,401	85,796,933	101,713,892	105,132,271	108,295,856
Average Balance	82,592,244	83,732,847	84,935,167	93,755,413	103,423,082	106,714,064
Working Capital Allowance	22,593,651	19,388,704	19,375,776	19,779,434	27,503,172	25,207,987
Total Rate Base	**105,185,895**	**103,121,551**	**104,310,943**	**113,534,847**	**130,926,253**	**131,922,050**

The year over year increase in the average net book value reflects the utility's obligation to accommodate growth while addressing the upkeep and replacement of its aging infrastructure as well as meet the need to maintain the highest electrical safety standards for both the public and employees.

Year over year variance analysis are shown using Chapter 5 investment categories namely; System Access, System Renewal, System Services and General Plant at the table below. Year over year variance analysis follow.

Appendix 2-AB
Table 2 - Capital Expenditure Summary from Chapter 5 Consolidated Distribution System Plan Filing Requirements

First year of Forecast Period: *2014*

CATEGORY	**Historical Period** (previous plan[1] & actual)															**Forecast Period** (planned)				
	2009			2010			2011			2012			2013			2014	2015	2016	2017	2018
		Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var	Previous Year	Actual[2]	Var					
	$		%	$		%	$		%	$		%	$		%	$				
System Access		$14,297,941	--	$14,297,941	$9,864,837	**-31.0%**	$9,864,837	$5,480,942	**-44.4%**	$5,480,942	$8,690,080	**58.6%**	$8,690,080	$7,580,069	**-12.8%**	$8,244,469	$7,396,054	$6,925,561	$6,925,561	$7,621,934
System Renewal		$1,504,332	--	$1,504,332	$1,504,313	**0.0%**	$1,504,313	$2,103,560	**39.8%**	$2,103,560	$846,293	**-59.8%**	$846,293	$635,680	**-24.9%**	$1,349,241	$1,311,959	$1,309,651	$1,309,651	$1,309,561
System Service		$351,331	--	$351,331	$417,267	**18.8%**	$417,267	$1,771,353	**324.5%**	$1,771,353	$7,887,428	**345.3%**	$7,887,428	$1,783,314	**-77.4%**	$908,540	$650,832	$966,547	$966,547	$650,832
General Plant		$1,927,289	--	$1,927,289	$708,897	**-63.2%**	$708,897	$954,373	**34.6%**	$954,373	$893,472	**-6.4%**	$893,472	$1,183,455	**32.5%**	$807,000	$644,000	$496,000	$656,500	$278,900
Subtotal (net of Capt Contr).		$18,080,893		$18,080,893	$12,495,314	**-30.9%**	$12,495,314	$10,310,228	**-17.5%**	$10,310,228	$18,317,273	**77.7%**	$18,317,273	$11,182,518	**-39.0%**	$11,309,250	$10,002,845	$9,697,759	$9,858,259	$9,861,227
Capital Contribution		-$6,661,564		-$6,661,564	-$2,905,190		-$2,905,190	-$1,447,615		-$1,447,615	-$3,238,245		-$3,238,245	-$3,217,443		-$3,579,205				
TOTAL EXPENDITURE	-	$11,419,329	--	$11,419,329	$9,590,124	**-16.0%**	$9,590,124	$8,862,613	**-7.6%**	$8,862,613	$15,079,028	**70.1%**	$15,079,028	$7,965,075	**-47.2%**	$7,730,045				
System O&M			--		$6,323,045	--	$6,323,045	$7,187,610	13.7%	$7,187,610	$7,536,406	4.9%	$7,536,406	$9,223,725	22.4%	$10,006,700				

System Access Variances

2010 – 2009

The System Access expenditures in 2009 were unusually high for a variety of reasons although in many cases the costs were funded by contributed capital from developers or the City of Burlington. Of particular note were the values of projects for the Burlington Performing Arts Centre, the large volume of subdivisions assumed plus major City, Region of Halton and MTO projects. (Details in Appendix G 2009)

2011 –2010

In 2010 System Access expenditures were still relatively high, compared to 2011, due to continued subdivision assumptions, City and Region of Halton projects and metering expenditures. The variance was accentuated by the relatively low value of System Access expenditures, in 2011, due to reduced City and Region of Halton projects and the reallocation of Spare Transformers into inventory. (Details in Appendix G 2010, 2011)

2012 -- 2011

The 2012 System Access expenditures returned to a more typical level with a variance that is exaggerated by the relatively lower expenditures in 2011.

2013, 2014, 2015, 2016, 2017 and 2018

The System Access expenditures for these years are forecasted to be at a fairly consistent level. (Details in Appendices E, F and G)

System Renewal Variances

2011 –2010

The most significant variance in 2011 over 2010 was that this was the first year that BHI purchased a replacement power transformer as part of its strategic initiative to update these aging units. This purchase explains 59% of the year over year variance in Burlington Hydro's System Renewal gross capital spend.

2012 -- 2011

In 2012 BHI purchased a second power transformer as part of its strategic program but it postponed its planned Cable Rebuild project and reduced its Pole Replacement expenditure as part of its annual strategy to maintain total capital expenditures within its total budget. (Details in Appendix G 2011, 2012) This resulted in the low 2012 System Renewal expenditure.

2013 – 2012

In 2013 BHI postponed the purchase of an additional power transformer and a Cable Rebuild project while also temporarily cutting back Pole Replacement expenditure for this year. These postponements support the significant expenditures required for the construction of Tremaine TS feeder egress in 2013.

2014, 2015, 2016, 2017 and 2018

The System Renewal expenditures for these years are forecasted to be at a fairly consistent level. (Details in Appendices E, F and G)

System Service Variances

2010 – 2009

While the percentage increase in 2010 was notable (18.8%) the increased dollar value was not large and reflects some of the smaller substation equipment projects that were postponed, in 2009, to contain the overall capital budget.

2011 –2010

The increase in 2011 was very significant as it included the first capital contribution to Hydro One for the new Termaine TS and the beginning of the expenditures for the construction of new feeders to egress this facility. Please refer to section 1.2 of the Burlington Hydro's Distribution System Plan at Exhibit 2, Tab 5, Schedule 3 for a comprehensive explanation of how and why the Termaine TS project came about. The anticipated total investment of approximately $7.5M will be made over 8 years, from 2011-2018.

2012 -- 2011

The System Service expenditures accelerated dramatically in 2012 as the major cost for the capital contribution to Hydro One was accommodated and major costs were incurred for the construction of new the feeders and the costs for the Motorized ABS/Recloser Program.

2013 – 2012

Expenditures for System Service were reduced in 2013 primarily due to the refund to Hydro One following the true-up to satisfy the Capital Cost Recovery Agreement for the new Tremaine TS and also for decreased expenditures for the Motorized ABS/Recloser Program.

2014, 2015, 2016, 2017 and 2018

The System Service expenditures for these years are forecasted to be at a fairly consistent level, with some variances due to the timing of feeder egress costs. (Details in Appendices E and F)

General Plant Variances

2010 – 2009

The General Plant expenditures, in 2010, are significantly decreased due to reduced spending on Buildings, Rolling Stock and the new Geographic Information System (GIS) software. (Details in Appendix G 2009)

2011 –2010

The 2011 General Plant expenditures increased primarily due to the costs associated with the GIS Implementation. (Details in Appendix G 2010, 2011)

2012 – 2011

The variance between the General Plant expenditures in these years is not materially significant. This reduced level of spending in 2013 is achieved by deferring investment to a future period; this deferral is possible because Burlington Hydro has discretion as to which year its capital investment in its buildings occurs. By decreasing the capital investment in buildings, Burlington Hydro increases its resources available to support the construction of the Tremaine TS feeder egress.

2013 – 2012

The decreased General Plant expenditures, in 2013, are primarily due to reduced costs for Buildings.

2014, 2015, 2016, 2017 and 2018

The General Plant expenditures for these years are forecasted to be at a fairly consistent level, with some variances due to the timing for new Rolling Stock and Computer Hardware/Software.

ACCUMULATED DEPRECIATION

In the 2014 Test Year Burlington Hydro proposes to record Opening Accumulated Depreciation of $139,057,395 and a Closing balance of $143,623,522 for an average value of $141,340,625. Burlington Hydro's Accumulated Depreciation is presented in a continuity schedule at Exhibit 2, Tab 2, Schedule 3, Attachment 1. While Burlington Hydro's accumulated depreciation has increased at the same pace as the utility capital investment, the accumulated depreciation decreased in 2013 and 2014 due to the following accounting changes:

- Changes to the overheads and burdens eligible for capitalization; and
- Increased depreciable lives.

Burlington Hydro's depreciation expense policy and methodology are provided at Exhibit 4 Tab 7 Schedule 3.

In 2010, Burlington Hydro, along with Enersource Corporation, Oakville Hydro, Halton Hills Hydro and Milton Hydro commissioned Kinectrics Inc. to prepare a useful life study. Burlington Hydro has revised the useful lives of many of its assets according to the study's findings. For reference purposes, the "Useful Lives Study" is filed at Exhibit 4, Tab 7, Schedule 1, Attachment 2.

Table 2-10 below provides Burlington Hydro's depreciable lives by asset class.

IFRS GENERAL LEDEGER ACCOUNTS FOR I.F.R.S. COMPONENTS			
OLD	NEW	DESCRIPTION	YEARS
ACCOUNT	ACCOUNT		
540/1980	8701	SCADA – RTU	20
540/1980	8702	SCADA – Relays	30
540/1980	8703	SCADA – Battery	10
1820	8201	Substation - Equipment	40
1820	8202	Substation - Battery Bank and Chargers	20
1830	8301	Overhead Primary - Structures	40
1835	8351	Overhead Primary - Devices	40
1835	8352	Overhead Primary - Conductors	60
1835	8353	Overhead Primary - Switch Motors, Arresters	20
1840	8401	Underground Primary - Conduit	60
1845	8451	Underground Primary - Conductor	40
1845	8452	Underground Primary - Riser Pole Arresters	20
1845	8453	Underground Primary - Devices	30
1850	8501	Transformers	40
1850	8502	Transformers - Arresters	20
1855	8551	Underground Secondary	60
1855	8552	Overhead Secondary	60
1860	8601	Meters - Residential	25
1860	8602	Meters - Industrial and Wholesale	20
1860	8603	Meters - CT and PT	45
1860	8604	Smart Meters, Repeaters, Data Concentrators	15

Continuity schedules of Burlington Hydro's accumulated depreciation by year at an account level are provided at Exhibit 2 Tab 2 Schedule 3, Attachment 1.

FIXED ASSET CONTINUITIES

This Schedule presents a continuity schedule of its investment in capital assets, the associated accumulated amortization and the net book value for each Capital USoA account for the 2010 Historic Year, 2011 Historic Year, 2012 Historic Year, 2013 Bridge Year and 2014 Test Year.

Fixed Asset Continuity Schedule - CGAAP/ASPE/USGAAP

Year 2010

			Cost				Accumulated Depreciation				
CCA Class	OEB	Description	Opening Balance	Additions	Disposals	Closing Balance	Opening Balance	Additions	Disposals	Closing Balance	Net Book Value
12	1611	Computer Software (Formally known as Account 1925)	$ 4,191,890	$ 249,256		$ 4,441,146	-$ 2,936,651	-$ 305,500		-$ 3,242,151	$ 1,198,995
CEC	1612	Land Rights (Formally known as Account 1906)	$ 189,351			$ 189,351	-$ 18,029	-$ 2,829		-$ 20,858	$ 168,493
N/A	1805	Land	$ 202,703			$ 202,703	$ -			$ -	$ 202,703
47	1808	Buildings	$ 2,229,294	$ 34,915		$ 2,264,209	-$ 956,519	-$ 64,610		-$ 1,021,129	$ 1,243,080
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ -			$ -	$ -			$ -	$ -
47	1820	Distribution Station Equipment <50 kV	$ 12,965,913	$ 214,958		$ 13,180,871	-$ 8,021,997	-$ 357,630		-$ 8,379,627	$ 4,801,244
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 24,151,388	$ 1,874,117		$ 26,025,505	-$ 11,924,982	-$ 890,923		-$ 12,815,905	$ 13,209,600
47	1835	Overhead Conductors & Devices	$ 37,300,263	$ 1,199,621		$ 38,499,884	-$ 19,933,626	-$ 1,322,055		-$ 21,255,681	$ 17,244,203
47	1840	Underground Conduit	$ 12,088,085	$ 1,441,086		$ 13,529,171	-$ 6,352,098	-$ 449,781		-$ 6,801,879	$ 6,727,292
47	1845	Underground Conductors & Devices	$ 23,584,390	$ 1,183,354		$ 24,767,744	-$ 11,469,768	-$ 860,684		-$ 12,330,452	$ 12,437,292
47	1850	Line Transformers	$ 43,726,111	$ 2,087,896		$ 45,814,007	-$ 22,622,094	-$ 1,612,675		-$ 24,234,769	$ 21,579,238
47	1855	Services (Overhead & Underground)	$ 27,927,296	$ 1,585,735		$ 29,513,031	-$ 15,122,050	-$ 998,653		-$ 16,120,703	$ 13,392,328
47	1860	Meters	$ 10,063,029	$ 2,106,826	-$ 3,967,312	$ 8,202,543	-$ 6,239,633	-$ 226,609	$ 2,102,457	-$ 4,363,785	$ 3,838,758
47	1860	Meters (Smart Meters)	$ -			$ -	$ -			$ -	$ -
N/A	1905	Land	$ 96,300			$ 96,300	$ -			$ -	$ 96,300
47	1908	Buildings & Fixtures	$ 7,847,195	$ 191,053		$ 8,038,248	-$ 3,231,798	-$ 203,666		-$ 3,435,464	$ 4,602,784
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 1,273,709	$ 52,155	-$ 690	$ 1,325,174	-$ 1,021,443	-$ 40,118	$ 690	-$ 1,060,871	$ 264,303
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ 738,094	$ 74,986		$ 813,080	-$ 600,446	-$ 48,989		-$ 649,435	$ 163,645
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
45.1	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ -			$ -	$ -			$ -	$ -
10	1930	Transportation Equipment	$ 3,892,691	$ 80,979	-$ 221,678	$ 3,751,992	-$ 2,462,486	-$ 284,933	$ 221,678	-$ 2,525,741	$ 1,226,251
8	1935	Stores Equipment	$ 292,425			$ 292,425	-$ 292,080			-$ 292,080	$ 345
8	1940	Tools, Shop & Garage Equipment	$ 1,292,993	$ 21,559		$ 1,314,552	-$ 1,111,194	-$ 33,184		-$ 1,144,378	$ 170,174
8	1945	Measurement & Testing Equipment	$ 362,219	$ 3,995		$ 366,214	-$ 330,199	-$ 5,428		-$ 335,627	$ 30,587
8	1950	Power Operated Equipment	$ -			$ -	$ -			$ -	$ -
8	1955	Communications Equipment	$ 191,861			$ 191,861	-$ 191,861			-$ 191,861	$ -
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ -			$ -	$ -			$ -	$ -
47	1970	Load Management Controls Customer Premises	$ -			$ -	$ -			$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -			$ -	$ -			$ -	$ -
47	1980	System Supervisor Equipment	$ 2,883,378	$ 92,823		$ 2,976,201	-$ 2,491,417	-$ 184,143		-$ 2,675,560	$ 300,641
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ -			$ -	$ -			$ -	$ -
47	1995	Contributions & Grants	-$ 19,753,629	-$ 2,905,190		-$ 22,658,819	$ 2,985,715	$ 848,249		$ 3,833,964	-$ 18,824,855
	etc.					$ -				$ -	$ -
						$ -				$ -	$ -
		Sub-Total	**$ 197,736,949**	**$ 9,590,124**	**-$ 4,189,680**	**$203,137,393**	**-$114,344,656**	**-$ 7,044,161**	**$ 2,324,825**	**-$ 119,063,992**	**$ 84,073,401**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets (input as negative)				$ -				$ -	$ -
		Total PP&E	**$ 197,736,949**	**$ 9,590,124**	**-$ 4,189,680**	**$203,137,393**	**-$114,344,656**	**-$ 7,044,161**	**$ 2,324,825**	**-$ 119,063,992**	**$ 84,073,401**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets)									
		Total						**-$ 7,044,161**			

Fixed Asset Continuity Schedule - CGAAP/ASPE/USGAAP

Year **2011**

			Cost				Accumulated Depreciation				
CCA Class	OEB	Description	Opening Balance	Additions	Disposals	Closing Balance	Opening Balance	Additions	Disposals	Closing Balance	Net Book Value
12	1611	Computer Software (Formally known as Account 1925)	$ 4,441,146	$ 531,430		$ 4,972,576	-$ 3,242,151	-$ 358,411		-$ 3,600,562	$ 1,372,014
CEC	1612	Land Rights (Formally known as Account 1906)	$ 189,351			$ 189,351	-$ 20,858	-$ 2,829		-$ 23,687	$ 165,664
N/A	1805	Land	$ 202,703			$ 202,703	$ -			$ -	$ 202,703
47	1808	Buildings	$ 2,264,209	$ 27,185		$ 2,291,394	-$ 1,021,129	-$ 66,425		-$ 1,087,554	$ 1,203,840
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ -			$ -	$ -			$ -	$ -
47	1820	Distribution Station Equipment <50 kV	$ 13,180,871	$ 645,340		$ 13,826,211	-$ 8,379,627	-$ 360,175		-$ 8,739,802	$ 5,086,409
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 26,025,505	$ 2,564,592		$ 28,590,097	-$ 12,815,905	-$ 960,604		-$ 13,776,509	$ 14,813,588
47	1835	Overhead Conductors & Devices	$ 38,499,884	$ 1,222,353		$ 39,722,237	-$ 21,255,681	-$ 1,337,612		-$ 22,593,293	$ 17,128,944
47	1840	Underground Conduit	$ 13,529,171	$ 893,215		$ 14,422,386	-$ 6,801,879	-$ 485,860		-$ 7,287,739	$ 7,134,647
47	1845	Underground Conductors & Devices	$ 24,767,744	$ 1,009,509		$ 25,777,253	-$ 12,330,452	-$ 886,509		-$ 13,216,961	$ 12,560,292
47	1850	Line Transformers	$ 45,814,007	$ 603,586		$ 46,417,593	-$ 24,234,769	-$ 1,635,594		-$ 25,870,363	$ 20,547,230
47	1855	Services (Overhead & Underground)	$ 29,513,031	$ 1,099,026		$ 30,612,057	-$ 16,120,703	-$ 1,026,891		-$ 17,147,594	$ 13,464,463
47	1860	Meters	$ 8,202,543	$ 329,818	-$ 55,592	$ 8,476,769	-$ 4,363,785	-$ 261,824	$ 24,759	-$ 4,600,850	$ 3,875,919
47	1860	Meters (Smart Meters)	$ -			$ -	$ -			$ -	$ -
N/A	1905	Land	$ 96,300			$ 96,300	$ -			$ -	$ 96,300
47	1908	Buildings & Fixtures	$ 8,038,248	$ 198,813		$ 8,237,061	-$ 3,435,464	-$ 216,787		-$ 3,652,251	$ 4,584,810
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 1,325,174	$ 71,789		$ 1,396,963	-$ 1,060,871	-$ 46,121		-$ 1,106,992	$ 289,971
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ 813,080	$ 42,470		$ 855,550	-$ 649,435	-$ 46,125		-$ 695,560	$ 159,990
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
45.1	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ -			$ -	$ -			$ -	$ -
10	1930	Transportation Equipment	$ 3,751,992	$ 64,228	-$ 151,620	$ 3,664,600	-$ 2,525,741	-$ 292,025	$ 151,620	-$ 2,666,146	$ 998,454
8	1935	Stores Equipment	$ 292,425			$ 292,425	-$ 292,080			-$ 292,080	$ 345
8	1940	Tools, Shop & Garage Equipment	$ 1,314,552	$ 15,734		$ 1,330,286	-$ 1,144,378	-$ 31,737		-$ 1,176,115	$ 154,171
8	1945	Measurement & Testing Equipment	$ 366,214	$ 2,722		$ 368,936	-$ 335,627	-$ 5,764		-$ 341,391	$ 27,545
8	1950	Power Operated Equipment	$ -			$ -	$ -			$ -	$ -
8	1955	Communications Equipment	$ 191,861			$ 191,861	-$ 191,861			-$ 191,861	$ -
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ -			$ -	$ -			$ -	$ -
47	1970	Load Management Controls Customer Premises	$ -			$ -	$ -			$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -			$ -	$ -			$ -	$ -
47	1980	System Supervisor Equipment	$ 2,976,201	$ 45,359		$ 3,021,560	-$ 2,675,560	-$ 22,258		-$ 2,697,818	$ 323,742
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ -	$ 943,057		$ 943,057	$ -			$ -	$ 943,057
47	1995	Contributions & Grants	-$ 22,658,819	-$ 1,447,615		-$ 24,106,434	$ 3,833,964	$ 935,305		$ 4,769,269	-$ 19,337,165
	etc.					$ -				$ -	$ -
						$ -				$ -	$ -
		Sub-Total	**$ 203,137,393**	**$ 8,862,611**	**-$ 207,212**	**$211,792,792**	**-$119,063,992**	**-$ 7,108,246**	**$ 176,379**	**-$ 125,995,859**	**$ 85,796,933**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 203,137,393**	**$ 8,862,611**	**-$ 207,212**	**$211,792,792**	**-$119,063,992**	**-$ 7,108,246**	**$ 176,379**	**-$ 125,995,859**	**$ 85,796,933**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets)									
		Total						**-$ 7,108,246**			

Fixed Asset Continuity Schedule - CGAAP/ASPE/USGAAP

Year 2012

			Cost				Accumulated Depreciation				
CCA Class	**OEB**	**Description**	**Opening Balance**	**Additions**	**Disposals**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals**	**Closing Balance**	**Net Book Value**
12	1611	Computer Software (Formally known as Account 1925)	$ 4,972,576	$ 566,350		$ 5,538,926	-$ 3,600,562	-$ 476,897		-$ 4,077,459	$ 1,461,467
CEC	1612	Land Rights (Formally known as Account 1906)	$ 189,351			$ 189,351	-$ 23,687	-$ 2,829		-$ 26,516	$ 162,835
N/A	1805	Land	$ 202,703			$ 202,703	$ -			$ -	$ 202,703
47	1808	Buildings	$ 2,291,394	$ 5,450		$ 2,296,844	-$ 1,087,554	-$ 66,361		-$ 1,153,915	$ 1,142,929
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ -			$ -	$ -			$ -	$ -
47	1820	Distribution Station Equipment <50 kV	$ 13,826,211	$ 594,682		$ 14,420,893	-$ 8,739,802	-$ 367,829		-$ 9,107,631	$ 5,313,262
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 28,590,097	$ 2,590,416		$ 31,180,513	-$ 13,776,509	-$ 1,039,293		-$ 14,815,802	$ 16,364,711
47	1835	Overhead Conductors & Devices	$ 39,722,237	$ 1,634,365		$ 41,356,602	-$ 22,593,293	-$ 1,352,706		-$ 23,945,999	$ 17,410,603
47	1840	Underground Conduit	$ 14,422,386	$ 1,764,996		$ 16,187,382	-$ 7,287,739	-$ 525,463		-$ 7,813,202	$ 8,374,180
47	1845	Underground Conductors & Devices	$ 25,777,253	$ 1,309,497		$ 27,086,750	-$ 13,216,961	-$ 909,835		-$ 14,126,796	$ 12,959,954
47	1850	Line Transformers	$ 46,417,593	$ 1,855,125		$ 48,272,718	-$ 25,870,363	-$ 1,633,220		-$ 27,503,583	$ 20,769,135
47	1855	Services (Overhead & Underground)	$ 30,612,057	$ 1,328,442		$ 31,940,499	-$ 17,147,594	-$ 1,042,893		-$ 18,190,487	$ 13,750,012
47	1860	Meters	$ 8,476,769	$ 9,986,098		$ 18,462,867	-$ 4,600,850	-$ 1,860,583		-$ 6,461,433	$ 12,001,434
47	1860	Meters (Smart Meters)	$ -			$ -	$ -			$ -	$ -
N/A	1905	Land	$ 96,300			$ 96,300	$ -			$ -	$ 96,300
47	1908	Buildings & Fixtures	$ 8,237,061	$ 226,795		$ 8,463,856	-$ 3,652,251	-$ 227,590		-$ 3,879,841	$ 4,584,015
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 1,396,963	$ 81,205		$ 1,478,168	-$ 1,106,992	-$ 52,092		-$ 1,159,084	$ 319,084
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ 855,550	$ 89,640	-$ 176,983	$ 768,207	-$ 695,560	-$ 60,434	$ 171,437	-$ 584,557	$ 183,650
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
45.1	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ -			$ -	$ -			$ -	$ -
10	1930	Transportation Equipment	$ 3,664,600	$ 64,539	-$ 199,385	$ 3,529,754	-$ 2,666,146	-$ 234,201	$ 199,385	-$ 2,700,962	$ 828,792
8	1935	Stores Equipment	$ 292,425			$ 292,425	-$ 292,080			-$ 292,080	$ 345
8	1940	Tools, Shop & Garage Equipment	$ 1,330,286	$ 16,652		$ 1,346,938	-$ 1,176,115	-$ 32,040		-$ 1,208,155	$ 138,783
8	1945	Measurement & Testing Equipment	$ 368,936	$ 12,995		$ 381,931	-$ 341,391	-$ 5,405		-$ 346,796	$ 35,135
8	1950	Power Operated Equipment	$ -			$ -	$ -			$ -	$ -
8	1955	Communications Equipment	$ 191,861			$ 191,861	-$ 191,861			-$ 191,861	$ -
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ -			$ -	$ -			$ -	$ -
47	1970	Load Management Controls Customer Premises	$ -			$ -	$ -			$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -			$ -	$ -	$ -		$ -	$ -
47	1980	System Supervisor Equipment	$ 3,021,560	$ 64,163		$ 3,085,723	-$ 2,697,818	-$ 25,012		-$ 2,722,830	$ 362,893
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ 943,057	$ 5,855,000		$ 6,798,057	$ -			$ -	$ 6,798,057
47	1995	Contributions & Grants	-$ 24,106,434	-$ 3,238,245		-$ 27,344,679	$ 4,769,269	$ 1,029,023		$ 5,798,292	-$ 21,546,387
	etc.					$ -				$ -	$ -
						$ -				$ -	$ -
		Sub-Total	**$ 211,792,792**	**$24,808,165**	**-$ 376,368**	**$236,224,589**	**-$125,995,859**	**-$ 8,885,660**	**$ 370,822**	**-$ 134,510,697**	**$101,713,892**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets (input as negative)				$ -				$ -	$ -
		Total PP&E	**$ 211,792,792**	**$24,808,165**	**-$ 376,368**	**$236,224,589**	**-$125,995,859**	**-$ 8,885,660**	**$ 370,822**	**-$ 134,510,697**	**$101,713,892**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets)									
		Total						**-$ 8,885,660**			

Fixed Asset Continuity Schedule - CGAAP/ASPE/USGAAP

Year 2013

CCA Class	OEB	Description	Cost: Opening Balance	Cost: Additions	Cost: Disposals	Cost: Closing Balance	Accumulated Depreciation: Opening Balance	Accumulated Depreciation: Additions	Accumulated Depreciation: Disposals	Accumulated Depreciation: Closing Balance	Net Book Value
12	1611	Computer Software (Formally known as Account 1925)	$ 5,538,926	$ 345,000		$ 5,883,926	-$ 4,077,459	-$ 278,107		-$ 4,355,566	$ 1,528,360
CEC	1612	Land Rights (Formally known as Account 1906)	$ 189,351			$ 189,351	-$ 26,516	-$ 2,828		-$ 29,344	$ 160,007
N/A	1805	Land	$ 202,703			$ 202,703	$ -			$ -	$ 202,703
47	1808	Buildings	$ 2,296,844	$ 5,000		$ 2,301,844	-$ 1,153,915	-$ 65,070		-$ 1,218,985	$ 1,082,859
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ -			$ -	$ -			$ -	$ -
47	1820	Distribution Station Equipment <50 kV	$ 14,420,893	$ 214,215		$ 14,635,108	-$ 9,107,631	-$ 217,667		-$ 9,325,298	$ 5,309,810
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 31,180,513	$ 3,252,295		$ 34,432,808	-$ 14,815,802	-$ 536,131		-$ 15,351,933	$ 19,080,875
47	1835	Overhead Conductors & Devices	$ 41,356,602	$ 681,770		$ 42,038,372	-$ 23,945,999	-$ 563,931		-$ 24,509,930	$ 17,528,442
47	1840	Underground Conduit	$ 16,187,382	$ 1,981,565		$ 18,168,947	-$ 7,813,202	-$ 177,551		-$ 7,990,753	$ 10,178,194
47	1845	Underground Conductors & Devices	$ 27,086,750	$ 1,604,325		$ 28,691,075	-$ 14,126,796	-$ 603,525		-$ 14,730,321	$ 13,960,754
47	1850	Line Transformers	$ 48,272,718	$ 2,008,135		$ 50,280,853	-$ 27,503,583	-$ 696,902		-$ 28,200,485	$ 22,080,368
47	1855	Services (Overhead & Underground)	$ 31,940,499	$ 1,589,650		$ 33,530,149	-$ 18,190,487	-$ 280,726		-$ 18,471,213	$ 15,058,936
47	1860	Meters	$ 18,462,867	$ 634,745		$ 19,097,612	-$ 6,461,433	-$ 995,242		-$ 7,456,675	$ 11,640,937
47	1860	Meters (Smart Meters)	$ -			$ -	$ -			$ -	$ -
N/A	1905	Land	$ 96,300			$ 96,300	$ -			$ -	$ 96,300
47	1908	Buildings & Fixtures	$ 8,463,856	$ 35,000		$ 8,498,856	-$ 3,879,841	-$ 244,847		-$ 4,124,688	$ 4,374,168
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 1,478,168	$ 54,000		$ 1,532,168	-$ 1,159,084	-$ 60,189		-$ 1,219,273	$ 312,895
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ 768,207	$ 98,000		$ 866,207	-$ 584,557	-$ 59,669		-$ 644,226	$ 221,981
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
45.1	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ -			$ -	$ -			$ -	$ -
10	1930	Transportation Equipment	$ 3,529,754	$ 46,000		$ 3,575,754	-$ 2,700,962	-$ 71,769		-$ 2,772,731	$ 803,023
8	1935	Stores Equipment	$ 292,425			$ 292,425	-$ 292,080			-$ 292,080	$ 345
8	1940	Tools, Shop & Garage Equipment	$ 1,346,938	$ 18,000		$ 1,364,938	-$ 1,208,155	-$ 31,102		-$ 1,239,257	$ 125,681
8	1945	Measurement & Testing Equipment	$ 381,931	$ 3,000		$ 384,931	-$ 346,796	-$ 5,593		-$ 352,389	$ 32,542
8	1950	Power Operated Equipment	$ -			$ -	$ -			$ -	$ -
8	1955	Communications Equipment	$ 191,861			$ 191,861	-$ 191,861			-$ 191,861	$ -
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ -			$ -	$ -			$ -	$ -
47	1970	Load Management Controls Customer Premises	$ -			$ -	$ -			$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -			$ -	$ -			$ -	$ -
47	1980	System Supervisor Equipment	$ 3,085,723	$ 88,820		$ 3,174,543	-$ 2,722,830	-$ 168,564		-$ 2,891,394	$ 283,149
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ 6,798,057	-$ 1,477,000		$ 5,321,057	$ -	$ 557,059		$ 557,059	$ 5,878,116
47	1995	Contributions & Grants	-$ 27,344,679	-$ 3,217,443		-$ 30,562,122	$ 5,798,292	-$ 44,342		$ 5,753,950	-$ 24,808,172
	etc.		$ -			$ -	$ -			$ -	$ -
			$ -			$ -	$ -			$ -	$ -
		Sub-Total	**$ 236,224,589**	**$ 7,965,077**		**$244,189,666**	**-$134,510,697**	**-$ 4,546,698**		**-$ 139,057,395**	**$105,132,271**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 236,224,589**	**$ 7,965,077**	**$ -**	**$244,189,666**	**-$134,510,697**	**-$ 4,546,698**	**$ -**	**-$ 139,057,395**	**$105,132,271**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets)									
		Total						**-$ 4,546,698**			

Fixed Asset Continuity Schedule - CGAAP/ASPE/USGAAP

Year 2014

			Cost				Accumulated Depreciation				
CCA Class	**OEB**	**Description**	**Opening Balance**	**Additions**	**Disposals**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals**	**Closing Balance**	**Net Book Value**
12	1611	Computer Software (Formally known as Account 1925)	$ 5,883,926	$ 245,000		$ 6,128,926	-$ 4,355,566	-$ 363,440		-$ 4,719,007	$ 1,409,920
CEC	1612	Land Rights (Formally known as Account 1906)	$ 189,351	$ 60,000		$ 249,351	-$ 29,344	-$ 3,328		-$ 32,673	$ 216,678
N/A	1805	Land	$ 202,703			$ 202,703	$ -			$ -	$ 202,703
47	1808	Buildings	$ 2,301,844	$ 5,000		$ 2,306,844	-$ 1,218,985	-$ 63,385		-$ 1,282,370	$ 1,024,474
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ -			$ -	$ -			$ -	$ -
47	1820	Distribution Station Equipment <50 kV	$ 14,635,108	$ 565,312		$ 15,200,420	-$ 9,325,298	-$ 227,604		-$ 9,552,902	$ 5,647,517
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 34,432,808	$ 1,686,483		$ 36,119,291	-$ 15,351,933	-$ 597,865		-$ 15,949,798	$ 20,169,493
47	1835	Overhead Conductors & Devices	$ 42,038,372	$ 847,206		$ 42,885,578	-$ 24,509,930	-$ 504,774		-$ 25,014,705	$ 17,870,874
47	1840	Underground Conduit	$ 18,168,947	$ 1,669,428		$ 19,838,375	-$ 7,990,753	-$ 207,976		-$ 8,198,729	$ 11,639,646
47	1845	Underground Conductors & Devices	$ 28,691,075	$ 1,882,472		$ 30,573,547	-$ 14,730,321	-$ 595,920		-$ 15,326,241	$ 15,247,306
47	1850	Line Transformers	$ 50,280,853	$ 1,909,205		$ 52,190,058	-$ 28,200,485	-$ 745,869		-$ 28,946,354	$ 23,243,704
47	1855	Services (Overhead & Underground)	$ 33,530,149	$ 1,261,637		$ 34,791,786	-$ 18,471,213	-$ 304,487		-$ 18,775,701	$ 16,016,085
47	1860	Meters	$ 19,097,612	$ 606,883		$ 19,704,495	-$ 7,456,675	-$ 947,134		-$ 8,403,810	$ 11,300,686
47	1860	Meters (Smart Meters)	$ -			$ -	$ -			$ -	$ -
N/A	1905	Land	$ 96,300			$ 96,300	$ -			$ -	$ 96,300
47	1908	Buildings & Fixtures	$ 8,498,856	$ 327,000		$ 8,825,856	-$ 4,124,688	-$ 246,284		-$ 4,370,972	$ 4,454,884
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 1,532,168	$ 38,000		$ 1,570,168	-$ 1,219,273	-$ 57,569		-$ 1,276,842	$ 293,326
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ 866,207	$ 70,000		$ 936,207	-$ 644,226	-$ 64,916		-$ 709,142	$ 227,065
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
45.1	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ -			$ -	$ -			$ -	$ -
10	1930	Transportation Equipment	$ 3,575,754	$ 50,000		$ 3,625,754	-$ 2,772,731	-$ 75,769		-$ 2,848,499	$ 777,255
8	1935	Stores Equipment	$ 292,425			$ 292,425	-$ 292,080			-$ 292,080	$ 345
8	1940	Tools, Shop & Garage Equipment	$ 1,364,938	$ 9,000		$ 1,373,938	-$ 1,239,257	-$ 26,532		-$ 1,265,788	$ 108,150
8	1945	Measurement & Testing Equipment	$ 384,931	$ 3,000		$ 387,931	-$ 352,389	-$ 4,626		-$ 357,015	$ 30,916
8	1950	Power Operated Equipment	$ -			$ -	$ -			$ -	$ -
8	1955	Communications Equipment	$ 191,861			$ 191,861	-$ 191,861			-$ 191,861	$ -
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ -			$ -	$ -			$ -	$ -
47	1970	Load Management Controls Customer Premises	$ -			$ -	$ -			$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -			$ -	$ -			$ -	$ -
47	1980	System Supervisor Equipment	$ 3,174,543	$ 73,624		$ 3,248,167	-$ 2,891,394	-$ 72,483		-$ 2,963,877	$ 284,290
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ 5,321,057			$ 5,321,057	$ 557,059	-$ 88,684		$ 468,374	$ 5,789,431
47	1995	Contributions & Grants	-$ 30,562,122	-$ 3,579,205		-$ 34,141,327	$ 5,753,950	$ 632,186		$ 6,386,136	-$ 27,755,191
	etc.		$ -			$ -	$ -			$ -	$ -
			$ -			$ -	$ -			$ -	$ -
		Sub-Total	**$ 244,189,666**	**$ 7,730,045**	**$ -**	**$251,919,711**	**-$139,057,395**	**-$ 4,566,460**	**$ -**	**-$ 143,623,855**	**$108,295,856**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 244,189,666**	**$ 7,730,045**	**$ -**	**$251,919,711**	**-$139,057,395**	**-$ 4,566,460**	**$ -**	**-$ 143,623,855**	**$108,295,856**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets)									
		Total						**-$ 4,566,460**			

Exhibit 2: Rate Base

Tab 3 (of 8): Allowance for Working Capital Allowance

DERIVATION OF WORKING CAPITAL ALLOWANCE

Burlington Hydro has used the 13% Allowance Approach for the purpose of calculating its Allowance for Working Capital. This was done in accordance with the letter issued by the Board on April 12, 2012 in which the Board indicated that its default ratio had been reduced from 15% to 13% and that the default ratio was to continue to be applied to the sum of Cost of Power and controllable expenses (i.e., Operations, Maintenance, Billing and Collecting, Community Relations, Administration and General). The change in rate has reduced Burlington Hydro's working capital allowance by $3,878,152.

Burlington Hydro proposes a deemed Working Cash Allowance of $25,207,987k for the 2014 Test Year. The Table below presented below show Burlington Hydro's calculations in determining its Allowance for Working Capital.

Table 2-11: 2014 Proposed Working Capital Allowance at rate of 13%

Particulars		Test Year 2014 (NewCGAAP)
Controllable Expenses		$18,553,350
Cost of Power/Power Supply Expense		$175,354,241
Working Capital Base		$193,907,591
Working Capital Rate %		13%
Working Capital Allowance		$25,207,987

Table 9: 2014 Proposed Working Capital Allowance at rate of 15%

Particulars		Test Year 2014 (NewCGAAP)
Controllable Expenses		$18,553,350
Cost of Power/Power Supply Expense		$175,354,241
Working Capital Base		$193,907,591
Working Capital Rate %		15%
Working Capital Allowance		$29,086,139

LEAD LAG STUDY

Burlington Hydro is not proposing to use a lead lag study in order to determine its Working Capital Allowance.

Exhibit 2: Rate Base

Tab 4 (of 8): Treatment of Stranded Assets Related to Smart Meters Deployment

TREATMENT OF STRANDED ASSETS RELATED TO SMART METERS DEPLOYMENT

On February 28, 2012, Burlington Hydro filed an application seeking Board approval for the disposition and recovery of costs related to smart meter deployment, offset by Smart Meter Funding Adder ("SMFA") revenues collected from May 1, 2006 to April 30, 2012. Burlington Hydro requested approval of proposed Smart Meter Disposition Riders ("SMDRs") and Smart Meter Incremental Revenue Requirement Rate Riders ("SMIRRs") effective May 1, 2012. The Board determined that an implementation date of July 1, 2012 was appropriate.

In its decision, the Board found that Burlington Hydro's documented costs, as revised in response to interrogatories and in Burlington Hydro's reply submission, related to smart meter procurement, installation and operation, and including costs related to TOU rate implementation, were reasonable. As such, the Board approved the recovery of the costs applied for related to smart meter deployment and operation as of December 31, 2011, and the ongoing recovery of capital-related and operating expenses for 2012 and going forward until Burlington Hydro's next cost of service application. The Board determined that an implementation date of July 1, 2012 was appropriate.

The Board's model and decision (Decision and Order, EB-2012-0081 dated June 21, 2012), which contains a summary of the specifics requested and approved, is presented at Exhibit 2, Tab 3, Schedule 2, Attachment 1 and Exhibit 2, Tab 3, Schedule 2, Attachment 1. The table below shows details of the capital expenditures that have been added to the utility's rate base.

Table 2-12: Summary of Smart Meter Capital Costs transferred to Rate Base.

	Res	**GS<50**	**GS>50**
Capital			
Smart Meter	$7,174,687*	$2,234,597	$249,698
Computer Hardware	$28,274	$2,458	$275
Computer Software	$135,135	$11,746	$1,313
Tools & Equipment	$9,553	$830	$93
Other Equipment	$0	$0	$0
Applications Software	$0	$0	$0
Total Capital Costs	$7,347,649	$2,249,631	$251,378

* Includes $100K of forecast amount which was not shown as part of capitalization.

In the application, Burlington Hydro stated: "No cost associated with stranded meters has been included in the application." The exclusion of stranded meters was consistent with the directions in G-2011-0001 Guideline: "Smart Meter Funding and Cost Recovery – Final Disposition", dated December 15, 2011.

Burlington Hydro's decision to exclude its stranded meter costs in its Smart Meter application was accepted in Decision and Order, EB-2012-0081, dated June 21, 2012, where it was stated:

> "TREATMENT OF STRANDED METERS
>
> In its Application, Burlington Hydro proposed not to dispose of stranded meters by way of stranded meter rate riders at this time, but to deal with disposition in its next rebasing application, scheduled for 2014 rates. Neither VECC nor Board staff took issue with Burlington Hydro's proposal. Board staff submitted that

> Burlington Hydro's proposal to defer recovery of stranded meter costs is compliant with Guideline G-2011-0001. The Board agrees."

Subsequently in the Decision and Order, the Board instructed Burlington Hydro to address both the recovery of all its stranded meter costs and possible operational efficiencies/cost savings opportunities in its next rebasing application.

As mentioned in Exhibit 1, in response to the Board's request for quantified operational efficiencies related to smart meters, Burlington Hydro is of the opinion that it is premature to deal with this matter. Burlington Hydro is taking steps to leverage the data that Smart Meters will make available (for example, we plan to deploy an Outage Management System that will make use of Smart Meter data to locate the origin of a power interruption and to automatically alert a crew of the outage; when fully deployed it may be possible to avoid dispatching a crew because the system will rely on programmed intelligence to detect an interruption, correctly identify the cause of the outage, automatically open and close switches to make safe and reroute power flows to minimize the duration of the interruption). While Burlington Hydro is preparing for the deployment and commissioning of these systems it is premature to identify any operational efficiencies or cost savings.

The total cost of the stranded meters that Burlington Hydro is claiming in this current application is $4,585,794. This cost is the net cost after allowing for the proceeds from the sale of its stranded meters.

Beginning in May 2006 as part of its Smart Meter Pilot project, Burlington Hydro began swapping out the existing vintage mechanical meters. Once Government approval was received for Burlington Hydro to make the full transition to Smart Meters for the selected customer classes, all the vintage mechanical meters for those classes were withdrawn from service and replaced with Smart Meters over the next four years. With all LDCs in the Province scrapping their vintage meters, a glut was created and the resale value of these functioning mechanical meters was minimal; their only value was as scrap. Burlington Hydro went to great lengths to extract the greatest value for its surplus assets. After extensive verification that no market existed for functioning mechanical meters, it invited Wentworth Metal Recycling, Green-Port Environmental Ltd. and Unican International Ltd. to bid on meter disposal. Wentworth Metal Recycling was successful on the price per pound for the meter quotation submitted.

Rex 1 meters were first installed in 2006 as part of Burlington Hydro's approved Smart Meter Pilot program. Later, because of the inevitable adoption by Burlington Hydro of Rex meters in the near future and the success of the Rex 1 pilot, management judged it as a prudent strategy to install the Rex 1 meters for new services and for meter seal expires; indeed, management was of the opinion that to acquire and install any other meters with the inevitable move to Smart Meters would have been a quite imprudent action. However, when the MDM/R rules were changed for the entire Province, the early Rex 1 meters became non-compliant. Burlington Hydro's 4,738 Rex 1 meters were replaced following the selection of Elster Rex 2 meters through the London Hydro AMI RFP process. In 2010 and 2011 Burlington Hydro again went to great lengths to extract the greatest value for these surplus meters. Exhaustive attempts were made to sell the meters in Canada and in the USA but, apart from four meters which were sold as functioning meters, the remaining meters had to be sold as scrap. Wentworth Metal Recycling was the successful purchaser. The total cost for the stranded meters that Burlington Hydro is claiming includes the cost for the stranded Rex 1 meters. (REF: OEB Decision and Order, EB-2012-0081, June 21, 2012)

Table 2-13: Net Book Value of Stranded Meter Capital Costs

Year	Gross Asset Value	Accumulated Amortization	Contributed Capital (Net of Amortization)	Net Asset	Proceeds on Disposition	Residual Net Book Value
	(A)	(B)	(C)	(D) = (A) - (B) - (C)	(E)	(F) = (D) - (E)
2006				$0		$0
2007	$2,487			$2,487		$2,487
2008	$2,487			$2,487	$2,624	-$137
2009	$3,885,280	$1,627,605		$2,257,675	$26,166	$2,231,509
2010	$8,361,043	$3,831,959		$4,529,084	$68,190	$4,460,894
ADJ*	$8,416,634	$3,757,213		$4,659,421	$73,627	$4,585,794

*Burlington Hydro adjusted the depreciation expense in 2011. This was done to rectify an error in calculation.

Calculations of the Stranded Meter Rate Rider are presented at Exhibit 8

Exhibit 2: Rate Base

Tab 5 (of 8): Capital Expenditures/Distribution System Plan

SUMMARY OF HISTORICAL CAPITAL EXPENDITURES

This section provides an analysis of Burlington Hydro Capital Projects for the years 2010 to 2014. Burlington Hydro has been, and continues to be, focused on maintaining the adequacy, reliability and quality of service to its distribution customers. Burlington Hydro completes regular inspections throughout the year while carrying out necessary maintenance on the distribution system. The annual reliability indices are recorded and monitored and one of the elements that Burlington Hydro uses to assess the asset condition which impacts the capital budgeting process. Burlington Hydro has an obligation to serve new growth within the service area in a timely and cost effective way. In order to fulfill this obligation, the municipality along with input from Burlington Hydro identifies all potential areas where new growth may occur, while recognizing that the actual timing of each possible new development is uncertain.

Burlington Hydro has, for many years, followed the best practices of the electricity distribution industry. Consistent with best practices, over the years Burlington Hydro has replaced or upgraded equipment when economically viable. The net result has been that while the average age of the system has increased slightly the reliability of the system has steadily improved to meet the expectations of Burlington Hydro's customers. As a condition of licence, Burlington Hydro is bound to comply with all aspects of the OEB's Distribution System Code, including the performance standards and the distribution equipment inspection requirements.

The Minimum Inspection Requirements of the OEB's DSC outline the minimum inspection standards and intervals required. Burlington Hydro' s investment in its inspections allow for identification and documentation of condition-related deficiencies, with subsequent analysis to support maintenance and capital expenditures concerning various assets such as transformers, stations, switching cubicles, poles/supports/attachments, etc.

Burlington Hydro has faced increased financial pressures arising from its fulfillment of government mandated changes (e.g. the deployment of Smart Meters and associated infrastructure throughout the service area). In order to comply with these mandatory programs, Burlington Hydro has accorded a priority status to the government mandated changes for internal budgeting purposes; specifically, capital was prioritized to be able to complete this deployment on time. Consequently, funds available to support other investments in infrastructure were reduced. Had funds been available at the levels enjoyed in other years aging equipment could have been renewed in a more timely manner and other projects could have progressed according to Burlington Hydro's original long term plan. Burlington Hydro constantly looks for cost saving alternatives in order to safeguard reliability, while satisfying all other obligations.

In the period 2010-2012 and for the 2013 Bridge Year and the 2014 Test Year Burlington Hydro will have invested an incremental $47M in Property, Plant and Equipment and in General Plant exclusive of Smart Meters. The drivers of this amount are:

- $32.2M of investment to connect new customers and to renew the existing distribution system;
- $5M in HONI's new Tremaine TS;
- $2M in Information Systems and related infrastructure; and
- $1.7M in General Plant.

The projects over calculated materiality threshold of $150,000 warrant further explanation. These explanations are presented at Appendix E of the Distribution System Plan

Burlington Hydro's Capital Plan for 2015 to 2018 is also presented at Appendix E of the Distribution System Plan.

PROJECT/PROGRAM CLASSIFICATIONS

Although Burlington Hydro has for the most part adopted the new category investments from the Distribution System Plan, namely System Access, System Renewal, System Services and General Plant, it has yet to implement these categories for budgeting purposes. The following high level project classifications are still considered in support of the utility's yearly budgets.

Growth Driven:

These are projects that Burlington Hydro undertakes to meet its customer service obligations in accordance with the OEB's Distribution System Code (the "DSC") and Burlington Hydro's Conditions of Service. Activities include all overhead and underground works to connect new customers or service upgrades, connection and inspection of new subdivisions and relocating system plant for roadway reconstruction work. Capital contributions toward the cost of these projects are collected by Burlington Hydro in accordance with the DSC and the provisions of its Conditions of Service. Such projects involved load growth caused by new customer connections and increased demand of existing customers over time can result in a need for capacity improvements on the system.

Projects can include new or upgraded feeders, transformers or transformer stations.

Safety, Reliability and Continuity of Service

The Distribution System Code (DSC) requires an LDC to maintain its distribution system in good working condition, as follows:

- "4.4.1. A distributor shall maintain its distribution system in accordance with good utility practice and performance standards to ensure reliability and quality of electricity service, on both a short-term and long-term basis."
- The following components are regular activities undertaken by Burlington Hydro to maintain reliability and promote safety.

The following components are regular activities undertaken by Burlington Hydro to maintain reliability and promote safety.

Overhead Lines

Tree Trimming:

Vegetation and Right of Way control is a requirement under the Minimum Inspection Requirements of the Distribution System Code and good utility practice. Where overhead hydro lines are in the proximity to trees, regular trimming is required to prevent vegetation form contacting energized lines and inflicting:

- Interruption of power due to short circuit to ground or between phases
- Damage to conductors, hardware and poles
- Danger to persons and property within the vicinity due to falling conductors, hardware, poles and trees
- Danger of electric shock potential from electricity energizing vegetation

In an effort to mitigate direct contact between trees and distribution assets, tree trimming is conducted on a three year cycle. Burlington Hydro's contractor patrols the overhead lines and where tree trimming is needed the contractor will proceed with the necessary clearing. During the patrol process, the following potential hazards are also examined.

- Conductors and Cables
    - Low conductor clearance
    - Broken/frayed conductors or tie wires
    - Insulation fraying on secondary especially open-wire

- Poles/Supports/ Cross arms
    - Bent, cracked or broken poles
    - Excessive surface wear or scaling
    - Loose, cracked or broken cross arms and brackets
    - Woodpecker or insect damage, bird nests

- Loose or unattached guy wires or stubs
- Guy strain insulators pulled apart or broken
- Guy guards out of position or missing
- Grading changes, or washouts
- Indications of burning

Pole inspection is a requirement under the Minimum Inspection Requirements of the Distribution System Code as good utility practice. Burlington Hydro conducts pole inspections annually to determine when poles need to be replaced.

Pole Replacements are undertaken for the following different reasons:

- Structural damage
- Taller or different class of pole required
- Health and safety hazard to the public and employees
- Pole damaged
- Line rebuilds
- ESA compliance including third party clearances

Hardware and Attachments

- Loose or missing hardware
- Insulators unattached from pins
- Conductor unattached from insulators
- Insulators flashed over or obviously contaminated
- Tie wires unraveled
- Ground wire broken or removed
- Ground wire guards removed or broken

Switches

Burlington Hydro meets the switch inspection requirements under the Minimum Inspection Requirements of the Distribution System Code. Switches are devices that open, or close, high-voltage distribution feeder circuits. They are available in single phase solid or fused configurations and three phase applications involving load break and air break. Fused cut-outs accept different sizes of fuses, which are used for the protection of lines, equipment or transformers from main feeder amperages in the event of either system overloading or a fault. Fused switches (cutouts) are inspected during yearly patrol and asset inspection process.

Switch Replacements are undertaken for the following reasons:

- Mechanical or electrical failure
- Vehicle accidents, lightning strikes
- New customer requirements
- Line rebuilds or circuit reconfigurations
- ESA compliance

Reclosers

As required under the Minimum Inspection Requirements of the Distribution System Code. Burlington Hydro inspects and tests reclosing devices regularly and oil samples are taken on a yearly basis.

Transformers

Transformer inspection is performed as required under the Minimum Inspection Requirements of the Distribution System Code with visual inspections being conducted on an annual cycle basis to check for general appearance, loose wires, birds or animal nests. New GIS capabilities allow for aggregation of smart meter data to reveal actual transformer loading. This information is used to assess their real-world loading conditions.

Underground Lines

Switching apparatus

Every 3 years switching cubicles are visually inspected, thermographically and ultrasound inspected and dry-ice cleaned in accordance with the Minimum Inspection Requirements in the Distribution System Code.

Primary Cables

Underground primary cable inspection is conducted annually by visually examining the riser poles with respect to cable, cable guards, terminators and arrestors. Cable faults are recorded and used to prioritize sections of aged underground cable for replacement.

Secondary Services

Similarly, with respect to underground secondary services, riser poles are examined yearly with a visual check of cable, cable guards and connections.

Substations

Substation investments are undertaken to improve or maintain reliability to large numbers of customers and to maintain security and safety at the substations. Age and condition of the transformers are also a major factor in this decision. Oil samples are analysed to determine the internal 'health' of each transformer.

Regulatory, Government and 3rd party driven

Government Driven projects are requested or mandated by government, regulators or municipalities. Compliance with these projects is for the most part, necessary in order to maintain compliance. These projects are considered out of the utility's control. These projects also include recommendations and orders from the ESA following yearly inspections.

Internally Driven - Fleet

Burlington Hydro's fleet is an integral tool for providing safe and reliable service for the rapid response to various contingency situations occurring in its distribution service areas. In order to respond to trouble calls efficiently, and to avoid downtime and delays in maintenance and construction, Burlington Hydro ensures it has a safe, reliable and well-maintained fleet.

Attachment 1 (of 2):

OEB Appendix 2-AA Capital Projects Table

File Number:	EB-2013-0115
Exhibit:	2
Tab:	5
Schedule:	2
Page:	1
Date:	Oct 1,2013

Appendix 2-AA
Capital Projects Table

Projects		2008	2009	2010	2011	2012	2013 CGAAP	2014 CGAAP
Reporting Basis								
Project Name #1 Buildings								
1340 Brant St. & Substation Propertie	D		458,125	225,968	225,998	251,765	40,000	332,000
Easements								60,000
Sub-Total Buildings		**0**	**458,125**	**225,968**	**225,998**	**251,765**	**40,000**	**392,000**

Project Name #2 Substation Equipment								
Upgrade Relays to Solid State	C		42,243	56,271		4,404	36,196	31,104
Recomission Substations	B		124,734	156,313	142,458	158,246	115,624	90,299
Metalclad Equipment Refurbish/Paint	B		0	0	30,212	22,845	34,614	34,601
Upgrade RTUs	C		9,164	30,245	40,169	64,163	48,780	38,675
Battery banks & Chargers	B		2,725	0		4,799	7,692	7,692
Control Room Upgrade	B		141,105	4,055		0		
Transducers	C		0	2,252	5,190	0	3,846	3,846
Vacuum Breaker Conversions (Asbes	B		0	58,645	120,145	0		
Misc. Projects	B		3,653	0				
Replacement of Substation Breakers	B						56,281	46,241
Power transformers(substation)	B				352,524	401,108		386,478
Sub-Total Substation Equipment		**0**	**323,624**	**307,781**	**690,698**	**655,565**	**303,033**	**638,936**

Project Name #3 Underground Distribution								
Performing Arts Centre	A		1,760,286	12,201				
General Service Underground	A		1,273,706	1,835,256	1,498,305	1,520,576	1,338,527	1,104,892
Underground Rebuilds (North Brant H	B			456,739	404,426			
Underground Rebuilds (Faversham/C	B					26,727		345,520
Burlington Mall	B		110,396	0				
Butyl Cable Replacement	B		14,811	12,112	42,047			
Subdivisions Assumed	A		3,887,728	1,366,078	665,947	2,137,623	1,400,000	1,400,000
Downtown/Lakeshore Elizabeth/Lake	A						339,561	740,406
Subdivision Buybacks	A						1,200,000	1,200,000
Sub-Total Underground Distribution		**0**	**7,046,927**	**3,682,386**	**2,610,725**	**3,684,926**	**4,278,088**	**4,790,818**

Project Name #4 Overhead Distribution								
Pole Replacement Program	B		449,944	565,248	738,621	164,706	167,554	246,957
Motorized ABS Program	C		299,924	274,249	385,055	728,132	409,548	262,834
City Projects	A		551,466	641,769	41,116	962,011		667,704
Rebuild Crossing	B		9,678	132,938				
Region Projects	A		857,285	573,712	122,009	0		68,922
General Service Overhead	A		1,201,052	1,477,221	2,427,652	1,965,315	1,423,355	1,259,668
MTO Projects	A		1,308,018	35,326	17,305			
Purchase Milton Hydro Assets	A		743	0				
Sherwood Forest Park Feeder Tie	C			54,250				
NE Burlington TS Egress	C				397,882	1,235,729	3,341,399	151,791
Bronte Feeder Doubel CCT Egress	C							420,290
Sub-Total Overhead Distribution		**0**	**4,678,110**	**3,754,713**	**4,129,640**	**5,055,893**	**5,341,856**	**3,078,166**

Project Name #5 Transformers								

Installed (Including replacement)	A		1,617,306	1,388,125	1,043,047	1,222,639	702,662	614,742
PCB Free Transformer Replacement	B		599,974	79,463	160,881	34,652	195,136	172,704
Subdivision Assumed Transformers	A		1,396,605	334,074	145,613	500,248	600,000	600,000
Spare Transformers	A		52,510	94,249	-702,027			
Sub-Total Transformers		**0**	**3,666,395**	**1,895,911**	**647,514**	**1,757,539**	**1,497,798**	**1,387,446**
Project Name #6 Meters								
Current Limiters	A		5,192	0				
Primary Metering Tank Replacement	B		47,312	38,800	74,169	33,210	58,779	18,749
Installed	A		343,935	730,749	-88,158	335,834	271,398	240,309
Spare Meters & Misc. Equipment	A		42,109	-14,872				
Smart Meters (Installed by BHI staff)	A			686,500	310,133			
Wholesale Metering (IT Metering at C	A			704,449				
Smart Synch for G50 meters	B				38,077			
SSE04 Measurement Canada Inspec	A						8,696	
MSP Metering for Tremaine TS and N	A					45,834	96,957	
Quadlogix Condominium Sub-Meterin	A						198,913	347,826
Sub-Total Meters		**0**	**438,548**	**2,145,626**	**334,221**	**414,878**	**634,743**	**606,884**
Project Name #7 Tools								
UG, Station Maintenance & Meters	D		23,516	21,559	15,735	19,171	21,000	12,000
Measurement & Test Equipment	D			3,995	2,722			
Sub-Total Tools		**0**	**23,516**	**25,554**	**18,457**	**19,171**	**21,000**	**12,000**
Project Name #8 Rolling Stock								
New and/or Replacements (>4500kg)	D		406,635	42,572			46,000	50,000
New and/or Replacements (<4500kg)	D		145,446	38,406	64,228	64,539		
Sub-Total Rolling Stock		**0**	**552,081**	**80,978**	**64,228**	**64,539**	**46,000**	**50,000**
Project Name #9 Office Equipment								
Misc. Office Equipment	D		82,457	24,379	71,790	81,205	54,000	38,000
Telephone Upgrade	D			27,776	37,529	0		
Sub-Total Office Equipment		**0**	**82,457**	**52,155**	**109,319**	**81,205**	**54,000**	**38,000**
Project Name #10 Computer H/ware & S/ware								
Personal Computers	D		28,284	30,294	42,470	37,170	73,000	50,000
Backup Server, Mapping system & O	D					27,877		
Computer Room Network Communica	D			23,197		8,350	5,000	
Daffron Custom Programming	D		2,533	12,816	18,742	25,392	20,000	20,000
Windows Software upgrade	D			19,579				75,000
GIS Interfaces	D			169,669	450,905		100,000	
GIS Mapping System Upgrades	D		780,293	0		123,173		50,000
Daffron iXP Dashboard	D			35,470	24,254			
Daffron iXP Implementation	D						100,000	
Misc. (Tablets, Software, Document M	D			33,217				
Field Force Automation Enhancemen	D					54,275	20,000	20,000
Upgrade Network Capabilities to 1 Gb	D						100,000	
SpatialNet User Licence	D					16,200		
Complete Mobile Asset Inspection Sy	D					33,379		
Pin Mapping	D					117,296		
SCADA / GIS / AMI / CIS Integration,	D					33,680		100,000
Spidacalc Licence							14,000	
Ortho Imaging							11,000	
Sub-Total Computer H/ware & S/ware		**0**	**811,110**	**324,242**	**536,371**	**476,792**	**443,000**	**315,000**
Project Name #11 Substations								
New Transformer Station - N/E Burlin	C				943,057	5,855,000	-2,105,000	
Subtotal - New Transformer Station - N/E Burlin		**0**	**0**	**0**	**943,057**	**5,855,000**	**-2,105,000**	**0**

Project Name #12 Contributions & Grants								
Contributions & Grants			-6,661,564	-2,905,190	-1,447,615	-3,238,245	-3,217,443	-3,579,205
Sub-Total Contributions & Grants		**0**	**-6,661,564**	**-2,905,190**	**-1,447,615**	**-3,238,245**	**-3,217,443**	**-3,579,205**
Transformer Station (N/E Burlington) - Capital Contribution H1								
Bronte TS Breaker	C						628,000	
Miscellaneous		**0**	**0**	**0**	**0**	**0**	**628,000**	**0**
Total		**0**	**11,419,329**	**9,590,124**	**8,862,613**	**15,079,028**	**7,965,075**	**7,730,045**

*2012 total is net of smart meter additions

Attachment 2 (of 2):

OEB Appendix 2-AB: Capital Expenditures

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Appendix 2-AB
Table 2 - Capital Expenditure Summary from Chapter 5 Consolidated Distribution System Plan Filing Requirements

First year of Forecast Period: *2014*

CATEGORY	Historical Period (previous plan[1] & actual)															Forecast Period (planned)				
	2009			2010			2011			2012			2013			2014	2015	2016	2017	2018
		Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var	Previous Year	Actual[2]	Var					
	$		%	$		%	$		%	$		%	$		%	$				
System Access		$14,297,941	--	$14,297,941	$9,864,837	**-31.0%**	$9,864,837	$5,480,942	**-44.4%**	$5,480,942	$8,690,080	**58.6%**	$8,690,080	$7,580,069	**-12.8%**	$8,244,469	$7,396,054	$6,925,561	$6,925,561	$7,621,934
System Renewal		$1,504,332	--	$1,504,332	$1,504,313	**0.0%**	$1,504,313	$2,103,560	**39.8%**	$2,103,560	$846,293	**-59.8%**	$846,293	$635,680	**-24.9%**	$1,349,241	$1,311,959	$1,309,651	$1,309,651	$1,309,561
System Service		$351,331	--	$351,331	$417,267	**18.8%**	$417,267	$1,771,353	**324.5%**	$1,771,353	$7,887,428	**345.3%**	$7,887,428	$1,783,314	**-77.4%**	$908,540	$650,832	$966,547	$966,547	$650,832
General Plant		$1,927,289	--	$1,927,289	$708,897	**-63.2%**	$708,897	$954,373	**34.6%**	$954,373	$893,472	**-6.4%**	$893,472	$1,183,455	**32.5%**	$807,000	$644,000	$496,000	$656,500	$278,900
Subtotal (net of Capt Contr).		$18,080,893		$18,080,893	$12,495,314	**-30.9%**	$12,495,314	$10,310,228	**-17.5%**	$10,310,228	$18,317,273	**77.7%**	$18,317,273	$11,182,518	**-39.0%**	$11,309,250	$10,002,845	$9,697,759	$9,858,259	$9,861,227
Capital Contribution		-$6,661,564		-$6,661,564	-$2,905,190		-$2,905,190	-$1,447,615		-$1,447,615	-$3,238,245		-$3,238,245	-$3,217,443		-$3,579,205				
TOTAL EXPENDITURE	-	$11,419,329	--	$11,419,329	$9,590,124	**-16.0%**	$9,590,124	$8,862,613	**-7.6%**	$8,862,613	$15,079,028	**70.1%**	$15,079,028	$7,965,075	**-47.2%**	$7,730,045				
System O&M			--		$6,323,045	--	$6,323,045	$7,187,610	13.7%	$7,187,610	$7,536,406	4.9%	$7,536,406	$9,223,725	22.4%	$10,006,700				

Notes to the Table:

1. Historical "previous plan" data is not required unless a plan has previously been filed
2. Indicate the number of months of 'actual' data included in the last year of the Historical Period (normally a 'bridge' year):

Explanatory Notes on Variances (complete only if applicable)

Notes on shifts in forecast vs. histrical budgets by category

Notes on year over year Plan vs. Actual variances for Total Expenditures

Notes on Plan vs. Actual variance trends for individual expenditure categories

DISTRIBUTION SYSTEM PLAN

Distribution System Plan
2013

Introduction

BHI's distribution system strategy is the set of long-term policies, rules, guidelines, etc. that BHI utilizes to transition its current system into its desired future system. The strategy, as described in this Distribution System Plan provides the rationale for the capital expenditures and supporting activities planned for the 2014-2018 period.

An effective strategy requires a clear recognition of the strengths and weaknesses of the current system as the starting point together with a realistic vision of the desired future system. In order to provide context and rationale for the strategy, it is first necessary to sketch out the current and future distribution systems together with the key drivers and other major influencers expected to impact the transition.

The Present Distribution System

BHI has pursued the best practices of the electricity distribution industry for many years. This has included adhering to the OEB's Distribution System Code that sets out both good utility practice and minimal performance standards for electricity distribution systems in Ontario, and minimal inspection requirements for distribution equipment. Consistent with best practices, over the years BHI has diligently maintained its equipment in safe and reliable working order and, only when economically justified, upgraded or replaced its equipment. The diligent maintenance of its equipment has permitted BHI to extract an extended useful working life from its assets; moreover, while the age of the distribution equipment has increased, the reliability of the equipment has also often improved to meet the expectations of BHI's customers. Historically, this has been achieved with only a moderate increase in the customers' bills over many years.

By carefully controlling renewal expenditures and therefore moderating any increases in its customers' bills, the distribution system has evolved into an array of equipment of different vintages spanning a number of technological eras; that is, funds were not spent on replacing functioning equipment in order to simply have more modern technologies in place. This is evidenced by BHI continuing to have 32 municipal substations servicing its territory and primary distribution voltages of 4.16 kV, 13.8 kV and 27.6 kV. While the foregoing practices resulted in reduced capital expenditures in the past, this presents a significant challenge to today's management; specifically, to maintain and operate the substations and to advance specific and potentially obsolete equipment, to current technological standards within the capital expenditure envelope that has traditionally been approved by the OEB.

The City of Burlington saw accelerated growth in population and businesses in the 1950s and early 1960s. With the life-extension practices successfully employed over the years and the historically low capital expenditures, much of BHI's distribution equipment is now at – and in many cases beyond – the end of its useful life but the equipment is present in such large quantities that replacement cannot be made in just a few years. This phenomenon is most clearly demonstrated by the average age of the utility's wood poles and, to a lesser extent, by the age of its transformers and underground cables.

In anticipation of the increasing growth in the BHI service area and to provide relief to heavily loaded parts of the existing distribution system, BHI participated with Hydro One in a detailed Regional Planning process. This resulted in BHI and Milton Hydro contributing to the funding of the new Hydro One Tremaine transformer station. While this transformer station became operational at the beginning of 2013, the construction of the egress feeders continues to extract the optimal load from this new facility.

Many of BHI's substations are housed within custom buildings specifically designed for the safe operation of high voltage equipment. These buildings incorporate significant public safety and security features requiring diligent upkeep and occasional capital investments.

The Desired Future Distribution System

BHI's customers have been surveyed over the past few years, primarily through the CDM programs, to ensure that the utility spent its limited resources consistent with its customers' needs and wishes. The vision of BHI's desired future distribution system has been informed by its customer feedback.

The envisaged future distribution system will be designed to deliver power at the quality and reliability levels required by customers and will minimize the lifetime cost by balancing preventive maintenance, life-extending refurbishment and end-of-life replacement; in short, the system will *meet the customers' needs for quality and reliability of power at the minimal cost to the customer.*

The envisaged system in place in 10 to 20 years will be one where there is even greater emphasis on condition monitoring in order to direct preventive maintenance to specific at-risk equipment and extend further the safe reliable useful life of all equipment. Consequently, equipment is expected to have longer in-service lives.

The future system should have sufficient capital available to it to permit the lowest cost solution to be implemented; this would involve, however, smoothing the financial blips brought about with the bulk replacement of certain equipment that has exceeded its cost-effective life. (While extending the useful working life of equipment is intuitively desirable, life-extension "at any cost" such as that necessitated by shortage of capital, produces a sub-optimal more-costly solution.)

In order to leverage the efficiencies that are possible through emerging new technologies, the distribution system would employ additional smart grid equipment.

Underground connections are envisaged as the norm in the downtown core.

Distribution-connected renewable generation and electric vehicle charging are expected to be much more commonplace in BHI's service area. Also, CDM would be an integral part of the system.

In order to achieve the foregoing desired distribution system, sufficient well-trained and well-equipped staff will be required. This may require a temporary increase in staff levels, in some departments, to accommodate apprenticeship schedules to replace retiring employees.

Drivers and influencers

Perhaps the factor exhibiting the greatest "influence" on achieving the desired future system is the legacy of the in-situ equipment noted above; this legacy severely restricts the options available to current management to achieve the desired future within traditional funding limits.

While the growth rate of the City has diminished over recent years, it is still a moderate growth area. One driver is the Provincial government's long-term "Places to Grow" infrastructure plan which envisages Burlington as one of the 25 Urban Growth Centres in the Greater Golden Horseshoe. The government's initiative together with the City's refurbishment of the downtown core and the development of residential sub-divisions and smaller industrial/commercial parks, places significant pressure on BHI's available capital; however, these connections must be made as BHI has a regulatory obligation to connect all would-be customers.

With the sharp rise in electricity commodity prices experienced in the past few years and the forecast that this trend will continue for a number of years, there is a major emphasis on utilities maintaining current rates if possible or, at least, seeking only minimal increases. This situation is exacerbated by the OEB requirement that utilities move to Modified International Financial Reporting Standards (MIFRS) and the adoption of extended useful lives.

Another influence resulting from the rapidly increasing cost of electricity and the consistently improving reliability is that, generally, current reliability standards are adequate. However, for some high-technology customers, even the current excellent reliability standards are insufficient because of the very high cost of lost production from even a momentary outage or a minor power quality variation.

The continued effect of the Green Energy Act and the requirement to give priority connection to solar, wind and other renewable energy sources will place a continuing demand on the utility's manpower and financial resources.

Provided Conservation and Demand Management activities continue to be financed by the OPA and lost revenue is reimbursable to the LDC, the CDM effect on the distribution system is expected to be mildly positive as load growth continues to be dampened.

Continuing to address environmental challenges such as the removal of all PCB contaminants from transformers presents a short-term need for funding from the limited financial resources available.

Emerging smart grid technologies offer opportunities to reduce operations cost over the longer term. While such technologies have the immediate effect of improving reliability the technology can also bring about efficiency improvements by assisting the system to self-heal and thus reduce the number of occasions when line crews are required to respond to outages. Customers benefit from shorter outage response times and lower operating costs.

Strategy

The following are the actions that BHI plans to take over the next 5-10 years in order to bring about the desired future – albeit, now, at a reduced rate to respect the short term limitations on funding.

- Priority will be given to BHI's legislated/mandatory requirements; for example:
    - System access including the obligation to connect customers - Residential, Commercial and Industrial. This includes intensification of the downtown core consistent with the government's Places to Grow infrastructure plan.
    - Accommodate City, Region, Ministry, etc. mandatory project requirements.
    - Embrace the requirements of the Green Energy Act for the accommodation of renewable generation, and the CDM conditions of license, in order to fully support public policy directives.
    - Meet the OEB's – and other regulatory bodies' – quality, reliability, health, safety, environmental, etc. performance standards. This includes the removal of remaining PCB contaminants. Generally, funds will be spent to maintain current reliability levels; where a higher level of reliability is genuinely required, the additional cost will be allocated to specific customers or customer class by some appropriate mechanism.
- In order to safeguard the major investments already made in its key assets, continue to maintain and upgrade as necessary, the 24/7 control room and related system automation equipment; e.g. SCADA systems. Similarly, to ensure public safety and system security, maintain and refurbish the substations as required.
- Fully implement the utility's GIS system in order to harvest operational efficiency improvements. These improvements include the preparation of electronic documentation in support of the asset management system, and leveraging the investment in smart meters to improve outage management.
- Continue to invest prudently in modern information technology in order to provide customers with clear meaningful bills that are able to assist them in managing their electricity usage.
- Optimize life extension. For example:
    - Intensify condition monitoring to minimize uncertainty regarding decisions relating to equipment maintenance, renewal and replacement.

    - Where economically viable, refurbish distribution equipment in-situ to extend their reliable working lives.
- Leverage the additional supply capacity available from the new Tremaine transformer station by installing additional feeders as required.
- Where the optimal life has already been reached and to the extent that funding is available, undertake an accelerated replacement of the over-aged items; e.g. BHI's wood poles and, to a lesser degree, transformers.
- Prudently acquire smart grid equipment where there will be direct economic/efficiency benefits.
- Continue with the cost effective replacement of service vehicles to ensure the utility has a reliable fleet for maintenance and for response to system outages.
- Acknowledge that some desirable changes are realistically not affordable.
    - Retain, and maintain in good condition, the current 32 municipal substations.
    - Install new 27.6 kV feeders when additional feeders are required but do not actively add new load to the 4.16 and 13.8kV systems. When additional loads are to be added to the system these will be accommodated on the 27.6 kV feeders, whenever possible.

Burlington Hydro's Distribution System Plan is designed to present a fully integrated approach to capital expenditure planning. This includes a comprehensive documentation of its asset management process that supports its future 5 year capital expenditure plan while detailing the history of its past 5 years' activities. It recognizes its responsibilities to provide its customers with reliable service that is acknowledged as excellent value for money, by ensuring that its asset management activities maintain a focus on customers, operational effectiveness, public policy responsiveness and financial performance.

BHI has relied on the OEB's filing requirements Chapter 5 (March 28, 2013) to guide its presentation of its policies, practices and decision making processes. The following presentation includes some repetition and makes use of some examples more than once.

1 Distribution System Plans (Chapter 5, Section 5.2)

1.1 Distribution System Plan Overview (Chapter 5, Section 5.2.1)

a) Key Elements of the Plan

In common with the Province at large, the major prospective business condition influencing BHI's Distribution System Plan – and its moderating effect on the current rate proposal – is the slowly-recovering economy. In this application it is envisaged that the economy within the City will continue with its recovery.

Another prospective business condition is that while the growth rate of the City has diminished over recent years, it is still a moderate growth area. The Provincial government's long-term

"Places to Grow" infrastructure plan which envisages Burlington as one of the 25 Urban Growth Centres in the Greater Golden Horseshoe – and thus initiating the need to refurbish the City's downtown core – places additional pressure on BHI. This is compounded by the development of residential sub-divisions and smaller industrial/commercial parks for which BHI has a regulatory obligation to connect. It is these continuing growth factors that are driving the size and mix of capital investments.

Burlington Hydro's Distribution System Plan consists of a number of initiatives aimed at achieving common outcomes including:

- connecting and providing service to new end use customers, a long standing requirement, and new generators, a newly emerged requirement
- renewing and refurbishing its existing infrastructure
- Appropriately deploying new technologies, in the field, and integrating them with BHI's information systems.
- These initiatives are evaluated and implemented based on the results of customer impacts, system impacts, financial impacts and for ancillary issues (e.g. fulfilling provincial policy, energy policy).

This Distribution System Plan provides direct attention to the four performance outcomes that have been established by the Board:

- Customer Focus
- Operational Effectiveness
- Public Policy Responsiveness, and
- Financial Performance

One of Burlington Hydro's objectives is to supply reliable electrical services to its customers at a reasonable cost. This requires:

- Ensuring that all aspects of employee and public safety are addressed in compliance with good utility practice, and with all regulatory and legal obligations
- A thorough understanding of the age, condition and performance of its assets
- Documenting its inspection practices in accordance with the Distribution System Code
- Performing maintenance activities in accordance with good utility practice
- Forecasting and planning for the future growth of load customers and renewable generation facilities
- Recognizing and addressing constraints in the current distribution system and anticipating future capacity requirements
- An asset management process and coordinating system plan that recognizes the above items and prioritizes projects to accommodate customers and system requirements through a 5 year capital expenditure plan that anticipates and provides for future growth, capacity and performance of the distribution system while remaining flexible to accommodate the unknown requirements of its customer base

As a well-established and still growing community within the Greater Toronto Area, the customers of Burlington Hydro have high expectations on the service, delivery, reliability and cost of electrical distribution services. The challenge for BHI is to satisfy these expectations through a prudent allocation of capital investments that is responsibly paced over time and that satisfies the priorities of stakeholders (including the regulator and BHI's shareholder) and is consistent with all BHI's other corporate strategies.

The following high level inputs are among the matters that BHI considers contributing factors to its capital investment budget depending on the individual evaluations and timing of particular initiatives.

- New load growth and development projects
- Municipally driven projects
- System reliability
- Deployment of new technologies (e.g. Distribution Automation) that will cost effectively preserve or enhance service
- Infrastructure renewal projects
- Related information technology, either enhancements to existing systems (e.g. CIS) or in preparation for the initial implementation of new systems (e.g. OMS)
- Elimination of environmental/health and safety risks
- Regulatory initiatives e.g. Smart meters and the Green Energy and Green Economy Act
- Ancillary and facilitating infrastructure (e.g. Fleet/Tools)

Burlington Hydro's annual System Performance Report and its Asset Management Strategy are its on-going assessments of the health and performance of the distribution system. This Report and Strategy contribute to the development and prioritization of budgets and the latest versions are attached within Appendix A and Appendix B of this plan. A high level of expenditures for pole replacements and underground rebuild projects are emphasized within these documents.

BHI employs good utility practices to manage and operate its distribution system. Its Asset Management Strategy prioritizes work to achieve the following objectives:

1. To address safety or health issues that have been identified or may emerge
2. Maintain its reliability performance
3. Improve operational efficiency
4. Replace end-of-life plant (e.g. to manage obsolescence)
5. Address significant environmental risks
6. Meet regulatory and legal obligations

These objectives are consistent with BHI's Mission Statement;

- *To efficiently deliver reliable electrical energy to our customers in the City of Burlington*
- *To provide a safe and rewarding work environment for our employees*
- *To assure that future supply is available to meet Burlington's growing needs*

- *To provide our shareholder with a superior rate of return.*
- *To be a community partner*

They also reflect its Corporate Values:

In pursuit of our goals, Burlington Hydro holds certain core values toward its stakeholders and key aspects of its operation.

Burlington Hydro Cares for People

- *We provide a safe, healthy and fulfilling work environment for our employees, with fair remuneration, fair management and opportunities for learning and professional development;*
- *We value our relationships with our customers and work to win their trust and support;*
- *We interact with customers, employees, the public, and our business partners with integrity and respect, and at all times act in a responsible and professional manner.*

Burlington Hydro Cares for the Community

- *We are good corporate citizens and take pride in making significant contributions to community programs in which we can add value such as fundraising, energy conservation projects, business development activities, school safety programs, clean air initiatives, crime prevention programs, and other community giving such as blood donor clinics;*
- *We value the communities we serve and the environment in which we operate, managing environmental risks to eliminate or minimize adverse impacts associated with our businesses.*

Burlington Hydro Cares about Stewardship

- *We value the long term health and sustainability of Burlington Hydro;*
- *We will assure availability of a future electricity supply to meet customer needs and growth.*

Burlington Hydro Cares about Performance

- *We value a fully integrated business model: we deliver superior products to our customers in a safe and efficient manner, striving for excellence and continuous improvement in all aspects of our business.*

Burlington Hydro Cares about Shareholder Value

- *We create sustainable value for our shareholder by understanding and addressing customer needs, focusing on and promoting core business strengths.*

BHI's COO, Manager of Engineering and Manager of Operations are responsible, on a day to day basis, for the fulfillment of the strategy and the subject year's plan and for ensuring that the data and information required to support them on an ongoing basis is collected, evaluated and used for decision making purposes. BHI's executive team is responsible for ensuring that the required resources are available so that the plan can be formed and deployed, and so that BHI can adjust the plan appropriately (e.g. for random events such as extreme weather conditions or for newly emerging technologies or for the implementation of legislated requirements or to comply with evolving good utility standards).

b) Sources of Cost Savings

Attention to cost savings and prudent capital investments is inherent in BHI's planning process. A balanced approach to meeting its customer growth and regulatory obligations while continually investing in its existing infrastructure includes planning for and realizing viable cost savings opportunities.

The sources of the cost savings expected to be achieved over the planning period through good planning and execution of the Distribution System Plan include:

- The continuing intensive program of condition monitoring that will permit more accurate information to be available on the health of equipment; hence preventive and repair maintenance will be focused on equipment known to need attention and resources will not be wasted working on equipment and items that are in good condition.
- Continuing to perform infrared thermography of the overhead system and municipal substations that will help to mitigate expensive repairs and replacements.
- When viable, the in-situ repair of cables, etc. will permit refurbishment work to be performed at reduced cost.
- The continued extension of equipment lives will permit replacement at greater intervals resulting in reduced capital expenditures.
- The continued prudent investment of SCADA and other smart grid equipment will permit further and more rapid self-healing of the system with the consequential reduction in the number of situations where line crews must be dispatched to restore service.

c) Period of the Plan

This plan covers the Historical period of 2009 to 2013 and the Forecast period of 2014 to 2018.

d) Vintage of the Information

The investment "drivers" within the plan are generally based on available information and forecasts established in late 2012 and early 2013.

e) Important Changes to the Distributor's Asset Management Plan

In 2009 BHI filed a comprehensive Asset Management Strategy as a component of its Asset Management Plan that was also filed. Since that time BHI has refined this strategy by collecting field inspection data using tablet technology and downloading the data to its Mobile Asset

Inspections Software (MAIS). This allows for efficient summarizing of all identified concern items whereby each concern is checked/described within the software, automatically creating an email to the responsible person who then addresses each concern via a trouble report or system priority. This ensures that the MAIS database is current and that subsequent email messages are timely and appropriate.

f) Contingent Activities/Events

The recent commissioning of Hydro One's Tremaine Transformer Station resulted from the Regional Planning Process (described below) and is a significant additional supply point to BHI's distribution system and ultimately its customers. As indicated within this plan BHI is committed to major capital expenditures in 2013 and 2014 for the construction of feeder egress from this new station to realize its benefits.

There are no other significant contingency events or activities related to the Distribution System Plan.

1.2 Coordinated planning with third parties (Chapter 5, Section 5.2.2)

BHI's recent involvement with neighbouring LDCs to work successfully with HONI to develop support of the construction of a new Transformer Station is relied on to demonstrate coordinated planning with third parties.

Regional Planning

Description of the Consultations

In 2006 BHI coordinated with Hydro One to address concerns on the capacity limitations of the existing Hydro One Transformer Stations (TS) and their ability to satisfy the long term forecasts for load growth in the north east area of the City of Burlington. This issue was consistent with similar concerns from Oakville Hydro Electricity Distribution Inc. and Milton Hydro Distribution Inc. as all three distributors had experienced significant new customer growth supplied from Hydro One's Palermo TS which had reached its capacity limits.

Hydro One and the three distributors participated in a joint consultation process where the individual load forecasts were consolidated into potential options to satisfy the distributors and their respective customers. The initial results of this process identified the plan for a new Hydro One TS located near the Burlington/Milton border close to the existing Hydro One 230kV transmission corridor. Oakville Hydro had concluded that its best solution would be to construct its own transformer station closer to its projected load growth.

Hydro One proceeded with its environmental planning process and settled on a site location that satisfied both BHI and Milton Hydro. The required Hydro One Capital Cost Recovery Agreements were developed and signed by the respective parties in 2011. BHI has an initial allocation for 6 X 27.6kV circuits from this TS which will provide adequate capacity to relieve the loading on the existing transformer stations (Palermo TS, Cumberland TS and Bronte TS), to accommodate new customer growth and to reduce system losses while maintaining customer expectations for reliable service.

Final Deliverable of the Regional Planning Process

Hydro One committed to the construction of the Tremaine Transformer Station which was successfully commissioned, according to plan, in January 2013. To make this new capacity available to its customers BHI had to plan and construct new feeders and line extensions. The significant costs of these investments are identified within the System Service category of the capital expenditure plans.

This Regional Planning Process has resulted in an improvement in the supply arrangements and a distribution system that is better positioned to serve the long term electrical needs of the Burlington community.

Comment letter from OPA and BHI Response

BHI forwarded its REG Investments plan to the OPA for its review and consideration on September 5. BHI received the following OPA Letter of Comment on September 17, 2013.

OPA Letter of Comment:

Burlington Hydro Inc.

Green Energy Act Plan

September 17, 2013

Introduction

On March 28, 2013, the Ontario Energy Board ("the OEB" or "Board") issued its Filing Requirements for Electricity Transmission and Distribution Applications; Chapter 5 – Consolidated Distribution System Plan Filing Requirements (EB-2010-0377). Chapter 5 implements the Board's policy direction on 'an integrated approach to distribution network planning', outlined in the Board's October 18, 2012 Report of the Board - A Renewed Regulatory Framework for Electricity Distributors: A Performance Based Approach.

As outlined in the Chapter 5 filing requirements, the Board expects that the Ontario Power Authority ("OPA") comment letter will include:

- the applications it has received from renewable generators through the FIT program for connection in the distributor's service area;
- whether the distributor has consulted with the OPA, or participated in planning meetings with the OPA;
- the potential need for co-ordination with other distributors and/or transmitters or others on implementing elements of the REG investments; and
- whether the REG investments proposed in the DS Plan are consistent with any Regional
- Infrastructure Plan.

Burlington Hydro Inc. – Distribution System Plan

The OPA received a Green Energy Act Plan ("Plan") from Burlington Hydro Inc. ("BHI") at the beginning of September, 2013. The OPA has reviewed BHI's Plan and has provided its comments below.

OPAFIT/microFIT
Applications Received

On page 20 of its Plan, Burlington Hydro indicates that currently it has connected 6 FIT projects totalling 1,053 kW of capacity and 47 microFIT projects totalling 363 kW of renewable generation capacity. The Plan also

indicates that BHI has received an additional 45 FIT applications representing 19,667 kW. Of these, 19 applications totalling 4,203 kW have moved beyond the pre-FIT consultation stage and are not currently on hold. BHI has also received 99 microFIT applications representing
858 kW, of which 24 applications representing 205 kW have moved beyond the initial consultation phase and are not currently on hold.

According to OPA's information, as of September 3, 2013, the OPA has received and offered contracts to 27 FIT projects, totalling 5,720 kW of capacity, which remain active to date. Of these, 5 FIT projects totalling 760 kW have reached commercial operation, while 4 FIT applications totalling 1,130 kW have only recently been offered contracts in July 2013.

Additionally, the OPA has received and offered contracts to 55 microFIT projects, totalling approximately 416 kW of capacity in BHI's distribution system, which are still active.

The OPA finds that BHI's Plan is reasonably consistent with the OPA's information regarding renewable energy generation applications to date, particularly when adjusted for recently offered FIT contracts.

Consultation / Participation in Planning Meetings; Coordination with Distributors / Transmitters / Others; Consistency with Regional Plans

The OPA notes that BHI is part of "Group 1" for regional planning prioritization (underway – 2014) and although some bulk transmission and regional planning activities are currently underway in some parts of the area, neither a Regional Infrastructure Plan, nor an Integrated Regional Resource Plan has been completed for BHI's service territory. As a result, the OPA is unable to comment on whether BHI's renewable energy generation investments are consistent with a Regional Infrastructure Plan. In fact, on page 4 of the Plan, BHI indicates that:

> *"The BHI distribution system can accommodate all known projects, as is. At present there are no renewable generation and connection capital projects planned to accommodate new renewable generation."*

The OPA looks forward to working with Burlington Hydro Inc. in the execution of regional planning once that process is triggered, and appreciates the opportunity to comment on the information provided as part of Burlington Hydro

Inc.’s Green Energy Act Plan.

1.3 Performance measurement for continuous improvement

(Chapter 5, Section 5.2.3)

Monitoring system performance, both field assets and information systems, provides BHI with the information to appropriately adjust its plans and/or to identify remedial steps to ensure that distribution system assets achieve their design life and are capable of serving under peak demand conditions. BHI's performance monitoring is geared to achieving desired results on its four target performance outcomes, specifically:

- Customer Focus,
- Operational Effectiveness,
- Public Policy Responsiveness and
- Financial Performance.

The Service Quality Requirements within section 7 of the Distribution System Code indicate a prescribed measurement and expected level of performance that defines a baseline for the quality of service delivered by BHI. These are important indicators that generally reflect day-to-day performance of direct customer contacts. BHI monitors and reports on the successful meeting of these requirements on a yearly basis. This achievement benefits all BHI customers.

In addition to the metrics mandated by the OEB, BHI is evaluating with the following additional metrics that may potentially assist in the utility's continuous improvement activities.

- Asset Additions per Customer
- Frequency of Auto Reclosers
- Percentage of Total Capital Expenditures Spent on System Renewal

Both the established and trial metrics are discussed below.

a) System Planning Process Performance

BHI evaluates the performance of its distribution system planning process using a different set of metrics that address the following:

- **Customer Oriented performance**

The measure of customer satisfaction is, in many cases, unique to the particular customer and the specific nature of their concern. BHI achieves customer satisfaction through a culture that prioritizes and focuses on providing strong customer service that is embedded in all aspects of BHI's day-to-day operations. BHI planning, budgeting and program implementation practices all focus on customer satisfaction (e.g. by avoiding costs of duplication that may result from poor planning or high costs that accumulate when activities coincide and create undue overtime and the associated charges).

Consumer Bill Impacts

The purpose of including the “Asset Additions per Customer” metric here is to indicate the net capital expenditures incurred by each customer in each year; this type of expenditure is often viewed as the largest element of discretionary spending. The reported value for any one year is calculated as (1) the total of the system access, system renewal, system service, general plant costs plus contributions and grants, divided by (2) the number of metered customers. The metric is under review as a potentially useful year-over-year planning indicator of the impact on the customer’s annual bill for capital additions.

Reliability

Reliability is customers ongoing prime concern and, when power is unavailable whether for reasons within BHI control or not, makes BHI highly visible and in a negative light. BHI’s investments in SCADA technology, distribution automation and other related systems have been made in an effort to provide a high level of reliability in a cost effective way. Close attention is paid to system reliability indices and, through the annual System Performance Report, consideration is given to the performance of specific feeders and recommendations for maintenance or capital investments.

BHI produces an annual System Performance Report that provides a comprehensive overview of the performance of its distribution system. It contributes to its Asset Management Strategy by identifying future maintenance and capital budget priorities to maintain the reliability and performance of the distribution system. The following specific attributes are reviewed and addressed:

1) Substation and Feeder performance at 4.16, 13.8 and 27.6 kV primary voltage levels
2) Underground Distribution
3) System demand and critical loading issues
4) System maintenance activities and priorities
5) Reliability statistics and observations
6) Future maintenance recommendations
7) Future Capital Budget recommendations

The report captures specific performance issues in a given year and identifies trends that require attention over the longer term. A review, at each primary voltage level, assists in planning distribution automation, particularly on the 27.6kV and 13.8kV systems where there have been significant advancements.

Major investments are required to replace and renew the underground distribution system as it ages and the risk of significant outages increase. The analysis of cable failures on specific feeders within specific neighbourhoods focuses and prioritizes capital investments.

Burlington is a growing community with increasing system demands and the ongoing potential for critical loading issues to develop or emerge. BHI's close attention to system demands and related issues triggered the regional planning exercise it undertook with HONI, OHEDI and Milton Hydro and that culminated in the agreement with Hydro One Networks to invest in the new Tremaine Transformer Station, in north east Burlington. BHI is constructing 6 egress feeders from this TS to maintain reliability standards and to reduce critical loading on the existing TSs.

BHI's maintenance and inspection programs comply with the requirements of the Distribution System Code. The annual System Performance Report reviews BHI's routine maintenance programs to determine consistency with good utility practices and confirm its aim for compliance with all inspection requirements (e.g. under all legislation, warranties).

Reliability performance is assessed by a review of the annual Service Reliability Indices; the latest figures and trends are presented in the tables below.

All of the above culminate in recommendations for maintenance and capital expenditures that are considered within the annual budgeting process and resourcing plan development.

In accordance with Section 7.3.2 of the OEB Electricity Distribution Rate Handbook, BHI records and reports annually the following Service Reliability Indices:

$$\text{SAIDI} = \text{System Average Interruption Duration Index} = \frac{\text{Total Customer-Hours of Interruptions}}{\text{Total Customers Served}}$$

$$\text{SAIFI} = \text{System Average Interruption Frequency Index} = \frac{\text{Total Customer Interruptions}}{\text{Total Customers Served}}$$

In addition, BHI also records:

$$\text{SAARI} = \text{System Average Automatic Recloser Index} = \frac{\text{Total Customer Automatic Reclosers}}{\text{Total Customers Served}}$$

These indices provide BHI with an annual measure of its service performance for internal benchmarking and for comparisons with other distribution companies. The following graphs demonstrate the individual performance measures over the last 10 years.

Power Quality

Because the rate of occurrence of these issues is so low, BHI does not find it useful to record the incident rate of power quality problems. Power Quality issues are often eliminated by good robust electrical design (e.g. that analyzes for voltage drop limitations, unwanted frequency harmonics). Experience has shown that BHI may investigate approximately 20 such power quality issues, in a typical year, and that the majority prove to be the result of internal customer issues. For residential customers, the few power quality items in BHI's service territory are usually associated with issues that have been already identified and are scheduled for imminent replacement or refurbishment. For commercial customers, power issues are invariably the result of the customers installing equipment that has been acquired overseas and which is not designed to operate within Ontario's voltage limits. BHI offers its customers appropriate guidance on potential solutions.

In accordance with BHI's Conditions of Service:

"BHI will work with the Customer to perform investigative analysis to identify the underlying cause. Depending on the circumstances, this may include review of relevant power interruption data, trend analysis, and/or use of diagnostic measurement tools."

- **Cost Efficiency and Effectiveness**

BHI monitors its expenditures on all capital projects against the original budget. Any increases or decreases are reviewed for cause and accuracy. Very close attention is then given to the total capital budget to ensure there is no material over-expenditure. Similarly unanticipated projects may have to be accommodated; this may result in the re-allocation of funds or the postponement of some projects.

Percentage of Total Capital Expenditures spent on System Renewal

The purpose of this potential new metric is to provide an indication of the utility's success in extending the useful life of its existing equipment. The metric is calculated as (1) the amount spent on system renewal divided by (2) the total capital expenditures plus contributions and grants. The year-over-year metric is designed as a planning aid to BHI's system planning staff in their continuous improvement activities.

- ## Asset and/or System Operations Performance

Frequency of Feeder Auto Recloser

This SAARI-related metric provides an indication of the impact of maintenance activities, such as vegetation management and initiatives to minimize animal contacts. The quoted metric value is simply the count of the number of feeder outages that automatically reclosed with minimal customer impact. This metric provides an absolute robustness measure for the BHI system and aids system planning staff in their work.

b) Performance and Performance Trends

- **Customer Oriented Performance**

Following is a summary of the performance and performance trends of the metrics described above.

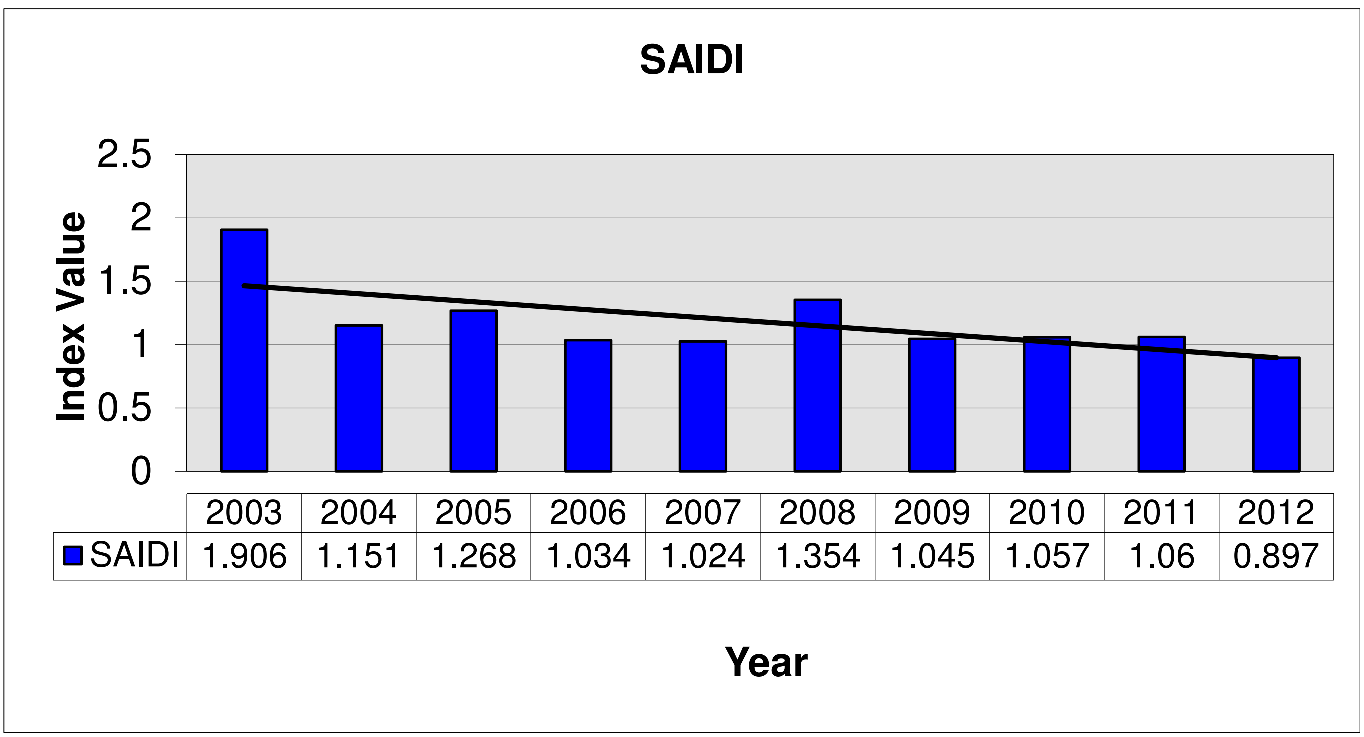
Customer Bill Impacts

Asset Additions per Customer:

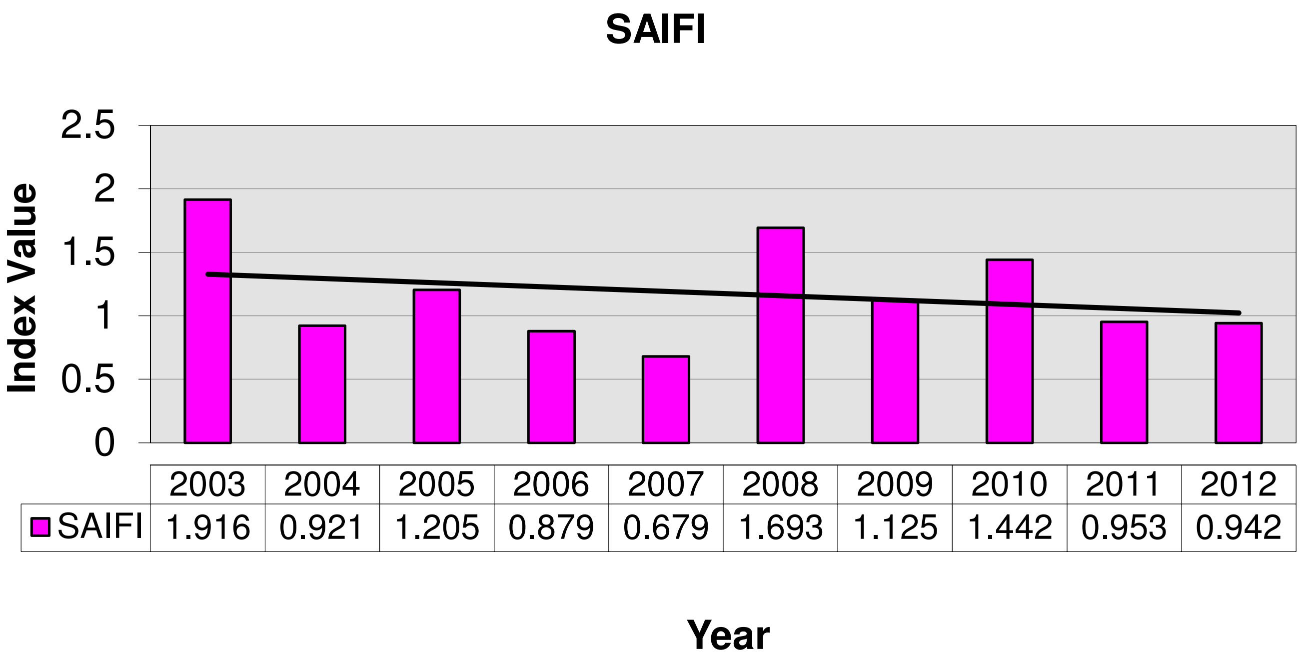
2009	2010	2011	2012
$180.79	$150.01	$137.20	$231.16*

* This figure includes a major capital contribution required to satisfy the Capital Cost Recovery Agreement, with Hydro One, for the new Tremaine TS. The value would be approximately $141 if normalized for the contribution.

Reliability

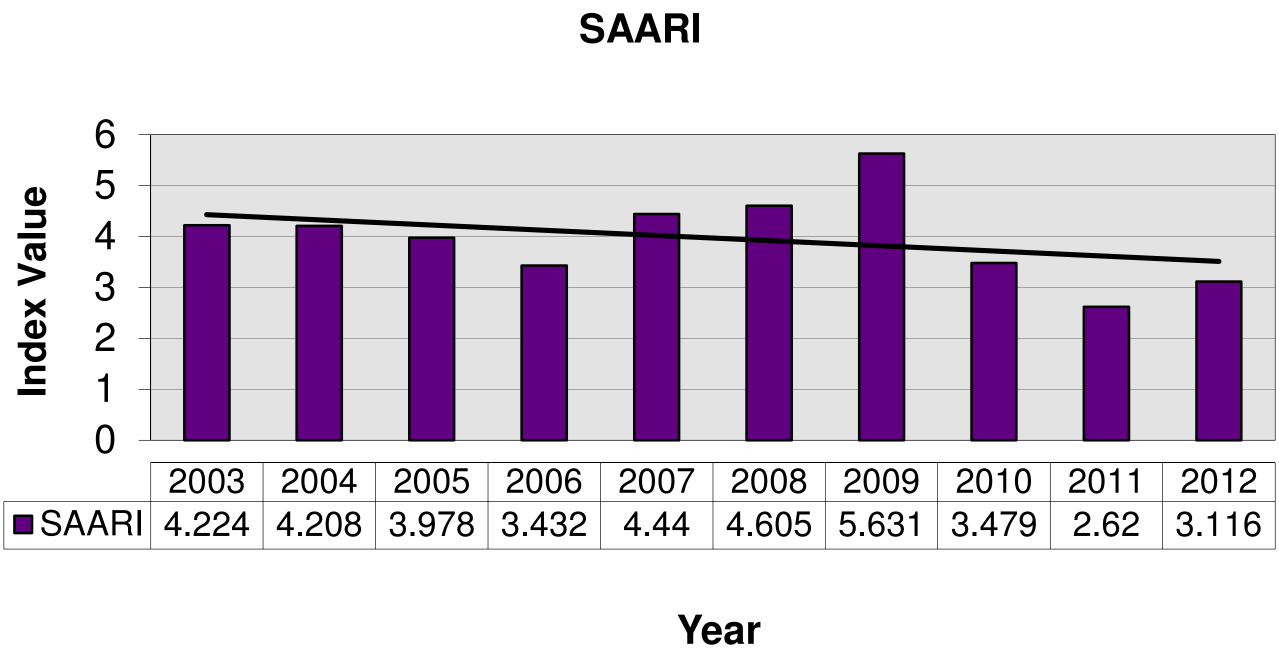


10 Year Average – 1.18



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
SAIFI	1.916	0.921	1.205	0.879	0.679	1.693	1.125	1.442	0.953	0.942

10 Year Average – 1.18



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
SAARI	4.224	4.208	3.978	3.432	4.44	4.605	5.631	3.479	2.62	3.116

10 Year Average – 3.97

Power Quality

As discussed above, because of the low occurrence of power quality issues, BHI has not found it useful to record the incident rate of such problems.

- **Cost Efficiency and Effectiveness**

Following is a summary of the performance and performance trends of the metric described above.

Percentage of Total Capital Expenditures spent on System Renewal

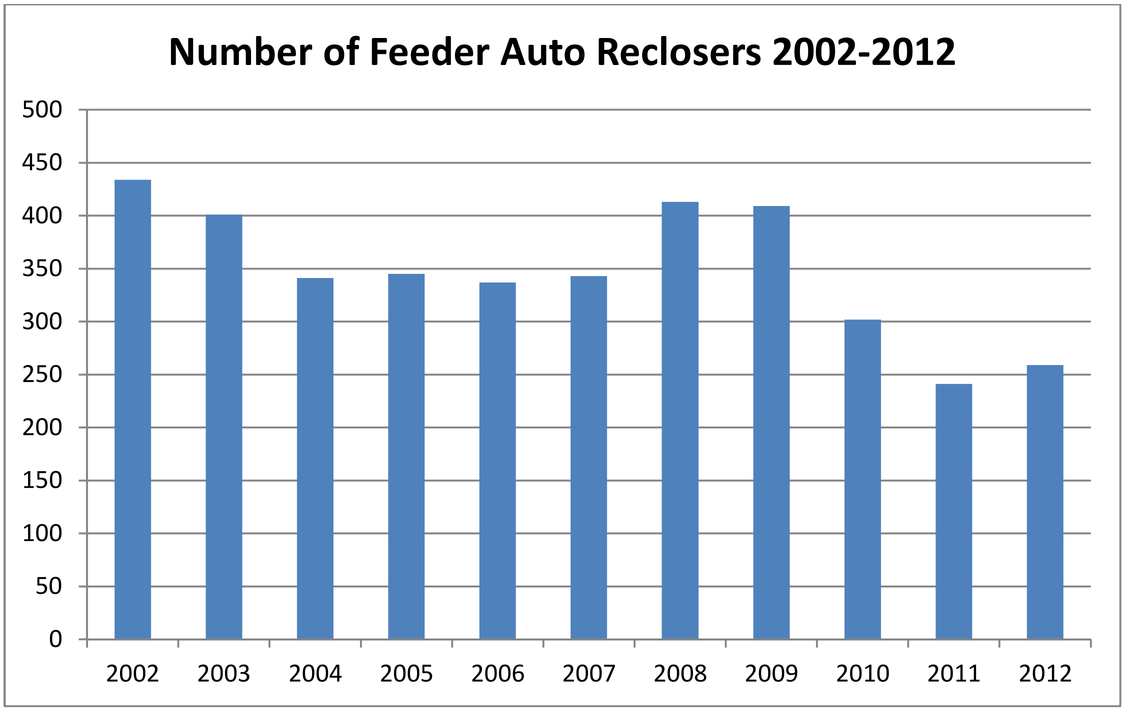
2009	2010	2011	2012
8.06%	12.04%	20.40%	5.6%*

*The 2012 value is potentially misleading since the Total Capital Expenditure includes an approximately $5.9 million contribution to satisfy the Capital Cost Recovery Agreement, with Hydro One, for the new Tremaine TS.

- **Asset and/or Systems Operations Performance**

Following is a summary of the performance and performance trends of the metric described above.

Frequency of Feeder Auto Recloser:



c) Effect of Information on the Plan

The foregoing information has been instrumental in assisting BHI staff in their system planning activities and helping them focus resources. For example;

- The 24% reduction in the "Asset Additions per Customer" metric over a three year period (2009 – 2011) (as displayed above) provides confidence to BHI staff that their system design philosophy is successfully leveraging earlier investments in infrastructure and in extracting longer useful life from equipment; this increased confidence has permitted a year-over-year decrease in capital expenditures. Conversely, the increase in 2012 highlights the capital contribution made to Hydro One to secure the required capacity from the new Tremaine TS.
- The steady 10-year improvement in system reliability as demonstrated by the above SAIDI, SAIFI and SAARI statistics shows that no significant additional expenditure is needed to improve service area

reliability but that lower capital expenditures are justified and that the limited available funding is better allocated to bring about efficiency improvements.

- The year-over-year increase in the "Percentage of Total Capital Expenditures spent on System Renewal" provides strong support for BHI's push to extract the optimal lifecycle from its investments.
- The steady 10-year reduction in the "Number of Feeder Auto Reclosers" provides supporting evidence that the BHI system is fundamentally stable and does not require significant expenditures to enhance reliability.

2 Asset Management Process (Chapter 5, Section 5.3)

BHI has a well-developed Asset Management Strategy that has evolved to take advantage of the records management features of its Geographic Information System (GIS) and to use tablets complete with Mobile Asset Inspections Software (MAIS) to facilitate efficient collection of inspection data.

The Asset Management Strategy outlines BHI's good utility practices within its inspection and maintenance programs, and its approach to documentation and data analysis, managing information and development of the capital and operations and maintenance budgets. The implementation of this strategy allows for an organized program for inspection, assessment and remediation of assets within the overhead distribution system, underground distribution system and substations. The original Asset Management Strategy was documented in 2009 and presented as part of its 2010 Electricity Distribution Rate Application.

The latest strategy (i.e. Asset Management Strategy 2013) is included in Appendix B of this plan.

2.1 Asset management process overview (Chapter 5, Section 5.3.1)

As described in the **Asset Management Strategy 2013,** BHI has established a comprehensive system of inspection and performance reporting procedures to provide for continuous assessments of its distribution business and to achieve consistency with its corporate mission and value statements. These procedures present information that is also relied on to satisfy the reporting requirements of the Distribution System Code. However, BHI has also developed reporting mechanisms that go beyond these regulatory obligations and are focused on continuous performance improvements to ensure the availability of long term capacity to meet the needs of the growing community, all of which contribute to effective and successful management of the distribution system assets.

The objectives of BHI's asset management process are a sub-set of the Corporate Mission and Values discussed earlier in section "1.1 Distribution System Plan Overview" – specifically, they are a subset of the "Mission Statement". The asset management objectives are aimed at providing BHI's customers with a reliable, safe and adequate supply of electricity in a manner that meets the customers' needs ***at***

the lowest cost. These specific asset management objectives are derived from two components of the Mission Statement:

- Efficiently deliver electrical energy to our customers in the City of Burlington
- Assure that future supply is available to meet Burlington's growing needs

BHI ranks its asset management objectives for the purpose of prioritizing investments by first addressing those objectives that are mandatory, followed by those where some discretion may be applied. The prioritization is set out in BHI's "Asset Lifecycle Optimization Policies and Practices" and specifically in the "Policy on System Access, Renewal and Service Investments"; included as Appendix D of this plan.

In summary, the priority ranking is:

- Meet legislated and mandatory requirements including:
    - System assess in order to connect customers
    - City, Region, Ministry, etc. mandatory projects
    - Green Energy Act
    - CDM Conditions of Service
    - OEB's and other regulatory bodies' quality, reliability, health, safety, environmental, etc. performance standards
- Maintain current operational standards by performing essential upgrades and refurbish in-situ where economic
- Invest prudently by leveraging and/or early harvesting of previous investments; invest in customer service and economic/efficiency improvements
- Accelerate replacement of critical over-aged items where affordable and optimal

BHI regards asset management as the foundation for the performance of its distribution system. Senior management is committed to the continual improvement process and ensures that sufficient resources are allocated to implement the strategy. This requires an upfront investment in personnel, internal and outsourced, to create and establish the strategy and the long term resources to complete the annual planning, inspecting, reporting and implementation activities. The quality and consistency of the reporting data is paramount to a successful Distribution System Plan. The responsibility for the continuous management of the strategy is assigned to a Project Engineer in the role of Asset Manager.

The Asset Manager's responsibilities primarily involve risk management i.e. ensuring that:

- The inspection process is organized with assets identified in reasonable zones and segments.
- Inspections and follow up maintenance is continuously being effectively organized and performed
- Records are accurate and current, including those that populate the GIS
- Condition analysis is completed correctly
- Potential Maintenance and Capital Budget recommendations are captured from the annual inspections and the Annual System Performance Report
- The condition of the distribution system, for the short, medium and long term periods, is reviewed to maintain and enhance the reliability of the system in the most cost effective manner

This up to date information provides key inputs to the maintenance budget and capital investment proposals.

The information inputs/outputs of the asset management process used to prepare BHI's capital expenditure plan are described fully in the "Asset Management Strategy 2013" which is attached as Appendix B. These information components include:

- Inspections, condition assessments and analysis
- Performance considerations
- Innovative and new technology
- Risk analysis and recommendations

As noted above the annual **System Performance Report** provides the second major contribution in the preparation of the capital expenditure plan. It records the annual performance of the distribution system including the status of the system demand and any critical loading issues. It also provides commentary on all feeders, at all voltage levels, experiencing 5 or more Auto-Reclosers or 2 or more Lock-Outs.

2.2 Overview of assets managed *(Chapter 5, Section 5.3.2)*

a) Description of the distribution service area

Burlington Hydro's service area is almost equally split between rural (90 square km in the 188 square km service area) and urban; it is home to some 170,000 individuals. Located between the north shore of Lake Ontario and the Niagara Escarpment, it has a temperate climate very similar to Toronto and other parts of the Golden Horseshoe. In this application it is envisaged that the economy within the City will continue with its recovery – similar to that of the Province at large. While economic growth within the City has slowed in recent years, Burlington is still a moderate growth area. With the availability of land for residential and commercial expansion becoming progressively limited as the City expands towards the boundary imposed by the Green Belt which occupies a large part of its service area, the Provincial government's long-term "Places to Grow" infrastructure plan provides an expansion impetus; the Provincial plan envisages Burlington as one of the 25 Urban Growth Centres in the Greater Golden Horseshoe. The City has responded to the government directive by intensifying development and refurbishment in the downtown core.

b) System Configuration

BHI serves over 66,000 residential and business customers within the City of Burlington's 188 square kilometers. It is committed to engineering and service delivery excellence.

Burlington Hydro receives power at 27.6kV from five Hydro One Transformer Stations (TS):

- Burlington TS
- Cumberland TS
- Palermo TS
- Bronte TS, and
- Tremaine TS

Hydro One identifies the Capacity Allocated To Customers (CATC), for each of its transformer stations. The following is a summary of the CATC from each transformer station supplying BHI.

Transformer Station	**CATC (MW)**
Cumberland TS	148.2
Bronte TS	45.0
Palermo TS	30.7
Burlington TS	156.0
Tremaine TS	114.75
TOTAL	**494.65**

Tremaine TS was recently commissioned by Hydro One (Jan. 2013) and is positioned to supply power to the new growth areas in north east Burlington and into the Town of Milton. This new Transformer Station resulted from extensive regional planning with Hydro One Networks Inc. and Milton Hydro Distribution Inc., and will also provide loading relief to the Cumberland and Palermo transformer stations which had exceeded their 10 Day Limited Time Ratings during periods of high demand. This additional supply is expected to be capable of satisfying BHI's long- term requirements.

BHI distributes power at 27.6kV, 13.8kV and 4.16kV; there are eight 27.6/13.8kV municipal substations and twenty-four 27.6/4.16kV municipal substations. The substation feeders comprise an integrated distribution system providing secure back-ups to each substation under normal loading conditions. The current substation infrastructure (4.16kV and 13.8kV) provides secure and reliable service to BHI customers in the older city neighbourhoods while the 27.6kV distribution system supplies larger loads throughout the city and a 27.6kV feeder network in the newer and developing neighbourhoods. The system configuration is one of the elements of Burlington Hydro's reliability performance. While there are multiple 4.16kV feeders throughout the service area each serves relatively few customers, versus the number of customers that would be served by a 27.6 kV feeder.

This Distribution System Plan places an emphasis on constructing the new feeder egresses from Tremaine TS and on the upkeep of the municipal substation equipment including a replacement plan for aging power transformers.

BHI operates its Control Room facility '24/7' this is typical of similar sized utilities with complex multi-voltage distribution systems. Staffing of this facility with well-trained Operators contributes to BHI's level of Operations and Maintenance costs. This facility, in combination with the advanced communications technology and functionality of modern Supervisory Control and Data Acquisition (SCADA) systems, that Burlington Hydro has invested in, serves to support the ongoing reliable supply of power and energy to BHI's customers.

BHI's distribution system consists of the following major components.

- Poles – 15,714
- Overhead Transformers – 4,005
- Single Phase Pad-mount Transformers – 3,029
- Three Phase Pad-mount Transformers – 1,019
- Submersible Transformers – 777
- Switching Cubicles – 201
- Kilometres of 3 Phase Overhead Circuits – 588 km
- Kilometres of 1 Phase Overhead Circuits – 274 km
- Kilometres of 3 Phase Underground Circuits – 149 km
- Kilometres of 1 Phase Underground Circuits – 509 km
- Number and length of 4.16 kV circuits – 99 – 212 km
- Number and length of 13.8 kV circuits – 28 – 207 km
- Number and length of 27.6 kV circuits – 29 – 319 km

BHI has 32 Municipal Substation Sites, with the following transformer capacities:

Municipal Substation	Transformer Bank	MVA Capacity
Appleby	T1	6.0
Appleby	T2	6.0
Brant	1	6/7.2
Bridgeview	1	5/5.6
Drury	1	6/8/10

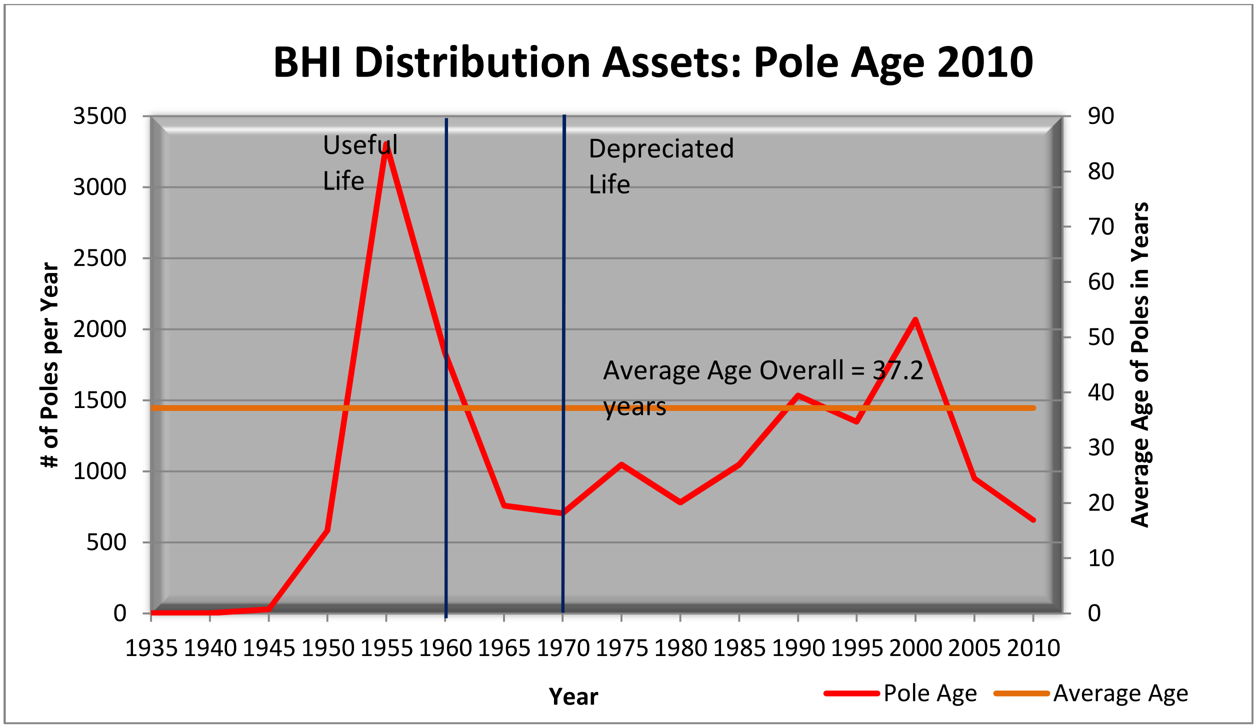
Easterbrook	1	6/8
Elgin	1	6
Eliz.Gardens	1	5/6.6
Fairleigh	1	5/6.6
Fairview	T1	10/12.5
Fairview	T2	10/12.5
Fairwood	T1	6
Fairwood	T2	6
Grahams	1	5/6.6
Hampton	T1	6/8/10
Hampton	T2	6/7.5
Harvester	1	6/8/10
Howard	1	5
Interchange	1	10/13/16
Lowville	T1	10
Lowville	T2	10/13/16
Maple	T1	10
Maple	T2	10
Marley	1	5/7.2
Martha	T1	10
Martha	T2	10
Mt. Forest	1	6
Orchard	1	10/13/16
Palmer	T1	10/13/16
Palmer	T2	10/13/16
Partridge	1	5/6.6
Pine Cove	1	5/6
Pinedale	1	5.6/7.5
Pt Nelson	1	6/7.5
Reservoir	T1	15/20/25
Reservoir	T2	10/13/16
Spruce	1	6/8/10.0
Towerline	T1	12/15
Towerline	T2	15/20/25
Tyandaga	T1	10/12.5
Tyandaga	T2	10/13/16
Walkers	1	6/8/10
Woodward	T1	6
Woodward	T2	6

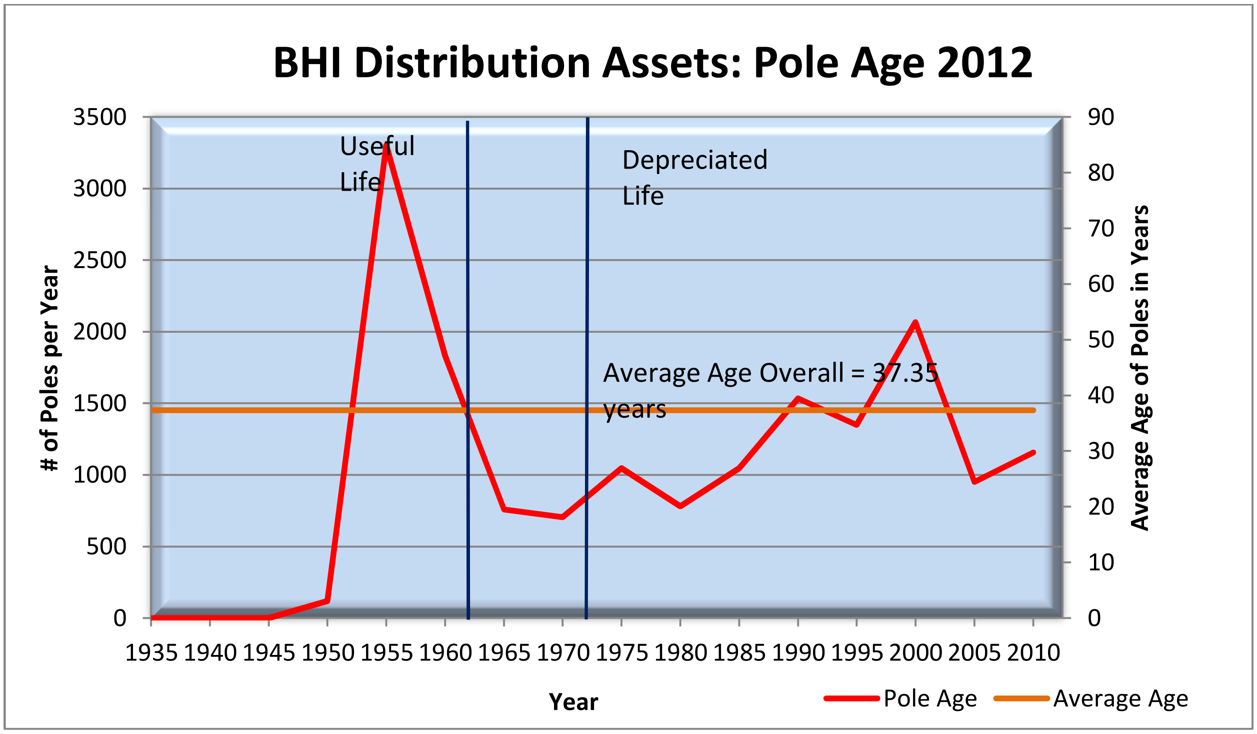
c) Service profile and asset condition

This section provides snapshots for key equipment in 2010 and 2012. The data presented in this section was updated and compiled in 2013.

Poles

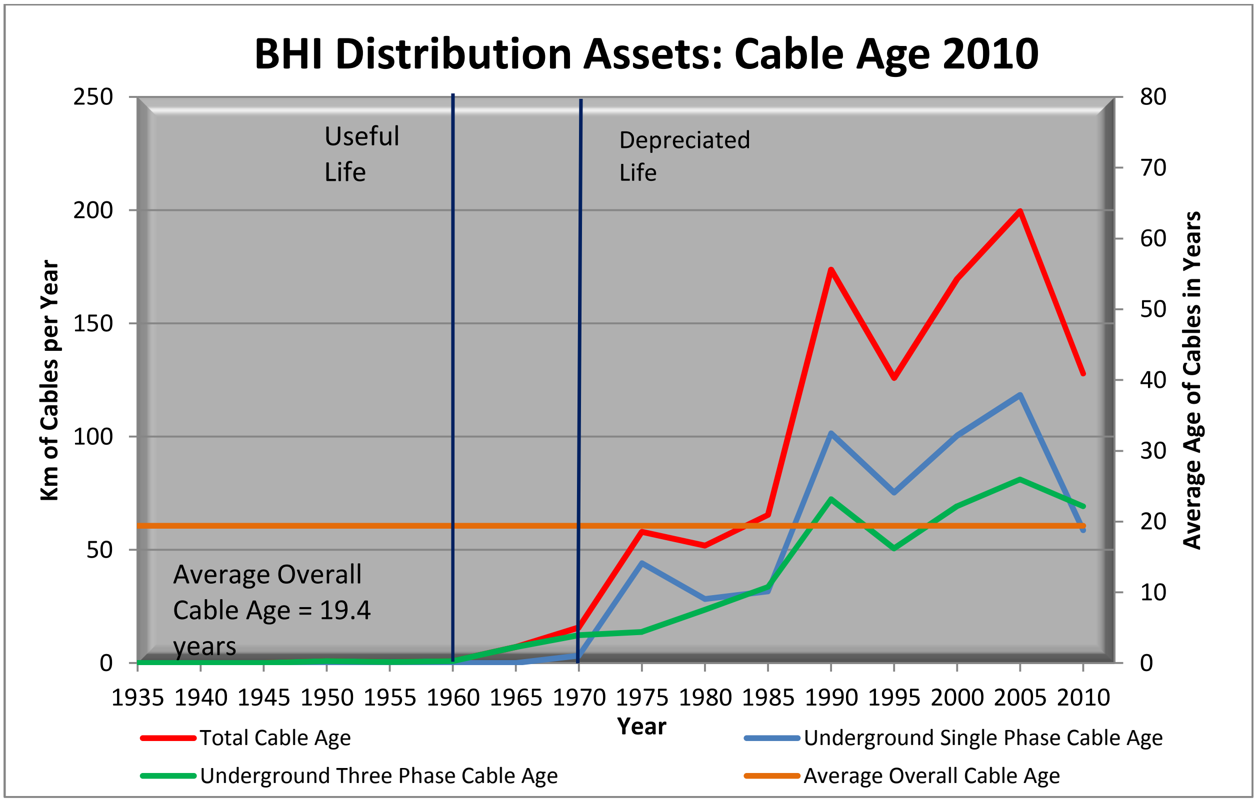
The results of BHI's annual wood pole testing have caused it to accelerate its pole replacement program to address the condition and age of this particular asset. As the graphs below demonstrate the average age of poles has continued to increase from 2010 to 2012. This is due to the large number of poles installed during the 1950s and 1960s.

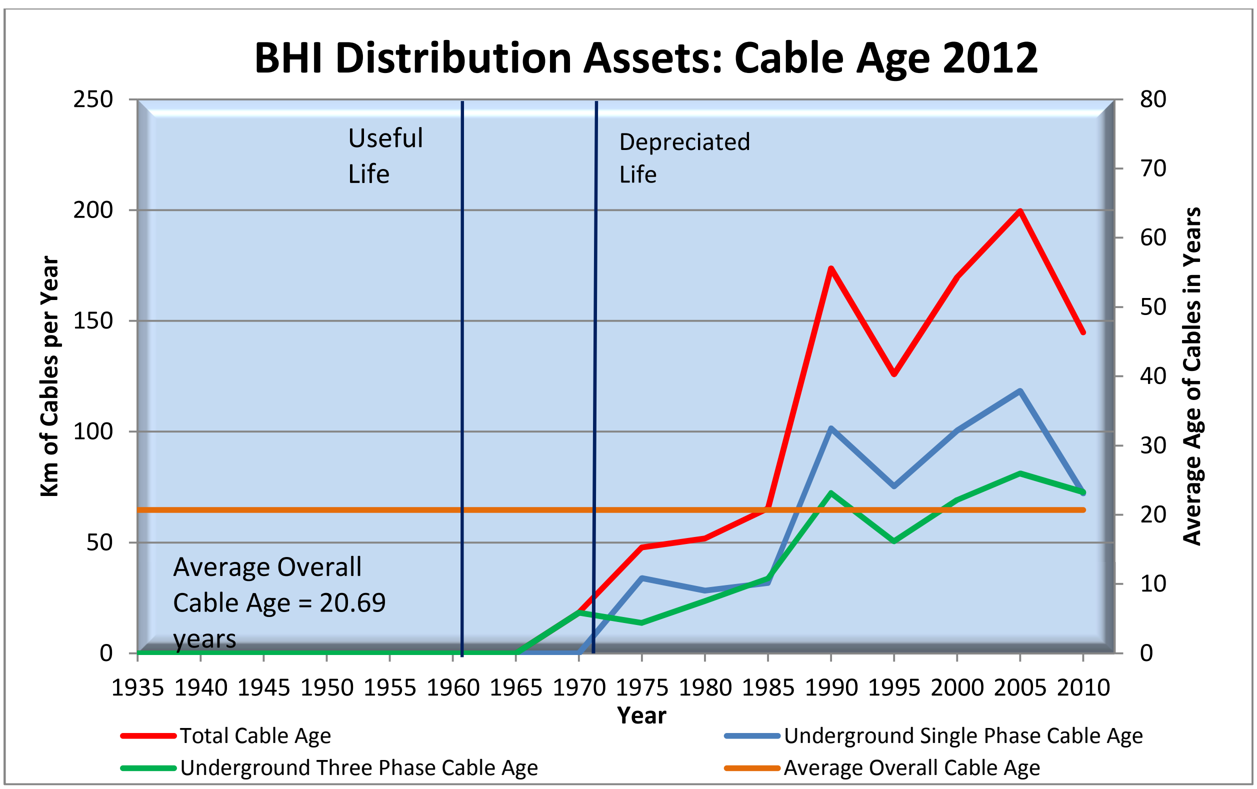




Underground Primary Cables

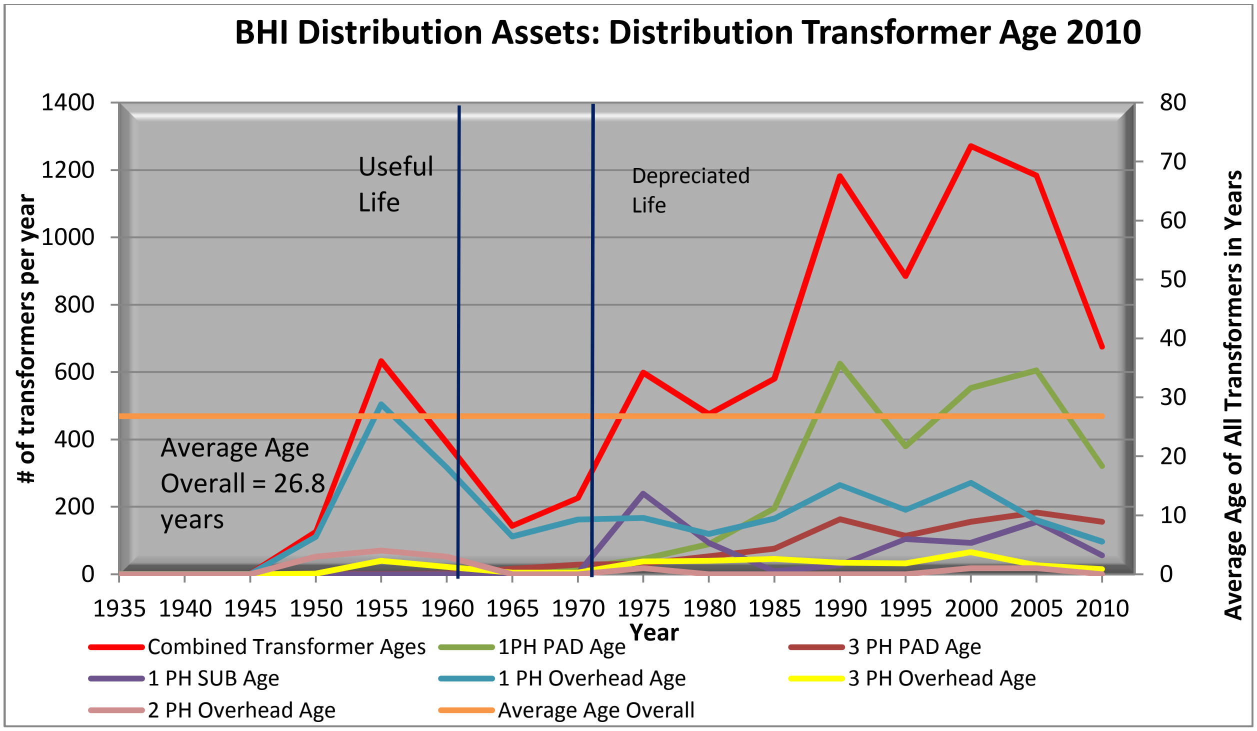
BHI closely monitors its primary cable failure rates and initiates cable replacement projects as part of its annual capital budgeting process. The graphs below demonstrate that the average overall age of BHI's cables has increased slightly from 2010 to 2012. With improved insulation technology the projected useful life of newer cables is expected to increase. However, the increased quantity of underground primary cables installed from the 1970's onwards will not allow for reduced costs for cable replacements. i.e. while the quality of the primary cables has improved the quantity of installed primary cable increased dramatically therefore requiring major expenditures for replacements in the future.

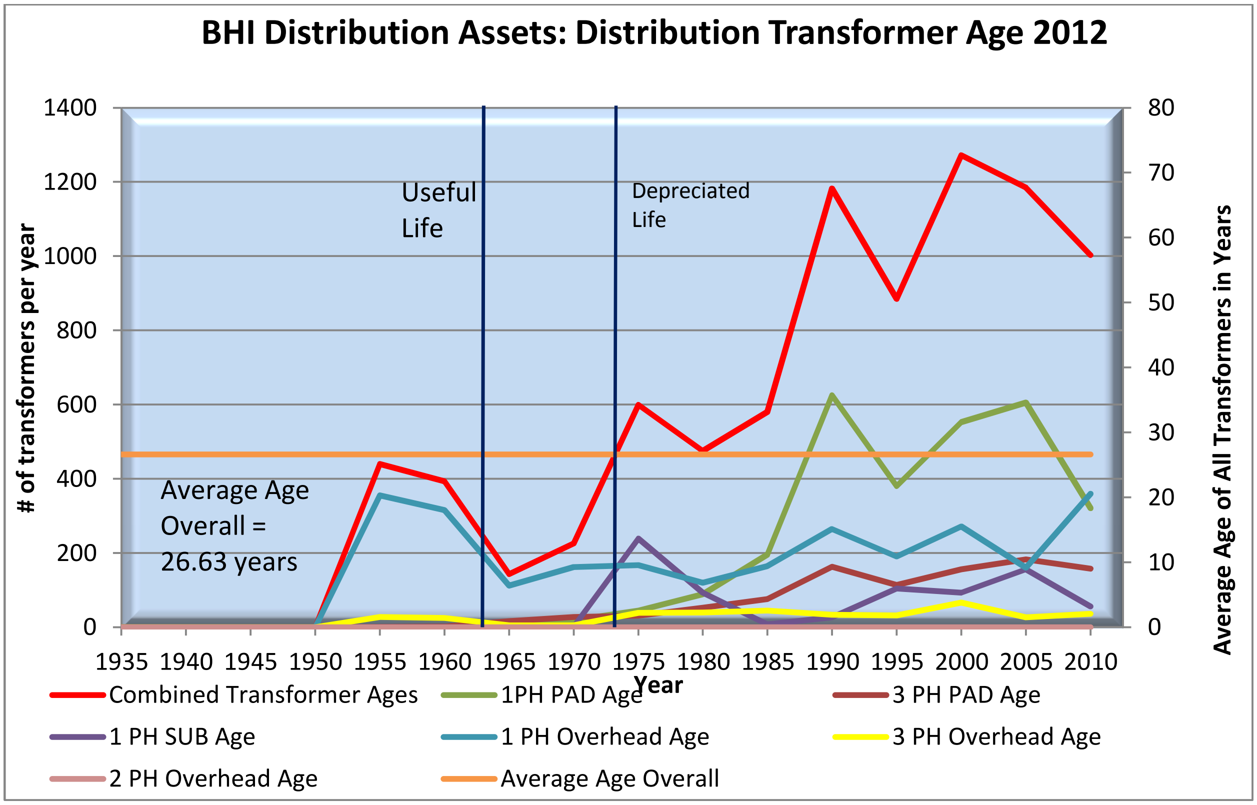

BHI Distribution Assets: Cable Age 2010
Km of Cables per Year
Average Age of Cables in Years
Useful Life
Depreciated Life
Average Overall Cable Age = 19.4 years
Year
Total Cable Age
Underground Single Phase Cable Age
Underground Three Phase Cable Age
Average Overall Cable Age


BHI Distribution Assets: Cable Age 2012
Km of Cables per Year
Average Age of Cables in Years
Useful Life
Depreciated Life
Average Overall Cable Age = 20.69 years
Year
Total Cable Age
Underground Single Phase Cable Age
Underground Three Phase Cable Age
Average Overall Cable Age

Distribution Transformers

From the graphs below, with the replacement of some older distribution transformers the average age has dropped slightly from 2010 to 2012. However, as with underground cable, future cost increases are anticipated due the large volume of padmounted transformers installed from the 1970s and onward. Distribution transformers are generally replaced on a break and fix basis due to the small number of customers impacted by an individual failure. However, it can often be more cost effective to replace all transformers when an underground rebuild project is being carried out in a particular neighbourhood.





Grid Modernization

Consistent with its aim to minimize its customers' bills in the long term and to meet or exceed reliability and safety standards, BHI's Grid Modernization is based on continuing its leadership in the application of distribution automation. This enhances the SCADA system's control capabilities, allows for more remote operation functionality and expands the technology applications for self-healing feeders. This provides automatic switching of feeders to un-faulted sections of a particular feeder thereby "self-healing" the supply to customers and improving reliability and customer satisfaction as it minimizes the area affected by the fault that occurred. This has been successfully applied in selected areas of the 27.6kV and 13.8kV systems and offers opportunities for improved service restoration across the complete distribution system.

BHI currently operates 56 X 27.6kV remotely operated ScadaMate switches and 12 X 13.8kV IntelliRupter Pulse Closer switches. It also utilizes the IntelliTeam self-healing feeder technology within its downtown core and to the Joseph Brant Hospital. Both being critical supply points within the distribution system and prime candidates for this type of high quality service level.

BHI is continuing these investments within its Capital Expenditure Plan.

d) Assessment of capacity of existing system

The results of the Regional Planning Process and the construction of the new Tremaine TS has provided BHI with the transformer station capacity to supply the anticipated long term supply needs of the Burlington community. However, investments in feeder egress are still required to deliver this capacity to the customer growth areas and to balance supplies from the existing transformer stations. These projects are therefore drivers within the System Service investment category.

2.3 Asset lifecycle optimization policies and practices (Chapter 5, Section 5.3.3)

The application of lifecycle optimization practices is inherent in BHI's Asset Management Strategy (Appendix B). The analysis of the data in BHI's Mobile Asset Inspections Software (MAIS) supports BHI staff in exercising good judgment when assessing items of concern resulting from the annual inspection process. The decisions for major asset replacements are made by the senior engineering and operations personnel in consideration of the inspection information, the capital cost implications and the resulting reduction in O &M costs.

The purpose of such an inspection program is to determine asset condition, identify any risk to safety, reliability and/or the environment and subsequently address findings through prudent capital, operations and maintenance expenditures, as necessary. BHI carried out a system wide Electrical Distribution System Inspection & Survey Report that was presented as part of its 2010 Electricity Distribution Rate Application it has not undertaken any asset condition studies since that time but has used that report as a baseline for its annual inspection program. The inspection cycles and patrol inspections for each of the major distribution facilities are described In Appendix C - Minimum Inspection Requirements. BHI aims to meet or exceed these requirements.

The following system maintenance activities and priorities are summarized in the annual System Performance Report (Appendix A) and budgetary recommendations are presented.

- Wood pole testing and replacement

  BHI has taken a proactive approach to the annual testing and replacement of wood poles. The testing is performed by a third party engineering company using specialized test equipment. Defective poles are identified for replacement and critical poles are replaced immediately and a high priority placed on those equipped with transformers or underground cable connections.

- Insulator Washing

Insulator washing is an important preventative measure to minimize flashovers and pole fires. Particular attention is given to the 27.6kV system including any areas where there are underbuilt circuits and areas with potential for high salt contamination i.e. adjacent to highways.

- Infrared Thermography of the Overhead system and Municipal Substations

Annual inspection and scanning of the overhead system and substations is an important and worthwhile part of a BHI's preventative maintenance program.

- Cleaning of Switching Cubicles

A specialized maintenance technique, using "dry ice", is employed, to clean a selected number of the cubicles. This work is able to be safely completed while the equipment is energized, which minimizes the time to clean the cubicles and reduces the need for and cost of switching activities. During the same field visit, all cubicle connections are viewed with thermography and scanned for ultrasound to detect early signs of potential faults. Any detected problems receive a high-priority repair.

- PCB Testing and Replacement of Distribution Transformers

BHI has approximately 9000 distribution transformers within its system. As a result of environmental legislation, only those units manufactured prior to 1980 are candidates for PCB contamination. By the end of 2007 BHI had tested all of these transformers. All will be replaced in accordance with the legislation, by 2014.

- Tree Trimming

BHI's tree trimming is completed in accordance with its established 3 year cycle; this is usual utility practice.

- Vault Inspection and Cleaning

Customer owned vaults that contain BHI distribution equipment are inspected with an eye on condition of equipment, operational and public safety.

By preparing an annual System Performance Report BHI is able to track the performance of its distribution system and review recommendations for maintenance and capital expenditures. This often results in a re-prioritization of activities and investments based on the most recent performance data, for example major investments for rebuilding the underground system are driven by the incidence of cable failures. Experience has shown that the number of such failures can vary considerably, year over year. Therefore while there can be solid indicators that a cable replacement project is ultimately required the timing can often be delayed if failures decrease over the course of a year and the asset life is then extended.

Similarly, while pole replacements are a continuous requirement due to the population age, the results of the annual pole testing can re-prioritize expenditures by accelerating or decelerating the program accordingly.

a) Formal policies and practices

BHI's set of asset lifecycle optimization policies and practices are attached as Appendix D. The set consists of three documents:

- Policy on System Access, Renewal and Service Investments,
- Policy on the Evaluation of Asset Replacement and Refurbishment, and
- Policy on Optimal Maintenance Planning Practices.

This set of documents addresses how, among other factors, system renewal spending is optimized, prioritized and scheduled within budget envelopes together with the impact on routine O&M; maintenance planning criteria and assumptions; and risk assessment and mitigation.

b) Lifecycle risk management

BHI regards risk identification and mitigation as an integral part of its asset lifecycle optimization activities. Consequently, rather than having a separate set of risk management policies and practices to address risk, BHI has fully integrated risk management considerations into the set of three formal policies and practices just identified.

3 Capital Expenditure Plan (Chapter 5, Section 5.4)

3.1 Summary (Chapter 5, Section 5.4.1)

All proposed expenditures in the test year (2014) and in the 2015 to 2018 Capital Expenditure Plan are categorized as follows:

1. System Access
2. System Renewal
3. System Service, and
4. General Plant

The forecasted growth, within the City of Burlington, continues to require on-going investments within the System Access category. Similarly, anticipated City projects for road improvements and widenings have been included within this plan.

The Asset Management process identifies System Renewal projects for underground rebuilds and pole replacements as on-going priorities to ensure the long-term health of the distribution system.
There are some significant projects that are also of note at this point in time, for BHI i.e. the commitment to the annual replacement of aging substation power transformers and the major investments in feeder egress to deliver supply from the new Tremaine TS. The latter being part of the System Service category together with BHI's distribution automation priority.

The category expenditures are described in more detail in Appendix E Capital Expenditures &Project Descriptions 2009 to 2018.

Major investments in General Plant have moderated somewhat but continuous investments in Rolling Stock and software systems are accounted for, in the plan.

The categorization is derived from the capital expenditure planning process that prioritizes items based on whether they are discretionary or non-discretionary. These, in turn, were developed from BHI's annual System Performance Report, its Asset Management Strategy and the Regional Planning Process. BHI's systems planning for new load and forecasts for renewable generation are captured within this DSP. For example, the System Service expenditures for feeder capacity from the new Tremaine TS resulted from the Regional Planning Process.

a) Capability to connect new load or generation customers

As noted later in this plan, BHI prepared a GEA Plan to document its capability to accommodate renewable generation facilities. This plan is included in Appendix C of this Distribution System Plan. The Plan does not indicate a requirement for any significant capital expenditures for the proposed connections.

b) Total annual expenditures over the planning period by investment category

The following table summarizes the planned expenditures within the respective investment categories.

Category	2014	2015	2016	2017	2018
System Access	8,244,469	7,411,040	7,015,725	6,953,590	7,665,347
System Renewal	1,349,241	1,311,959	1,309,651	1,309,651	1,309,651
System Service	908,540	650,832	966,547	966,547	650,832
General Plant	807,000	1,010,000	673,000	788,000	428,900
Total	11,309,250	10,383,831	9,964,923	10,017,788	10,054,730

c) Effect of outputs of the asset management and capital planning process on capital expenditures

The planned expenditures reflect continued moderate new customer growth that is informed by the Provincial government's long term "Places to Grow" infrastructure plan. Distribution automation and smart grid development also continue to be a strategic commitment and are supported annually by BHI's capital expenditure plans. As indicated in the GEA Plan, BHI does not anticipate major expenditures to accommodate renewable energy generation projects.

BHI does not anticipate additional capital expenditures with respect to load management, operational improvements, asset management and the integration of distributed generation. These operational enhancements are already in place.

d) List and description of material capital expenditure projects/activities by category

A summary of the total and annual costs sorted by category is provided in the table immediately above. Detailed information is provided in Appendix E Capital Expenditures &Project Descriptions 2009 to 2018 with descriptions of all of the major capital expenditure projects/activities, sorted by category.

e) Regional Planning Process

As noted earlier in section 1.2 "Coordinated Planning with Third Parties", in 2006 BHI coordinated with Hydro One, Oakville Hydro Electricity Distribution Inc. and Milton Hydro Distribution Inc. to address concerns on the capacity limitations of the existing Hydro One Transformer Stations (TS) and their ability to satisfy the long term forecasts for load growth in the north east area of the City of Burlington and in the other two LDCs. The process identified the plan for a new Hydro One TS located near the Burlington/Milton border close to the existing Hydro One 230kV transmission corridor. The environmental planning process was completed, a site location settled on, and the Tremaine Transformer Station constructed and commissioned. The commissioning of the Tremaine TS is witness to the success of Burlington Hydro's participation in the Regional Planning Process.

The availability of the Tremaine TS has assisted in reducing the demands that need to be addressed by BHI's capital expenditure program through an improvement in system operations, an enhancement in the supply arrangements, a reduction in system losses and a distribution system that is better positioned to serve the long term growth needs of the Burlington community. To make this new capacity available to its customers BHI has had to plan and construct new feeders and line extensions; some of development has already been completed while some future leveraging of the new capacity is reflected in the 2014-2018 capital expenditure plan.

f) Description of customer engagement

It is long-established BHI practice for the utility to maintain close contact with its customers. While maintaining this close contact requires substantial effort, it is BHI's view that such efforts pay long-term dividends by ensuring customers' needs and preferences become a central component of its plans. The information obtained from customers through the special events it organizes and from the continuous feedback received throughout the year is utilized throughout the planning cycle and is used by system planning staff to adjust the priority of projects and to fine-tune the selection of projects to be undertaken.

As described fully in Exhibit 1, Tab 2, Schedule 1 "Overview of Customer Engagement", the customer-oriented activities conducted by BHI include:

- Customer roadshows (e.g. March-May 2012 Time-of-Use billing)
- Direct communications including newspaper open letters (e.g. July 24, 2013 post-storm letter)
- April 2013 formal customer satisfaction survey performed by UtilityPULSE
- Community events (e.g. Burlington Home Show, local Canada Day celebrations, Children's Festival)
- Business events some 10 to 15 are typically held per year
- Commercial and industrial site visits and contacts (almost 3,000 made during the 2011-2013 period)

g) Expected system development over next five years

The City of Burlington has room to continue its moderate new customer growth and will accommodate the Provincial government's long term "Places to Grow" infrastructure plan. This reality has contributed to the system planning activities that have driven the TS capacity investments and new feeder construction. This will provide the necessary infrastructure to satisfy the system development over the next 5 years and beyond.

BHI expects to continue its leadership in the application of grid modernization and distribution automation within a Smart Grid context. This will enhance the SCADA system's control capabilities, allow for more remote operation functionality and expands the technology applications for self-healing feeders. This will provide automatic switching of feeders to un-faulted sections of a particular feeder thereby "self-healing" the supply to customers and improving reliability and customer satisfaction.

The accommodation of renewable energy generation projects is not expected to drive any significant system developments over the next 5 years.

h) Planned projects/activities planned in response to customer preferences, technology-based opportunities and innovative processes, etc.

BHI considers that it has currently embraced any opportunities to address any known customer preferences and maintains its technological leadership to maximize operational efficiencies. Through its GridSmartCity initiative BHI is investigating cooperative business opportunities with other Local Distribution Companies that may provide cost advantages for its operations.

Because of its frequent contact with its customers, BHI is keenly aware of its customers' preferences. Two specific examples of planned projects/activities in response to customer feedback are the accelerated replacement of poles and the further investment in SCADA equipment. Both these projects were in direct response to the customers' desires to maintain the solid level of reliability they had become accustomed to and they considered essential to maintain their way of life.

The just-noted investment in SCADA equipment also permitted BHI to take advantage of technology-based opportunities. While the equipment was not selected to specifically improve the reliability level being achieved – rather, it was to simply maintain the existing standard – it had the added potential economic bonus to automate recovery from outages and thus reduce the frequency with which crews need to be called out to the source of an outage.

As noted earlier, prudent investments in other smart grid equipment includes opportunities to engage in innovative processes and activities.

3.2 Capital expenditure planning process overview *(Chapter 5, Section 5.4.2)*

3.2.1 High Level Inputs to the Capital Expenditure Planning Process

With its corporate emphasis on business performance and accountability BHI has developed a prudent capital budget process and system of prioritization. This system reflects its long term investment strategy, recognizes its shorter term requirements and is capable of addressing the ongoing need for BHI to respond to external and internal priority changes. It respects the priorities of a wide range of stakeholders, BHI's corporate strategies and regulatory requirements.

The following high level inputs are investigated and evaluated in detail and collectively contribute to a final capital investment budget.

- New load growth and development projects
- Municipally driven projects
- Elimination of environmental/health or safety risks
- System reliability
- Distribution Automation
- Infrastructure renewal projects
- Regulatory initiatives e.g. Smart meters and the Green Energy and Green Economy Act
- Fleet/Tools

- Information technology and corporate administration

Each of these priorities is addressed below; however on-going assessments of the health and performance of the distribution system are captured within BHI's annual System Performance Report and its Asset Management Strategy. Both of these items contribute significantly to the development and prioritization of budgets with particular attention to the impact on customer's bills.

3.2.1.1 New load growth and development projects

BHI has its obligations to connect defined in section 28 of the *Electricity Act:*

> *28.1 A distributor to whom section 28 applies shall connect a building to its distribution system in such manner as may be prescribed by regulation, under such circumstances as may be prescribed by regulation, for such properties or classes of properties as may be prescribed by regulation, and for such consumers or classes of consumers as may be prescribed by regulation. 2010, c. 8, s. 37 (3).*

This reinforces the importance of good planning and capital investments in the City of Burlington where strong residential and commercial/industrial development has been and will continue to be a feature of the community. The City of Burlington's Intensification Strategy, which has its origins in the Provincial government's long term "Places to Grow" infrastructure plan (as described in the Technical Paper -- "Proposed Size and Location of Urban Growth Centres in the Greater Golden Horseshoe" prepared by the Ontario Growth Secretariat Ministry of Public Infrastructure Renewal, Spring 2008), is being realized. By close cooperation with staff from the city and the Region of Halton, BHI has consistently matched the expansion of its distribution system by providing the supply infrastructure and capacity to accommodate this growth. This requires capital investments and realistic estimates of load growth for system planning. Regional planning with Hydro One and Milton Hydro Distribution ultimately identified the requirement for a new Transformer Station (Tremaine TS) in North East Burlington which has been constructed, by Hydro One, and commissioned in January 2013. This required contributed capital from BHI and has also resulted in major investments for the construction of 27.6 kV egress feeders to incorporate the new supplies into the distribution system.

Capital expenditures for new load growth are not discretionary and BHI's budgeting process treats them as priority items. However, they are part of the long term planning process and the timing of these expenditures can sometimes be shifted as the rate of growth fluctuates (e.g. with economic conditions). The provision for built-in reliability also has to be accommodated and this has to be consistent with customers' high expectations.

3.2.1.2 Municipally driven projects

These projects are driven primarily by the City of Burlington and the Region of Halton with occasional requirements by the Ministry of Transportation. In these circumstances the relocation of BHI facilities is required in accordance with the *Public Service Works on Highways Act*. These projects are planned and funded within municipal, regional and provincial budgets but historically they are often difficult to schedule for LDCs as they rely on multiple schedules for funding, engineering, approvals and construction schedules outside of their control.

The act prescribes a formula for the apportionment of costs that allows for the road authority to contribute 50% of the "cost of labour" towards the relocation costs. Specifically:

Apportionment of costs of taking up
The road authority and the operating corporation may agree upon the apportionment of the cost of labour employed in such taking up, removal or change, but, subject to section 3, in default of agreement such cost shall be apportioned equally between the road authority and the operating corporation, and all other costs of the work shall be borne by the operating corporation. R.S.O. 1990, c. P.49, s. 2 (2).

> *"cost of labour" means,*
>
> *(a) the actual wages paid to all workers up to and including the foremen for their time actually spent on the work and in travelling to and from the work, and the cost of food, lodging and transportation for such workers where necessary for the proper carrying out of the work,*
>
> *(b) the cost to the operating corporation of contributions related to such wages in respect of workers' compensation, vacation pay, unemployment insurance, pension or insurance benefits and other similar benefits,*
>
> *(c) the cost of using mechanical labour-saving equipment in the work,*
>
> *(d) necessary transportation charges for equipment used in the work, and*
>
> *(e) the cost of explosives; ("coût de la main-d'oeuvre")*

Due to the uncertainties of the municipal planning, the nature of, scheduling of and funding for these projects are often very speculative from BHI's planning perspective. Municipal funding can become available at very short notice or conversely projects become delayed through the approvals process. However, close communications with the road authorities are maintained to minimize problems with schedules.

At the time of budgeting and with the best information available from the respective road authorities BHI's capital investment budget carries provision for these projects. BHI retains flexibility to accommodate changes identified by the municipal authorities.

3.2.1.3 Regulatory initiatives e.g. Smart meters and the Green Energy and Green Economy Act

This is a newer feature of BHI's planning and capital investment processes. BHI's obligation to install and commission Smart Meters throughout its service area is a prime example of a non-discretionary project initiated by the government. BHI successfully deployed Smart Meters and met the government's target completion date while maintaining normal day to day operations.

The Green Energy and Green Economy Act (GEGEA) requires distributors to accommodate a wide variety of renewable generation projects under the Ontario Power Authority's FIT and microFIT programs. BHI has embraced the prospects for this new electricity supply model but it introduces a new set of unknowns into the local supply planning equation and therefore into the capital budgeting process. Within the bounds of land use approvals and realistic business models uncertainty remains as to where and when renewable generation projects may be proposed as well as the relative size of the proposals.

While this uncertainty creates complexity from a planning perspective it is also capable of bringing supply opportunities to market that may result in reduced capital expenditures and improvements to the overall efficiency of the distribution system. To date, such opportunities have not materialized within BHI's system.

All licenced distributors, in Ontario, have to comply with Ontario Regulation 22/04 Electrical Distribution Safety and compliance with this regulation is subject to an annual external audit. Section 4 of the regulation sets the public safety standards and includes the statement:

> *"All distribution systems and the electrical installations and electrical equipment forming part of such systems shall be designed, constructed, installed, protected, used, maintained, repaired, extended, connected and disconnected so as to reduce the probability of exposure to electrical safety hazards. O. Reg. 22/04, s. 4 (2)."*

To confirm compliance with the above, the auditors reference the Distribution System Code, specifically the section on System Inspection Requirements and Maintenance. This reinforces BHI's commitment to maintaining its system in accordance with good utility practice and performance standards that could result in unscheduled capital expenditure priorities.

3.2.1.4 System reliability

BHI's priority and close monitoring of its reliability is a prime feature of its annual performance. Attention is given to the annual performance of every feeder at all voltage levels, 4.16 kV, 13.8 kV and 27.6 kV. Feeder outage times and momentary interruptions are reviewed and analyzed for trends and potential recommendations for improvement. For example, such reviews have highlighted reliability issues that are directly related to tree limbs or animal interference. This has resulted in more intensive tree trimming in some areas and the introduction of insulator guards to reduce wildlife contacts.

In accordance with Section 7.3.2 of the OEB's Electricity Distribution Rate Handbook, BHI records and reports the overall Service Reliability Indices for its distribution system.

By this measure BHI's reliability performance has been maintained, consistent with current, reasonable industry expectations.

In planning expenditures, based on reliability, consideration is also given to the nature of particular customers, who are not necessarily assessed equally. The priorities for a single residential customer and an industrial customer employing hundreds of staff with production reliance on electrical power require different evaluation criteria that are factored into the budget allocation process.

3.2.1.5 Distribution Automation

Distribution automation is a general term covering a wide range of technology applications that can enhance the operation and reliability of a distribution system. BHI has been typical of many LDCs, of similar size, and has operated its Supervisory Control and Data Acquisition (SCADA) system for many years enabling the remote monitoring and control of its 27.6kV, 13.8kV and 4.16kV distribution feeders. Operation of 27.6kV circuit breakers is performed by Hydro One operators with direction given by BHI.

Over 10 years ago BHI committed to a program for the installation of remotely operated switches within its 27.6kV distribution system. This greatly enhanced the operation of the system allowing control room operators much greater insight into the status of feeder conditions and the location of system faults. This proved to be a major step forward in responding to serious system outages, it improved response times and the flexibility of the system resulting in increased reliability to large numbers of customers.

In 2006 BHI further upgraded a selected number of these switches with the IntelliTEAM II Automatic Feeder Reconfiguration System. This advanced technology provides communication between switches and the ability to restore power automatically to selected sections of feeders i.e. a “self-healing” feature. This was an important demonstration of this feature and a valuable learning opportunity.

Distribution automation has been a strategic commitment, by BHI, that has been supported annually by its capital investment plans. This automation is applied to the 27.6 kV and the 13.8 kV feeders only, the smaller numbers of customers on 4.16 kV do not justify similar expenditures and these feeders are well protected by the circuit breakers at the respective substations. The experience gained has positioned BHI well for the potential of future applications and is consistent with the government’s emphasis on Smart Grid technologies within the GEGEA.

3.2.1.6 Infrastructure renewal projects

BHI has an on-going commitment to infrastructure renewal through its Asset Management Strategy. The following items provide a high level summary of its approach to infrastructure renewal projects.

Overhead

Pole testing and pole replacements are ongoing priorities and are continuously addressed. For example, spot replacements are identified and addressed through an annual pole replacement program. BHI’s overhead systems in residential neighbourhoods grew in the 1940s, 50s and 60s and, for reliability reasons and to pre-empt safety concerns associated with degraded insulation, are becoming due for major rebuild investments. Some areas in the City of Burlington have rear-lot construction where access is a major issue and due to the presence of trees in backyards. These are encountered frequently and require attention from an operational and safety standpoint. The timing and amount of expenditure for renewal of the overhead system are items for continuous consideration within the capital budget process.

Underground

Since the 1970s BHI, along with all LDCs in southern Ontario, made large commitments to underground residential distribution (URD) construction. This infrastructure has exhibited its own signs of aging. Primary cable failures have increased and are tracked annually. Submersible transformers are also a feature of some older neighbourhoods and are an expensive legacy. Underground system rebuilds are very capital intensive and have become an important priority that is evaluated annually and is a significant feature of the long term infrastructure renewal plans.

Substations

BHI owns and operates 32 municipal substations within its distribution system that transform 27.6kV supply down to lower distribution voltages (13.8kV or 4.16 kV). The age of the power transformers, within these substations, range from 40+ years to less than 10 years. The existence of these substations is a function of the age and development of the City of Burlington, when 4.16 and 13.8 kV distribution voltages represented the technology of the day. While providing secure reliability in the older neighbourhoods the substations are an expensive legacy; they require on-going maintenance and renewal of major components such as power transformers and switchgear. These renewals are a function of condition and age and must be factored into the long term capital budget process.

Buildings

Many of BHI's substations are housed within custom buildings, designed specifically for high voltage equipment with the appropriate public safety and security elements built into the designs. Maintaining a high standard of safety and functionality requires continual and planned upkeep and may on occasion require capital investment.

The BHI office facilities were originally constructed in 1961. While enhancements have been made over the years it will continue to require capital investments to maintain its physical integrity and so that BHI can provide suitable working conditions for all its employees.

Summary

Infrastructure renewal projects; buildings, overhead, underground, and substations are an essential component of BHI's investment strategies. The ratio of residential underground to overhead installations is continuing to increase in accordance with current practices. Inherently this will increase the future capital investments in infrastructure renewal due to the additional costs of underground projects. The timing of all renewal investments can be somewhat discretionary, allowing for some flexibility in the capital budget process, but renewals cannot be ignored in the long term investment strategy.

3.2.1.7 Elimination of environmental/health or safety risks

BHI has always respected environmental/health or safety issues and addresses them through the appropriate budget allocations.

For a number of years the most significant environmental issue for LDCs has been the elimination of Polychlorinated Byphenyls (PCB) contaminated transformers. BHI has completed its entire transformer testing work and has eliminated any units from sensitive locations. To comply with legislative requirements it has budgeted for the replacement of the remaining units, located in non-sensitive locations, by 2014. As a legal obligation this project exists as a non-discretionary item within the budgetary process.

3.2.1.8 Fleet/Tools

The nature of BHI's business requires the use of very specialized vehicles and tools to build, operate and maintain the distribution system. They are necessary to work effectively under live high voltage situations, often under extreme weather conditions where worker and public safety are the prime consideration.

BHI has built up its fleet of vehicles and equipment to deal with all aspects of its work environments. Maintaining this fleet in safe and reliable operating conditions is a continuous process requiring annual commitments for replacement or upgrades under a planned budgetary process.

3.2.1.9 Information technology and corporate administration

Information technology (IT) is an essential investment in any utility business. The applications include sophisticated customer information and work management systems, personal computing, Geographic Information Systems, SCADA and Outage Management systems.

They are all major capital expenditures requiring periodic upgrades or replacements that are carefully reviewed and prioritized, with input from all stakeholders within the company.

3.2.1.10 Renewable generation

BHI prepared a GEA Plan to document its capability to accommodate renewable generation facilities. This plan is included in Appendix C of this Distribution System Plan. The Plan does not indicate a requirement for any significant capital expenditures for the proposed connections. The amount of proposed renewable energy generation (REG) does not offer any significant capacity relief to BHI's distribution system and therefore has no impact on its regional planning.

3.2.1.11 Impact on customer bills

In the annual budgeting process care is taken to introduce only gradual increases in capital expenditures to minimize the impact on customer bills and to ensure smooth changes year to year. Mechanisms used in reviewing proposed budget increases include determining the reliability and quality of service improvements to customers, changes in revenue requirement from one year to the next, which is a proxy for the expected change in distribution rates, and impacts on BHI's resources (e.g., work force, capital).

3.2.1.12 Customer engagement

BHI has a wide range of customer engagement activities that communicate on items of interest and importance. These are communicated through community events, retail locations, a web portal, the local newspaper and bill inserts. Items include, energy conservation, financial assistance programs, time-of –use pricing, e-billing and the Community Energy Plan.

In 2013 BHI engaged UtilityPulse to conduct a Customer Survey. The results of the survey contribute to annual Electric Utility Customer Satisfaction Survey that reports on benchmark scores from electric utility customers across Canada. The survey covers a wide range of issues relating to customer satisfaction, service levels, business operations, reliability, conservation, smart meters and smart grid.

The results of the UtilityPULSE survey were published in June 2013 as the "15th Annual Electric Utility Customer Satisfaction Survey". The results showed that 86% of BHI's customers were either "fairly satisfied" or "very satisfied" with the service they received from BHI compared with the Province-wide average across all LDCs of 82%.

As a result of this type of feedback, the importance of maintaining the high level of reliability in the service area was identified by customers. This feedback was subsequently reflected in the current capital expenditure plan; the resulting planned expenditures include the accelerated replacement of poles and the further investment in SCADA equipment.

Further details of BHI's customer engagement activities are provided in Exhibit 1, Tab 2, Schedule 1 "Overview of Customer Engagement".

3.2.1.13 Summary

The above items give some insight into the degree of BHI's discretionary and non-discretionary spending and the limitations within the capital budget process. The following items are a high level summary of these items:

**Required Non-Discretionary
Budget Items**

- Projects to accommodate new customers and load growth in order to meet the Company's obligation to connect
- Projects to accommodate municipal, Region and Ministry requirements
- Expenditures to satisfy regulatory initiatives, environmental or health & safety risks including the Green Energy Act and the Company's Conditions of Service.

**Medium Term Non-Discretionary Budget Items
(With some timing flexibility)**

- Infrastructure renewal projects
- Fleet/tools
- Distribution Automation
- Information technology

In developing its capital investment plans BHI is challenged to satisfy its non-discretionary obligations and balance them with projects that have been evaluated and supported by data from its annual performance review, its Asset Management Strategy and good judgement from its professional management team.

It can be concluded that current levels of expenditures on rebuild projects, distribution automation and maintenance have kept BHI's reliability performance at reasonable North American levels. However, long term planning will identify expenditures for renewals as the distribution system infrastructure ages. This may result in assets remaining in service for longer periods and being subjected to closer condition assessments to minimize performance risks.

3.2.2 Elements of the Capital Expenditure Planning Process

a) Objectives, Criteria and Assumptions used and relationship to the Asset Management Objectives

The objective for BHI's capital expenditure planning process is twofold:

1. As a minimum, select that equipment that is to be refurbished and that equipment that is to be purchased/ leased such that BHI's legislated/mandatory obligations are met and
2. To the extent possible, select that equipment that will enable economic/efficiency improvements to be made and/or enhance customer communications and service.

The two-fold objective is to be achieved subject to certain constraints including:

- All capital expenditures are to be made within the available resources

- Expenditures to increase reliability will be made as necessary
- The plan should provide flexibility to accommodate unplanned and unexpected contingencies

The often-conflicting multiple criteria in effect include:

- Minimize the system lifecycle cost
- Minimize the increase in customers' bills – both short term and long term

The assumptions applicable to the development of the plan include:

- Expected change in number of customers, load, location, etc. together with anticipated legislated, regulatory and other changes will occur as anticipated

The relationship between the foregoing capital planning objective, constraints, criteria and assumptions and the asset management objectives is that BHI's capital planning is just one component (albeit often the largest) of its asset management process. Consequently, BHI makes every attempt to optimally plan the capital expenditures in an attempt to achieve overall optimization of its asset management activities.

BHI's outlook and objectives for accommodating the connection of renewable generation facilities is discussed in depth in its Green Energy Act Plan (GEA Plan) which is attached as Appendix C. Since all renewable energy generation (REG) potentially reduces the need for infrastructure enhancements within the service area, it is BHI's objective to connect all REG offerings as quickly as possible. The GEA Plan notes (in the Executive Summary and in section 2 Current Assessment) that "The BHI distribution system can accommodate all known projects, as is. At present there are no renewable generation and connection capital projects planned to accommodate new renewable generation. This capability will be further enhanced by the addition of new Tremaine TS in 2013, also on the 27.6 kV system."

b) BHI policy and procedures on incorporating non-distribution system alternatives

As just noted, it is BHI's policy to actively seeks opportunities to connect all REG projects since they have the potential to relieve system capacity constraints; these offerings include both FIT and microFIT projects. Also, BHI is, and has been for several years, extremely active in implementing conservation and demand management (CDM) load and energy savings; CDM savings make an immediate contribution to relieving system capacity and/or operational constraints. In addition, BHI's recent Regional Planning activities with neighbouring LDCs and Hydro One that ultimately resulted in the construction and commissioning of the Tremaine TS providing a major contribution to relieving both system capacity and operational constraints since it permitted load to be switched from more heavily loaded parts of the BHI system.

c) Processes used to identify projects in each investment category

The processes, tools and methods employed to identify, select, prioritize and pace the execution of projects in each investment category utilize a broad spectrum of BHI staff across multiple disciplines - in particular engineering and finance. BHI's "Asset Lifecycle Optimization Policies and Practices" (attached as Appendix D) sets out, for BHI, staff the processes, tools and methods to be used. In summary, the key elements are:

- Identify the range of renewal/refurbishment/purchase/lease options that meet each identified need or issue. This step involves experienced engineering staff who are able to differentiate between those theoretically possible options and those options that, in their professional best judgement, offer a solid practical solution.
- Again, for each identified need or issue, determine the full lifecycle cost of all identified practical and reasonable alternatives. The primary tool used here for major potential investments is an economic evaluation utilizing the discounted cash flow technique. This analysis would be performed with the assistance of finance staff.
- Select the best alternative for addressing each identified need or issue. This involves identifying the alternative with the lowest lifetime cost that complies with all design, construction and safety standards.
- Projects in each investment category are prioritized to ensure that BHI meets all legislated and mandatory requirements, maintains current operational standards by performing essential upgrades and refurbishments in-situ where economic, invests prudently by leveraging and/or early harvesting of previous investments, invests in customer service and economic/efficiency improvements and accelerates replacement of critical over-aged items where affordable and optimal.
- Projects are scheduled so as to balance the number and skills of resources needed for each project, likely weather conditions, delivery of materials and equipment, etc. Consideration is also given to scheduling projects in such a way that if a major unplanned and unfunded contingency were to occur, funding and resources could be swapped to respond to the emergency circumstances.

d) Customer feedback and impact on plan

BHI carefully utilizes the feedback it receives from its customers. In addition to feedback it receives throughout the year in response to operational issues, BHI conducts specific events and surveys. As described fully in Exhibit 1. Tab 2 Schedule 1 Overview of Customer Engagement these customer-oriented activities include:

- Customer roadshows (e.g. March-May 2012 Time-of-Use billing)
- Direct communications including newspaper open letters (e.g. July 24, 2013 post-storm letter)
- April 2013 formal customer satisfaction survey performed by UtilityPULSE
- Community events (e.g. Burlington Home Show, local Canada Day celebrations, Children's Festival)
- Business events - some 10 to 15 are typically held per year
- Commercial and industrial site visits and contacts (almost 3,000 made during the 2011-2013 period)

The feedback obtained from customers through these events is utilized throughout the planning cycle and is used by system planning staff to adjust the priority of projects and to fine-tune the selection of projects to be undertaken.

Two specific examples of customer feedback regarding the importance of maintaining the high level of reliability in the service area were subsequently reflected in the current capital expenditure plan; these planned expenditures are the accelerated replacement of poles and the further investment in SCADA equipment.

e) Methods and criteria used to prioritize REG investments

The methods and criteria are discussed in detail in the Green Energy Act Plan (attached as Appendix C). In summary: BHI does not receive an inordinate number of requests to connect REG investments; consequently, given the benefit that accrues to the distribution system through REG projects, BHI attempts to connect all REG projects as quickly as possible.

3.3 System capability assessment for renewable energy generation *(Chapter 5, Section 5.4.3)*

In anticipation of the Cost of Service application BHI prepared a GEA Plan, in accordance with the previous Filing Requirements. This plan provides all of the information required to describe BHI's capability and constraints in accommodating renewable energy generation. The GEA Plan is included in Appendix C of this Distribution System Plan.

In developing the GEA Plan, BHI included considerations including:

- Renewable generators over 10kW,
- The number and MW capacity expected over the forecast period,
- The MW capacity of the system to connect renewable energy generation, and
- Applicable connection constraints.

Constraints with respect to embedded distributors were not applicable since BHI has no embedded distributors.

3.4 Capital expenditure summary *(Chapter 5, Section 5.4.4)*

Appendix E -- Capital Expenditures &Project Descriptions 2009 to 2018 explains all of the project/activities within each investment category for this 10 year period.

Table 2 – Capital Expenditure Summary (below) provides the "snapshot" of BHI's capital expenditures over the 10 year period.

Table 2 – Capital Expenditure Summary

CATEGORY	Historical Period (previous plan[1] & actual)															Forecast Period (planned)				
	2009			2010			2011			2012			2013			2014	2015	2016	2017	2018
		Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var	Previous Year	Actual	Var					
		$	%	$		%	$		%	$		%	$		%	$				
System Access		$14,297,941	--	$14,297,941	$9,864,837	**-31.0%**	$9,864,837	$5,480,942	**-44.4%**	$5,480,942	$8,690,080	**58.6%**	$8,690,080	$7,580,069	**-12.8%**	$8,244,469	$7,411,040	$7,015,725	$6,953,590	$7,665,347
System Renewal		$1,504,332	--	$1,504,332	$1,504,313	**0.0%**	$1,504,313	$2,103,560	**39.8%**	$2,103,560	$846,293	**-59.8%**	$846,293	$635,680	**-24.9%**	$1,349,241	$1,311,959	$1,309,651	$1,309,651	$1,309,561
System Service		$351,331	--	$351,331	$417,267	**18.8%**	$417,267	$1,771,353	**324.5%**	$1,771,353	$7,887,428	**345.3%**	$7,887,428	$2,362,769	**-70.0%**	$908,540	$650,832	$966,547	$966,547	$650,832
General Plant		$1,927,289	--	$1,927,289	$708,897	**-63.2%**	$708,897	$954,373	**34.6%**	$954,373	$893,472	**-6.4%**	$893,472	$604,000	**-32.4%**	$807,000	$1,010,000	$673,000	$788,500	$428,900
Subtotal		$18,080,893		$18,080,893	$12,495,314	**-30.9%**	$12,495,314	$10,310,228	**-17.5%**	$10,310,228	$18,317,273	**77.7%**	$18,317,273	$11,182,518	**-39.0%**	$11,309,250	$10,383,831	$9,964,923	$10,017,788	$10,054,730
Capital Contribution		-$6,661,564		-$6,661,564	-$2,905,190		-$2,905,190	-$1,447,615		-$1,447,615	-$3,238,245		-$3,238,245	-$3,217,443		-$3,579,205				
TOTAL EXPENDITURE	-	$11,419,329	--	$11,419,329	$9,590,124	**-16.0%**	$9,590,124	$8,862,613	**-7.6%**	$8,862,613	$15,079,028	**70.1%**	$15,079,028	$7,965,075	**-47.2%**	$7,730,045				
System O&M			--		$6,323,045	--	$6,323,045	$7,187,610	13.7%	$7,187,610	$7,536,406	4.9%	$7,536,406	$9,223,725	22.4%	$10,006,700				

System Access Variances

2010 – 2009

The System Access expenditures in 2009 were unusually high for a variety of reasons although in many cases the costs were funded by contributed capital from developers or the City of Burlington. Of particular note were the values of projects for the Burlington Performing Arts Centre, the large volume of Subdivisions Assumed plus major City, Region of Halton and MTO projects. (Details in Appendix E 2009)

2011 –2010

In 2010 System Access expenditures were still relatively high, compared to 2011, due to continued subdivision assumptions, City and Region of Halton projects and metering expenditures. The variance was accentuated by the relatively low value of System Access expenditures, in 2011, due to reduced City and Region of Halton projects and the reallocation of Spare Transformers into inventory. (Details in Appendix E 2010, 2011)

2012 -- 2011

The 2012 System Access expenditures returned to a more typical level with a variance that is exaggerated by the relatively lower expenditures in 2011.

2013, 2014, 2015, 2016, 2017 and 2018

The System Access expenditures for these years are forecasted to be at a fairly consistent level. (Details in Appendices E, F and G)

System Renewal Variances

2011 –2010

The most significant variance in 2011 over 2010 was that this was the first year that BHI purchased a replacement power transformer as part of its strategic program to update these aging units.

2012 -- 2011

In 2012 BHI purchased a second power transformer as part of its strategic program but it postponed its planned Cable Rebuild project and reduced its Pole Replacement expenditure as part of its annual strategy to maintain total capital expenditures within its total budget. (Details in Appendix E 2011, 2012) This resulted in the low 2012 System Renewal expenditure

2013 – 2012

In 2013 BHI postponed the purchase of an additional power transformer and a Cable Rebuild project while also temporarily cutting back Pole Replacement expenditure for this year.

2014, 2015, 2016, 2017 and 2018

The System Renewal expenditures for these years are forecasted to be at a fairly consistent level. (Details in Appendices E, F and G)

System Service Variances

2010 – 2009

While the percentage increase in 2010 was notable (18.8%) the increased dollar value was not huge and reflects some of the smaller substation equipment projects that were postponed, in 2009, to contain the overall capital budget.

2011 –2010

The increase in 2011 was very significant as it included the first capital contribution to Hydro One for the new Termaine TS and the beginning of the expenditures for the construction of new feeders to egress this facility.

2012 -- 2011

The System Service expenditures accelerated dramatically in 2012 as the major cost for the capital contribution to Hydro One was accommodated and major costs were incurred for the construction of new the feeders and the costs for the Motorized ABS/Recloser Program.

2013 – 2012

Expenditures for System Service were reduced in 2013 primarily due to the refund to Hydro One following the true-up to satisfy the Capital Cost Recovery Agreement for the new Tremaine TS and also for decreased expenditures for the Motorized ABS/Recloser Program.

2014, 2015, 2016, 2017 and 2018

The System Service expenditures for these years are forecasted to be at a fairly consistent level, with some variances due to the timing of feeder egress costs. (Details in Appendices E and F)

General Plant Variances

2010 – 2009

The General Plant expenditures, in 2010, are significantly decreased due to reduced spending on Buildings, Rolling Stock and the new Geographic Information System (GIS) software. . (Details in Appendix E 2009)

2011 –2010

The 2011 General Plant expenditures increased primarily due to the costs associated with the GIS Implementation. (Details in Appendix E 2010, 2011)

2012 -- 2011

The variance between the General Plant expenditures in these years is not materially significant.

2013 – 2012

The decreased General Plant expenditures, in 2013, are primarily due to reduced costs for Buildings.

2014, 2015, 2016, 2017 and 2018

The General Plant expenditures for these years are forecasted to be at a fairly consistent level, with some variances due to the timing for new Rolling Stock and Computer Hardware/Software.

3.5 Justifying capital expenditures *(Chapter 5, Section 5.4.5)*

BHI bases its capital expenditures on a balanced approach that addresses the outcomes of:

- Customer Focus
- Operational Effectiveness
- Public Policy Responsiveness, and
- Financial Performance

3.5.1 Overall plan (Chapter 5, Section 5.4.5.1)

All proposed expenditures within this plan are allocated to one of the four investment categories:

1. System Access
2. System Renewal
3. System Service, and
4. General Plant

Attachment 1 (of 5):

Appendix A - System Performance Report

2012
System Performance Report

Burlington Hydro Inc.

2012 System Performance Report

Table of Contents

Introduction

The 2012 System Performance Report is intended to provide a comprehensive overview of the performance of the Burlington Hydro distribution system during 2012. It is based on the format established for previous reports and contributes to BHI's Asset Management Strategy by identifying future maintenance and capital budget priorities to enhance the reliability and performance of the distribution system. The following specific attributes are reviewed and addressed:

1) Substation and Feeder performance at 4.16, 13.8 and 27.6 kV primary voltage levels

2) Underground Distribution

3) System demand and critical loading issues

4) System maintenance activities and priorities

5) Reliability statistics and observations

6) Future maintenance recommendations

7) Future Capital Budget recommendations

Information contained in the report was supplied by the Burlington Hydro Control Room and BHI senior management; it summarizes statistics and incidents that occurred in 2012. Data from previous years was used for comparison purposes and to identify any recurring issues. Recommendations were based on consultations with BHI engineering and operations staff.

1 Substation and Feeder Performance

1a. *General*

In 2012, BHI had no major performance issues at any of its 32 substation locations. More specific observations and commentary, on substations, are included in section 1b below.

The following table summarizes the number of feeders at each voltage level.

Primary Voltage	Number of Feeders	Percentage of Total
27.6kV	28	18
13.8kV	28	18
4.16kV	99	64
	155	100

The analysis of feeder performance is based on the recording of feeder Auto-Reclosures, of feeder Lock-Outs and a review of causes of interruptions. Appendix A summarizes the performance of each feeder since 2003, as follows:

Appendix A1	2012 Auto-Reclosures (sorted by Total, since 2003)
Appendix A2	2012 Auto-Reclosures (sorted by no. in 2012)
Appendix A3	2012 Lock-Outs (sorted by Total, since 2003)
Appendix A4	2012 Lock-Outs (sorted by no. in 2012)

These Appendices also identify the voltages of each feeder.

A review of the actual numbers of Auto-Reclosures and Lock-Outs for 2012 and 2011 when compared to the average number since 2003 is also worthy of note.

Auto-Reclosures	2011	2012	Previous 9 year Average
27.6kV	40	35	58.3
13.8kV	134	160	177.3
4.16kV	67	64	103.5
TOTAL	241	259	339.1

Lock-Outs	2011	2012	Previous 9 year Average
27.6kV	13	15	24.1
13.8kV	25	27	23.1
4.16kV	31	34	32.2
TOTAL	69	76	79.4

Conclusions:

It is important to appreciate the difference in loading capacity at each voltage level.
A typical 4.16 kV feeder may supply only 200-300 customers, whereas a 13.8 kV feeder may supply around 1000 and a 27.6 kV 2000+. Therefore the exposure of feeder length has a proportional relationship to the number of customers served. Also it is acknowledged that both the 4.16 and 13.8kV customers actually experience momentary interruptions and outages when incidents occur on their particular 27.6kV supply feeder. Therefore Auto-Reclosures and Lock-Outs, at each voltage level, are not at all equal with respect to their impact on customers. With that background the following conclusions can be drawn from the above:

1. The total number of Auto-Reclosures was increased slightly in 2012, but well below the 9 year average, although the 13.8 kV feeders continue to have a significant number of operations.
2. The total number of Lock-Outs also increased in 2012, but was below the 9 year average.

More specific observations and commentary on these items are included in sections 1c, 1d and 1e below.

1b. *Substations*

There are no significant changes to the station and feeder loadings, in 2011. BHI Control Room Operators are aware of the system capabilities for station and feeder back-ups. At most times of the year these are not an issue, however there are the following potential vulnerabilities some of which have been previously noted:

1. Brant M.S. and Mount Forest M.S. should provide back-up to each other, but this is not possible under heavy load conditions. In the past, planned maintenance has required the construction of temporary back-up arrangements by energizing 27.6 kV circuits at 4.16 kV, to maintain supply. This situation continued in 2012. A number of solutions have been considered but a final selection and design solution is still pending.

2. The loading situation at Hampton M.S. is a cause for concern where if a station was lost under heavy load conditions there may be low voltage conditions for some customers. This could be below the CSA standards and contrary to BHI’s commitment in its Conditions of Service. The two transformers are also supplied from one set of four primary underground cables. New cables supplying each transformer separately are planned but not yet designed.

3. BHI expects to operate the majority of its substations indefinitely, as conversion to a higher voltage is considered to be cost prohibitive. The transformers, switchgear and buildings are well maintained, but many of them are over 30 years old and generally supply power to the older neighbourhoods. 20 of the substations are equipped with a single power transformer and 12 have double transformation. Approximately 17 of the transformers are over 40 years old and therefore present the highest risk particularly when the current insurance coverage applies to a depreciated value only and falls to zero for units over 50 years old. In 2011 an annual replacement program was initiated; one power transformer was replaced in 2011 and a second in 2012. See recommendation in Section 7a.

1c. *27.6kV Feeders*

Appendix B contains the 27.6kV Feeder Outage Reports for all 27.6kV feeders experiencing 5 or more Auto-Reclosures or 2 or more Lock-Outs, during 2012. The following is a commentary on each of these feeders.

Feeder (TS)	No. of 2012 Auto-Reclosures (2011)	No. of 2012 Lock-Outs (2011)	Comments
39M2 (Burlington)	3 (2)	3 (1)	• The Autos. occurred at different times throughout the year, 2 of the causes were Unknown. The Lock-Outs were caused by a Defective Transformer, High Winds and a Tree/Limb
39M3 (Burlington)	0 (0)	3 (1)	• All of the Lock-Outs occurred at the end of October resulting from High Winds from Hurricane Sandy

In total the BHI 27.6kV feeders experienced 15 Lock-Outs, during 2012.The following table compares the preceding 9 years.

YEAR	Number of 27.6 kV Lockouts
2003	71
2004	18
2005	30
2006	10
2007	4
2008	33
2009	16
2010	29
2011	13
2012	15

The total of 15, for 2012, was only a minor increase over 2011.
It has been noted that the 76M23 feeder has some fairly significant unbalance on the blue phase a solution is being reviewed in 2013.

1d. *13.8kV Feeders*

The performance of certain 13.8kV feeders continues to be monitored closely. Appendix C contains the 13.8kV Feeder Outage Reports for all 13.8kV feeders experiencing 5 or more Auto-Reclosures or 2 or more Lock-Outs, during 2012. The following is a commentary on each of these feeders.

M.S. Feeder #	No. of 2012 Auto-Reclosures (2011)	No. of 2012 Lock-Outs (2011)	Comments
Lowville F3	27 (25)	4 (1)	• The Autos were caused by High Winds/Trees, Unknown causes, and Wildlife. • The Lock-Outs all resulted from High Winds/Trees
Reservoir F1	23 (4)	2 (2)	• The Autos. were caused by defective underground cables, a defective transformer, a defective switch, thunder storms, Wildlife and Unknown Causes • The 2 Lock-Outs had Unknown Causes.
Tyandaga F2	11 (7)	0 (0)	• The Autos were caused by defective underground cables, a defective transformer, Unknown Causes and High Winds. • ** See note below
Tyandaga F3	10 (6)	1 (0)	• The Autos were caused by defective underground cables, a defective transformer, a defective connection Tree/Limbs, Unknown causes, and Wildlife. • The Lock-Out was caused by a defective switch.
Tyandaga F4	8 (10)	1 (0)	• The Autos were caused by defective underground cables, defective connections and Unknown Causes. • The Lock-Out was caused by a contractor dig-in. • * See note below.
Palmer F1	8 (3)	1 (0)	• The Autos. were caused by defective underground cables, a defective connection, a broken pole, Wildlife and Unknown Causes. • The Lock-Out was caused by the broken pole.

M.S. Feeder #	No. of 2012 Auto-Reclosures (2011)	No. of 2012 Lock-Outs (2011)	Comments
Orchard F2	8 (3)	0 (3)	• The Autos were caused by defective underground cables, a defective transformer, a pole fire and Unknown Causes.
Palmer F3	7 (11)	2 (1)	• The Autos. were caused by a pole fire, Wildlife and Unknown Causes. • The Lock-Outs were caused by a defective switch and a defective underground cable.
Towerline F2	7 (3)	2 (0)	• 4 of the Autos. had Unknown Causes and 3 were caused by Wildlife.. • 1 Lock-Out was caused by Wildlife and 1 by a pole fire.
Lowville F1	7 (7)	1 (0)	• The Autos. were caused by High Winds/Trees, Unknown causes and a pole fire. • The Lock-Out was caused by a Tree/Limb.
Fairview F2	7 (1)	(0) (1)	• The Autos were caused by High Winds, Unknown Causes, and Wildlife.
Tyandaga F1	6 (6)	0 (1)	• 3 Autos. were caused by defective underground cables, a defective transformer, a defective connection and an Unknown Cause.
Palmer F4	6 (3)	0 (0)	• The Autos. were caused by defective underground cables and Unknown Causes.
Lowville F4	1 (1)	5 (2)	• The Lock-Outs were caused by Tree/Limbs, High Winds and a broken pole. • The cause of the Auto. Was Unknown.

M.S. Feeder #	No. of 2012 Auto-Reclosures (2011)	No. of 2012 Lock-Outs (2011)	Comments
Palmer F2	3 (4)	2 (0)	• The Autos. were caused by a defective transformer and an Unknown Cause. • The Lock-Outs were caused by a Tree/Limb and a defective underground cable.

* Following previous recommendation an underground rebuild project, in the Faversham/Cavendish and Farnham Place areas east of Brant Street, south of Upper Middle Road was designed in 2012. Construction is now planned in 2014. This should improve the performance of Tyandaga F4.

** The Tyandaga F2 feeder has significant exposure to rural conditions, north of Dundas St. This impacts the urban customers to the south. BHI has installed an IntelliRupter recloser on this feeder between the rural and urban customers. The control and communications to the BHI control room will be completed in 2013; this should reduce the number of interruptions experienced by the urban customers.

1e. *4.16kV Feeders*

The 4.16kV feeders performed fairly well, in 2012, Appendix D contains the 4,16kV Feeder Outage Reports for all 4.16kV feeders experiencing 5 or more Auto-Reclosures or 2 or more Lock-Outs, during 2012. The following is a commentary on each of these feeders.

M.S. Feeder #	No. of 2012 Auto-Reclosures (2011)	No. of 2012 Lock-Outs (2011)	Comments
Spruce F1	9 (1)	0 (0)	• The Autos. were caused by High Winds, a thunder storm, a defective transformer and a single phase burn off.
Appleby F1	6 (1)	0 (0)	• The Autos. were caused by defective underground cables, a defective transformer, a defective switch, a thunder storm and High Winds.
Easterbrook F3	4 (1)	3 (0)	• The Autos. were caused by High Winds, a thunder storm and an Unknown Cause. • The Lock-Outs were caused by High Winds and Cold Load pick up.

M.S. Feeder #	No. of 2012 Auto-Reclosures (2011)	No. of 2012 Lock-Outs (2011)	Comments
Fairleigh F2	1 (2)	4 (0)	• The Auto. Was caused by a defective transformer. • The Lock-Outs were caused by High Winds and Tree/Limbs.
Fairwood F6	2 (0)	3 (0)	• The Autos. were caused by a single phase burn off and an Unknown Cause. • The Lock-Outs were caused by Tree/Limbs, a single phase burn off and an Unknown Cause.
Pt. Nelson F2	3 (2)	2 (1)	• The Autos. were caused by a single phase burn off and a Tree/Limb. • The Lock-Outs were caused by High Winds and a Tree/Limb.
Partridge F2	0 (2)	2 (0)	• The Lock-Outs were caused by High Winds.

The 4.16kV feeders had a similar number of Auto-Reclosures and Lock-Outs, in 2012. A review of the above comments identifies typical causes of problems with no particularly dominant cause.

The need for phase balance improvements has previously been identified as an issue, on a number of 4.16kV feeders. This issue should receive increased attention to improve the operational efficiency of the system. Ref. Section 6c for recommendations.

2 Underground Distribution

A very large percentage of BHI's residential distribution system has been constructed underground, particularly in the newer neighbourhoods, north of the QEW. This has been standard utility practice for over 30 years. These systems contain direct buried high voltage cables that have a finite length of life depending on the below-grade environment, the rate of deterioration of the cable insulation and the failure rate of underground splices. BHI closely monitors the failure of these cables on an individual feeder and geographic basis. Appendix E is a high level annual record of primary cable failures within the distribution system.

The planned replacement of primary cables is a very significant element within any utility's Asset Management Plan and represents the liability for very large, on-going, capital expenditures. The timing of complete cable replacements within specific neighbourhoods requires a careful balance considering the condition of the cable insulation and the historical reliability performance. Specific recommendations for future cable replacements are indicated in Section 7b.

Commentary on the current maintenance and future recommendations for pad-mounted transformers and switching cubicles is included in Sections 4 and 6 respectively.

3 System demand and critical loading issues

3a. *Overall Demand/Load Growth*

The following table shows BHI's **coincident** peak demand and percentage growth for the last 10 years.

Year	Coincident Peak Demand MW	% Increase (Decrease)
2003	334.14 (July)	
2004	338.38 (July)	1.3
2005	364.96 (June)	7.9
2006	378.16 (Aug)	3.6
2007	367.28 (June)	(2.9)
2008	346.36 (June)	(5.7)
2009	350.43 (Aug)	1.17
2010	365.93 (July)	4.42
2011	379.69 (July)	3.76
2012	373.21 (July)	(1.7)

The 2012 coincident peak demand is reduced slightly from 2011. There are many variables that contribute to this single number, such as a continued slower economy and the impact of conservation initiatives.

3b. *27.6 Feeder Loads and Transformer Station Capacity*

A serious transformer loading issue, at Hydro One's Cumberland TS, arose in July 2008. Hydro One encountered an equipment limitation on its fleet of 1970s vintage 75/100/125MVA Canadian General Electric power transformers. Two of these transformers are installed at the Cumberland TS and an immediate total station loading limitation was imposed at this station. One of these transformers was replaced, in late 2010, allowing Hydro One to lift the loading limitation. The replacement of the second transformer was completed in June 2012; this was in advance of a previous expectation in 2013.

The original loading concerns were further aggravated by Hydro One's restrictions on the availability of supply from Bronte TS. With the addition of two additional feeders, from this TS in 2008, BHI had raised its capacity available to 45 MW; however due to stability problems on its transmission system Hydro One has limited this capacity to 30MW. This restriction was lifted in December 2012.

Notwithstanding the above situations the issue of overall TS capacity continued to be a concern for BHI. Burlington T.S. and Cumberland T.S. supply BHI exclusively and the peak loading on Cumberland TS exceeds its 10 Day LTR. This less-than-ideal situation is further aggravated when the geographic supply areas are considered. Figure 1, below, shows how the capacity limitations on Cumberland, Palermo and Bronte TS's cause the Burlington TS's supply area to extend way beyond its optimum distance. This introduces inefficiency into the BHI distribution system and may expose customers to less-than-optimum reliability. Regional planning meetings were held and Hydro One committed to the construction of the new Tremaine Transformer Station, in the area of Tremaine Road, north of Dundas St., with a commissioning date of January 2013, which was met. This TS will initially provide an additional 6 feeders supplying the BHI distribution system.

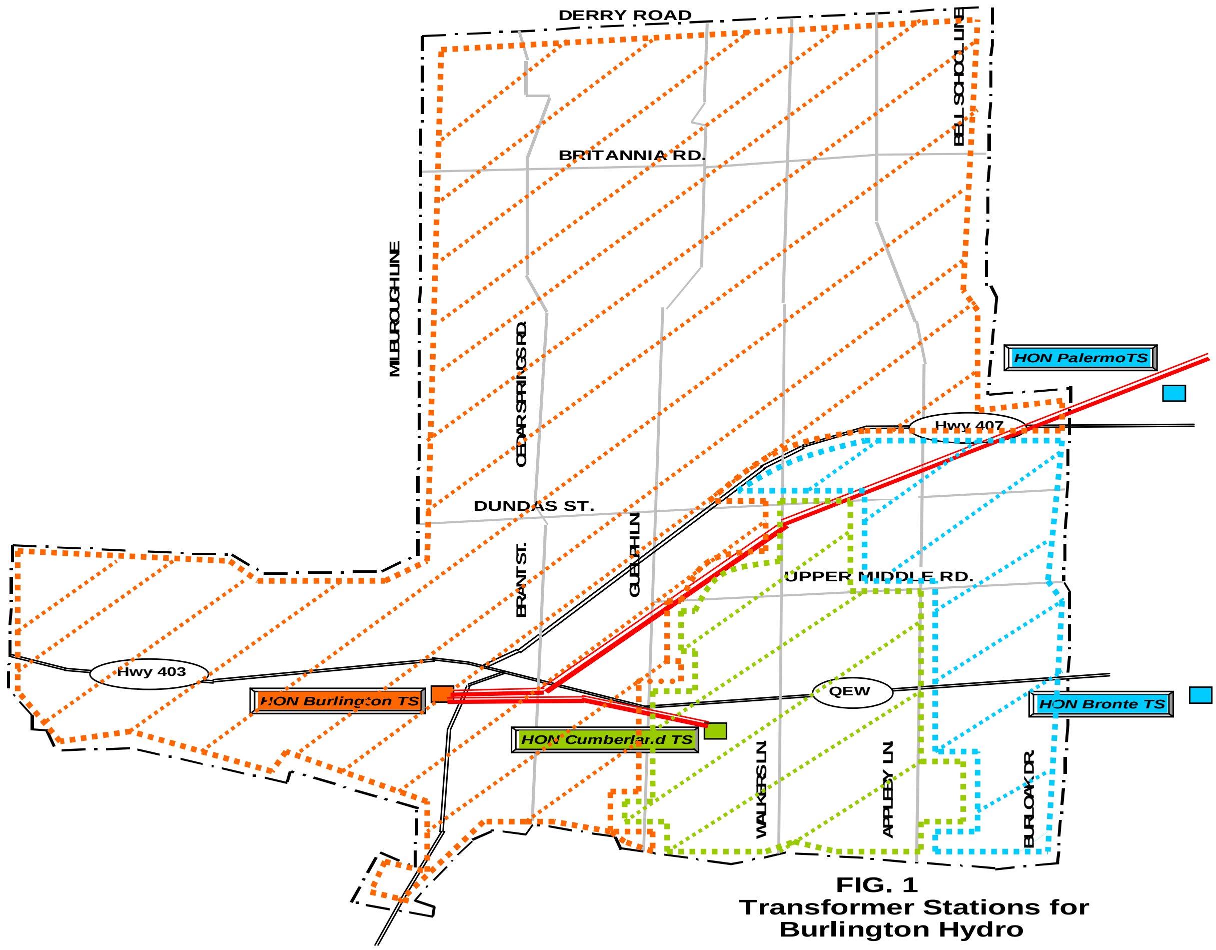


FIG. 1
Transformer Stations for Burlington Hydro

BHI’s 27.6kV feeder interconnections are well integrated and back-up arrangements have been further enhanced by the addition of remotely operated switches.

The following table shows the 27.6kV feeder peaks during the peak demand week of July 14, 2012.

Feeder	Peak Load Amps	Feeder	Peak Load Amps
39M1	**296**	**76M23**	**374**
39M2	**551**	**76M24**	**326**
39M3	**162**	**76M25**	**472**
39M4	**256**	**76M26**	**290**
39M5	**434**	**76M27**	**257**
39M6	**141**	**76M28**	**410**
39M31	**194**	**76M29**	**172**
39M32	**472**	**76M30**	**384**
39M33	**311**	**A4M5**	**495**
39M34	**453**	**A4M6**	**352**
39M35	**286**	**13M25**	**175**
39M36	**202**	**13M26**	**331**
76M21	**392**	**13M27**	**236**
76M22	**316**	**13M28**	**300**

The majority of these feeders have reasonable loadings, up to approximately 300A, however, there are a number of more heavily loaded feeders i.e. 39M2 (551A), A4M5 (495A), 39M5 (434A), 39M34 (453A), 76M25 (472A). With the upcoming introduction of the new feeders from Tremaine TS the rebalancing of feeder loads will be a priority planning consideration. This will be an opportunity to shift some load (reduce) more evenly to other feeders to improve flexibility and reduce losses in the system. It will also alleviate the capacity limitations on Cumberland, Palermo and Bronte TS’s. One particular feeder concern is the 39M5 which supplies the major portion of the downtown Burlington load. This load has grown considerably in recent years and the long term vision for downtown Burlington is expected to accelerate this growth. With the potential for reducing the load on Cumberland TS the planning study should consider the opportunity to supply and/or back up more of the downtown load from Cumberland TS. To achieve this would involve redistributing some loads from the 76M25 and 76M26 and require physical line construction and new switching capabilities.

Ref. 6a for recommendations.

4 System maintenance activities and priorities

Burlington Hydro aims to meet or exceed the system maintenance and inspection requirements of Section 4.4 of the Ontario Energy Board's Distribution System Code (DSC). In 2009 all equipment at all locations was inspected to provide a baseline of condition assessments for its Asset Management plans. The electronic documentation of the annual inspections is expected to be completed in 2013. The following routine maintenance programs are consistent with good utility practices and are applied annually within the BHI distribution system.

- **Wood pole testing and replacement**

In addition to the inspection requirements of the DSC, Burlington Hydro has taken a proactive approach to the annual testing and replacement of wood poles. The testing is performed by an engineering company using specialized test equipment. Defective poles are identified for replacement with critical poles replaced immediately and a high priority placed on those equipped with transformers or underground dips. The following is a summary of the wood pole testing and replacement program for 2011 and 2012.

	2011	2012
Total Number of Poles in the system	~17,000	~17,000
Number Tested	2950	1632
Number identified for replacement at end of year	53	39
Number replaced	288	53
Number treated to extend life	143	142

The figures above indicate that BHI is maintaining its commitment to its pole testing, treating and replacement program. This should be maintained to minimize any future back logs. Ref. Section 6d, for recommendations.

- **Insulator Washing**

Insulator washing is an important preventative measure to minimize flashovers and pole fires. Particular attention is given to the 27.6kV system including any areas where there are underbuilt circuits and areas with potential for high salt contamination i.e. adjacent to highways. This was completed once in April 2012. In the course of this work, 39 defects were identified and corrected e.g. cracked insulators, broken switches.

- **Infrared Thermography of the Overhead system and Municipal Substations**

Annual inspection and scanning of the overhead system is an important and worthwhile part of a good preventative maintenance program. This work was completed in August of 2012. 61 concerns were reported, of these 27 were considered severe and 34 were moderate, all were addressed.

- **Cleaning of Switching Cubicles**

Burlington Hydro has approximately 162 pad mounted switching cubicles within its distribution system. Inspections were carried out in 2012 and 10 defects were identified, these were corrected. A specialized maintenance technique, using “dry ice”, is employed, to clean a selected number of the switching cubicles. This work can be safely completed with the equipment energized, therefore reducing the time and cost for switching activities. 23 units were cleaned in 2012.

- **PCB Testing and Replacement of Distribution Transformers**

BHI has approximately 9000 distribution transformers within its system. As a result of environmental legislation, only those units manufactured prior to 1980 are candidates for PCB contamination. By the end of 2007 BHI had tested all of these transformers. The following is a summary of the status of this program and the environmental requirements.

Degree of Contamination	Environmental Requirement	Status at end of 2012
>500ppm	To be removed from service by 2009	All contaminated transformers >500 ppm removed from service
>50ppm and <500ppm	To be removed from service by 2009. Except units in non-sensitive locations by 2014	• All contaminated transformers in sensitive locations have been removed form service. • 8 Overhead transformers in non-sensitive locations were replaced, in 2012. 48 remain to be replaced in advance of 2014

Ref. Section 6e, for recommendations.

- **Tree Trimming**

Tree trimming was completed in 2012, in accordance with BHI’s established 3 year cycle; this is a normal utility practice. For 2012 the central area between Brant and Walkers Line and from Lakeshore Road to Britannia was addressed.

- **Vault Washing**

Submersible transformers are inspected as part of the annual transformer inspection process. There was a previous recommendation to introduce a formal program for the washing of underground vaults; this program has not been initiated. Ref. Section 6f, for recommendations.

- **Pad-Mounted Transformers & Switching Cubicles**

All pad-mounted transformers and switching cubicles were inspected, in 2009, as part of the system-wide condition assessments. Patrol Inspections, every 3 years, are now scheduled, in accordance with the minimum inspection requirements of the Distribution System Code. Ref. Section 6g, for recommendations on routine maintenance activities

5 Reliability statistics and observations

In accordance with Section 7.3.2 of the Ontario Energy Board's (OEB's) Electricity Distribution Rate Handbook, BHI records and reports annually the following Service Reliability Indices:

SAIDI = System Average Interruption Duration Index

$$= \frac{\text{Total Customer-Hours of Interruptions}}{\text{Total Customers Served}}$$

SAIFI = System Average Interruption Frequency Index

$$= \frac{\text{Total Customer Interruptions}}{\text{Total Customers Served}}$$

CAIDI = Customer Average Interruption Duration Index

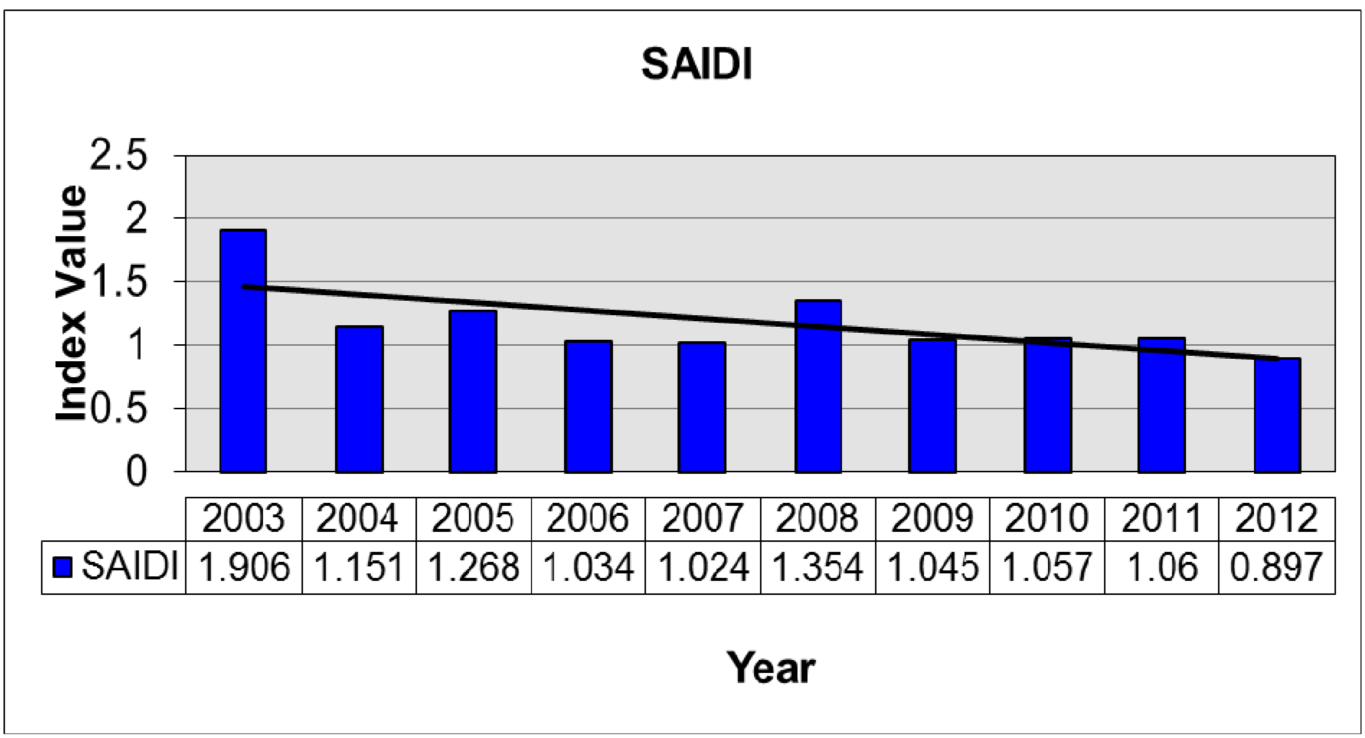
$$= \frac{\text{Total Customer-Hours of Interruptions}}{\text{Total Customer Interruptions}}$$

In addition, BHI also records:

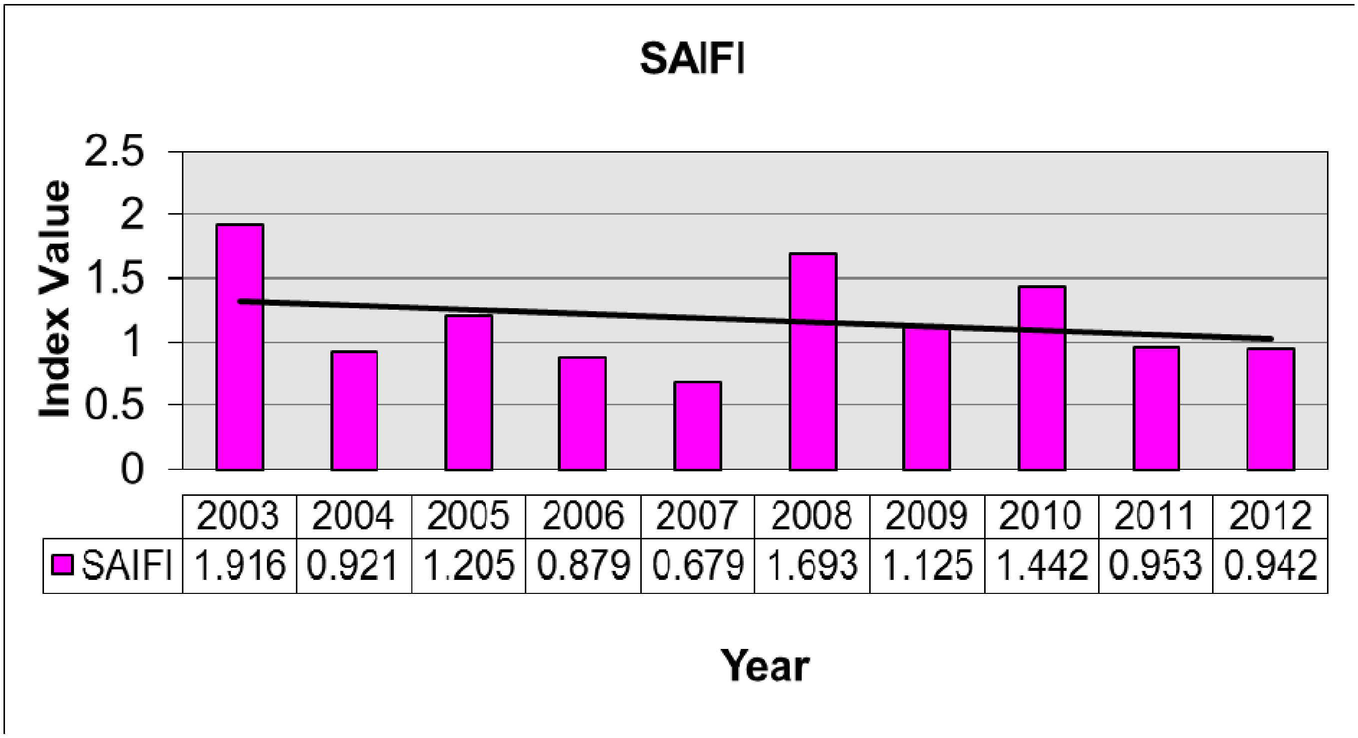
SAARI = System Average Automatic Reclosure Index

$$= \frac{\text{Total Customer Automatic Reclosures}}{\text{Total Customers Served}}$$

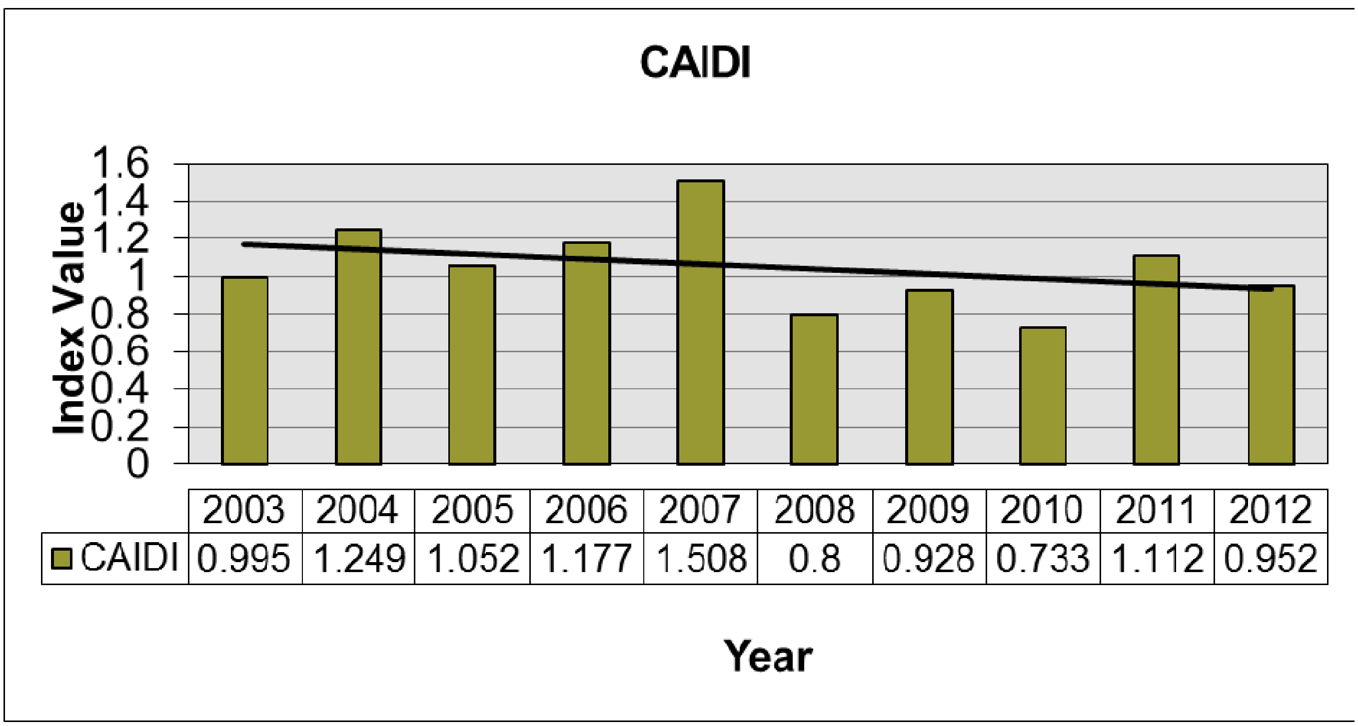
These indices provide BHI with an annual measure of its service performance for internal benchmarking and for comparisons with other distribution companies as part of the OEB's Performance Based Regulations. The following graphs demonstrate the individual performance measures over the last 10 years.



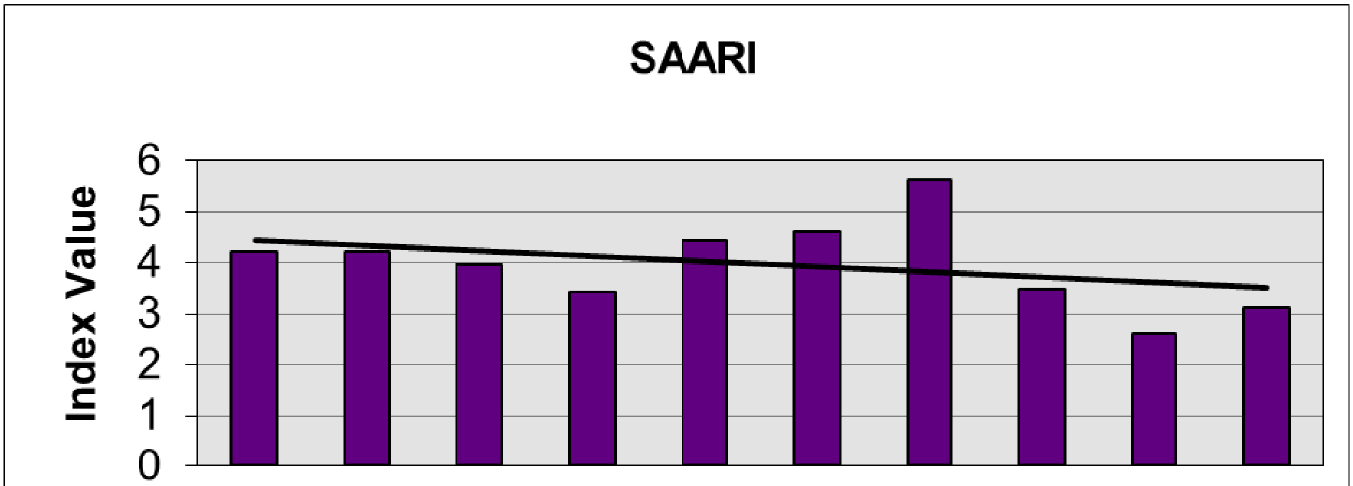
10 Year Average – 1.18



10 Year Average – 1.18



10 Year Average – 1.05



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
SAARI	4.224	4.208	3.978	3.432	4.44	4.605	5.631	3.479	2.62	3.116

10 Year Average – 3.97

The graphs depict a slightly improving but fairly consistent level of performance.

6 Future maintenance & operations recommendations

6a. *27.6kV Feeders*

With addition of new feeders from Tremaine TS, the open points in the distribution system will be changed significantly. This will be an opportunity to distribute loads more evenly and relieve some of the capacity limitations on Cumberland, Palermo and Bronte Transformer Stations. At that time, a complete review of all 27.6kV feeder loads is planned and should include an examination of the potential for supplying some existing and future downtown loads from Cumberland TS.

6b. *13.8kV Feeders*

Continued attention to the specific problems on the under-performing 13.8 kV feeders should be maintained. In addition to the geographic 3 year cycle of tree trimming on-going inspection and attention should be given to the tree clearances and condition of these feeders. The full functionality of the initial new automation technologies (IntelliRupters) should be continued in 2013. The results of these applications should be monitored closely to identify the reliability improvements.

6c. *4.16kV Feeders*

Opportunities, in the field, for improved phase balancing on 4.16kV feeders should continue to be investigated and carried out.

6d. *Wood Pole Replacements*

The back log of poles, identified for replacement, was decreased very significantly, in 2011 and the replacement program maintained in 2012. A continued commitment to testing and replacing should be followed in 2013.

6e. *PCB Testing and Replacement of Distribution Transformers*

Good progress has been made in meeting the environmental requirements. This should remain a high priority item with a planned program for elimination of all contaminated transformers well within the regulatory requirement dates.

6f. *Vault Washing*

No vault washing was completed in 2012. A review of the inspection reports for the submersible transformers should be made and depending on the reported conditions, consideration should be given to a more structured vault washing program.

6g. *Pad-Mounted Transformers & Switching Cubicles*

The exterior condition and appearance of these units require some planned maintenance including attention to landscape plantings that may interfere with the safe operation of these units. A program for the removal of obstructions, painting and replacement of safety signage and nomenclature is recommended.

7 Future Capital Budget recommendations

7a. *Substation Power Transformers*

With 17 of its substation power transformers over 40 years old these units require close monitoring and testing. The program to acquire one new unit per year for back up or replacement is endorsed and recommended for continuance.

7b. *13.8kV Feeders*

The following area of primary cable failures have been identified and should be reviewed as part of the Asset Management plan and prioritized for capital budget consideration.

1. Faversham/Cavendish and Farnham Place areas east of Brant Street, south of Upper Middle Road. (Tyandaga F4)

2. Longmoor Drive, Catalina Cres., and Sutherland Cres. area east of Walkers Line, north of New Street. (Fairview F3). This area has had a history of U/G cable failures but has performed better, more recently. It should be monitored for future consideration.

BHI has installed new automation technologies (IntelliRupters) on several 13.8 kV feeders. These should continue to be integrated into the operation of the control room, in 2013, to improve the reliability of the customers supplied by these feeders. Based on this experience BHI expects to expand these applications throughout its system as part of future capital budget considerations.

Appendix A1

APPENDIX A1

2012 Feeder Auto-Reclosures (Sorted by Total)

FEEDER	# CUSTOMERS	KV	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
LOWVILLE F3	256	13.8	33	17	25	35	22	26	30	36	25	28	277
LOWVILLE F4	413	13.8	21	18	22	32	28	18	14	2	1	1	157
TYANDAGA F2	883	13.8	10	13	13	18	14	23	19	10	7	11	138
RESERVOIR F1	1615	13.8	14	6	11	19	6	12	10	7	4	23	112
TYANDAGA F4	1036	13.8	11	5	9	6	24	4	13	12	10	8	102
FAIRVIEW F3	660	13.8	4	15	4	10	14	17	13	6	5	2	90
TOWERLINE F2	331	13.8	11	9	16	10	9	12	5	1	3	7	83
TOWERLINE F1	1231	13.8	2	8	6	17	8	8	10	5	11	2	77
TOWERLINE F4	55	13.8	0	9	6	12	7	11	12	5	6	2	70
PALMER F1	147	13.8	11	4	10	5	7	3	8	5	3	8	64
TYANDAGA F3	481	13.8	5	4	8	3	2	6	5	10	6	10	59
76M21	891	27.6	7	6	8	5	5	10	7	4	4	1	57
ORCHARD F2	524	13.8	5	3	8	5	6	6	6	3	3	8	53
PALMER F3	833	13.8	4	3	9	3	5	2	4	3	11	7	51
FAIRVIEW F2	29	13.8	5	9	4	9	4	4	2	4	1	7	49
LOWVILLE F1	146	13.8	2	5	3	6	2	5	6	4	7	7	47
TYANDAGA F1	1122	13.8	13	1	1	4	5	0	6	4	6	6	46
PALMER F4	938	13.8	5	9	10	0	2	1	2	6	3	6	44
ORCHARD F1	865	13.8	9	2	3	5	10	6	0	4	1	3	43
76M30	480	27.6	2	8	3	7	3	5	4	5	5	0	42
INTERCHANGE F2	53	13.8	1	6	5	2	5	6	4	4	6	3	42
76M28	3336	27.6	3	4	3	3	3	6	8	7	0	4	41
PALMER F2	548	13.8	8	5	2	2	1	4	8	4	4	3	41
EASTERBROOK F3	135	4.1	0	2	1	4	5	9	6	7	1	4	39
39M31	709	27.6	8	6	7	3	4	3	4	1	0	1	37
SPRUCE F1	281	4.1	5	3	1	1	2	13	1	1	1	9	37
76M23	2029	27.6	4	1	2	5	2	3	7	3	3	3	33
76M24	1553	27.6	2	3	3	0	4	1	13	1	2	2	31
76M27	1516	27.6	2	2	1	3	2	6	5	6	3	1	31
BRIDGEVIEW F2	155	4.1	7	1	8	3	3	4	2	1	1	0	30
PT NELSON F2	419	4.1	2	3	2	2	1	3	5	7	2	3	30
13M25	1210	27.6	3	4	3	3	1	2	2	6	5	0	29
ELGIN F1	52	4.1	7	6	0	1	3	0	5	0	2	4	28
13M26	3409	27.6	4	9	9	0	1	0	2	1	0	1	27
A4M6	3439	27.6	0	4	2	1	3	8	6	2	0	1	27
HOWARD F2	36	4.1	5	0	2	1	1	10	4	3	1	0	27

RESERVOIR F4	815	13.8	5	1	5	1	1	1	6	4	1	2	27
WALKERS F4	185	4.1	1	8	3	1	1	2	2	4	3	2	27
A4M5	3973	27.6	4	3	3	1	8	2	4	1	0	0	26
WOODWARD F2	280	4.1	2	4	2	0	1	2	12	1	2	0	26
INTERCHANGE F1	22	13.8	2	4	3	2	7	3	3	1	0	0	25
WALKERS F1	460	4.1	3	2	1	4	4	0	3	2	5	1	25
39M2	2741	27.6	1	2	1	0	3	5	5	1	2	3	23
39M32	3691	27.6	0	2	1	2	3	3	3	4	1	4	23
BRANT F3	187	4.1	4	1	2	0	2	3	3	8	0	0	23
LOWVILLE F2	86	13.8	4	1	4	3	2	1	3	2	1	1	22
MAPLE F8	466	4.1	6	3	6	0	2	0	2	1	2	0	22
RESERVOIR F2	816	13.8	4	1	0	0	2	2	2	1	7	3	22
PARTRIDGE F1	326	4.1	1	2	4	3	2	2	2	1	1	3	21
FAIRWOOD F6	104	4.1	4	0	0	0	2	6	2	4	0	2	20
HARVESTER F2	160	4.1	4	7	3	2	3	0	0	0	1	0	20
MAPLE F2	297	4.1	4	1	1	5	2	3	2	0	1	1	20
76M25	3201	27.6	2	7	1	1	3	1	2	2	0	0	19
76M29	467	27.6	3	4	1	1	5	3	2	0	0	0	19
MARLEY F3	458	4.1	1	0	1	0	0	9	2	4	1	0	18
PINECOVE F1	385	4.1	1	3	1	2	1	1	5	0	2	2	18
FAIRLEIGH F3	92	4.1	0	0	2	1	2	7	4	0	0	1	17
DRURY F4	253	4.1	3	1	4	2	1	2	1	2	0	0	16
APPLEBY F1	420	4.1	1	0	1	1	1	0	2	2	1	6	15
MT FOREST F2	280	4.1	7	0	3	0	3	1	0	1	0	0	15
PARTRIDGE F2	230	4.1	6	2	0	1	2	1	1	0	2	0	15
SPRUCE F2	402	4.1	3	6	0	0	1	1	1	1	0	2	15
WALKERS F2	475	4.1	3	2	1	0	1	1	0	5	1	1	15
39M6	1494	27.6	4	0	1	2	1	0	3	1	2	0	14
76M22	1485	27.6	0	2	2	0	2	1	1	0	5	1	14
EASTERBROOK F1	394	4.1	3	1	0	2	3	3	0	1	1	0	14
EASTERBROOK F2	240	4.1	1	0	1	4	1	2	0	2	0	3	14
PINEDALE F2	392	4.1	4	1	0	0	1	4	1	3	0	0	14
TOWERLINE F3	1249	13.8	2	0	0	1	2	2	2	3	1	1	14
13M27	55	27.6	0	0	0	0	0	0	3	4	1	5	13
BRIDGEVIEW F1	131	4.1	1	0	3	3	0	4	1	1	0	0	13
FAIRWOOD F4	324	4.1	0	3	0	2	3	0	1	2	1	1	13
HARVESTER F3	255	4.1	2	0	1	0	3	4	0	0	3	0	13
MAPLE F5	343	4.1	3	1	5	1	0	0	2	0	1	0	13
MARTHA F7	58	4.1	2	0	2	3	1	3	2	0	0	0	13
RESERVOIR F3	929	13.8	0	1	1	1	1	1	3	2	1	2	13

WOODWARD F5	389	4.1	0	5	3	0	1	1	1	2	0	0	13
HAMPTON F1	278	4.1	6	2	0	1	0	1	0	1	1	0	12
HARVESTER F1	285	4.1	7	1	1	1	1	0	0	0	1	0	12
PINEDALE F1	520	4.1	1	2	1	1	0	1	0	4	2	0	12
39M1	1990	27.6	2	1	1	0	2	0	0	1	2	2	11
39M5	2911	27.6	2	0	0	1	2	1	2	0	1	2	11
MAPLE F3	226	4.1	2	1	2	1	0	4	0	0	1	0	11
SPRUCE F3	204	4.1	3	1	0	0	1	1	4	1	0	0	11
APPLEBY F4	241	4.1	2	2	0	0	0	3	2	1	0	0	10
ELGIN F2	227	4.1	1	0	0	0	2	1	1	1	2	2	10
ELIZ GARDENS F3	521	4.1	3	1	1	1	1	1	1	1	0	0	10
MARTHA F3	59	4.1	1	1	0	2	1	2	0	0	1	2	10
MARTHA F5	93	4.1	0	0	2	6	0	1	0	0	1	0	10
MT FOREST F1	585	4.1	2	0	1	0	0	3	2	1	1	0	10
13M28	324	27.6	0	0	0	0	0	1	3	2	1	2	9
39M34	4228	27.6	3	1	0	0	0	1	3	1	0	0	9
APPLEBY F6	391	4.1	0	4	1	1	0	0	0	0	3	0	9
ELIZ GARDENS F2	505	4.1	2	3	0	0	0	0	1	1	1	1	9
MAPLE F1	297	4.1	0	0	0	0	0	1	5	2	0	1	9
MARTHA F1	96	4.1	0	1	0	1	1	4	0	0	2	0	9
PT NELSON F1	255	4.1	1	1	0	3	0	1	1	1	1	0	9
39M35	837	27.6	1	1	1	2	1	0	1	0	1	0	8
76M26	1204	27.6	0	0	1	0	0	4	3	0	0	0	8
HAMPTON F6	144	4.1	0	1	3	1	1	0	1	0	1	0	8
MAPLE F6	183	4.1	0	0	2	0	0	4	1	0	0	1	8
MARLEY F1	283	4.1	1	4	2	0	0	1	0	0	0	0	8
MT FOREST F3	300	4.1	0	0	1	1	0	3	1	2	0	0	8
PARTRIDGE F3	389	4.1	1	0	1	0	3	2	0	1	0	0	8
PINECOVE F3	293	4.1	0	0	4	0	3	0	1	0	0	0	8
39M3	877	27.6	0	0	1	0	0	2	2	2	0	0	7
BRANT F1	53	4.1	0	0	1	0	0	3	1	0	1	1	7
MARTHA F2	105	4.1	1	0	0	0	0	3	1	1	1	0	7
SPRUCE F4	152	4.1	2	1	1	1	0	0	2	0	0	0	7
WOODWARD F3	330	4.1	2	0	0	2	0	1	2	0	0	0	7
39M4	2233	27.6	1	0	0	1	0	1	0	0	1	2	6
FAIRLEIGH F1	176	4.1	2	0	1	0	0	0	1	1	1	0	6
FAIRWOOD F5	328	4.1	0	0	0	0	0	1	1	3	0	1	6
GRAHAMS F2	50	4.1	1	0	1	0	2	1	0	0	0	1	6
GRAHAMS F4	17	4.1	3	0	0	0	1	0	0	2	0	0	6
HOWARD F3	126	4.1	1	2	0	0	0	1	0	1	1	0	6

MARTHA F6	47	4.1	1	0	1	1	0	1	0	0	2	0	6
WALKERS F3	128	4.1	1	0	2	1	1	0	1	0	0	0	6
FAIRLEIGH F2	339	4.1	0	1	0	0	0	0	2	0	2	1	6
39M33	2445	27.6	1	1	1	0	0	1	0	0	0	1	5
APPLEBY F5	382	4.1	0	0	0	0	2	0	1	0	0	2	5
DRURY F1	444	4.1	0	1	0	0	1	1	0	1	0	1	5
DRURY F2	154	4.1	0	0	0	3	0	1	1	0	0	0	5
ELIZ GARDENS F1	582	4.1	0	0	1	0	0	0	2	1	0	1	5
FAIRVIEW F1	124	13.8	0	2	0	0	0	2	1	0	0	0	5
FAIRWOOD F2	328	4.1	0	0	0	1	0	0	2	2	0	0	5
HAMPTON F3	18	4.1	0	0	1	1	2	1	0	0	0	0	5
39M36	966	27.6	0	0	1	0	0	0	1	1	1	0	4
APPLEBY F2	202	4.1	2	0	1	0	0	0	1	0	0	0	4
ELGIN F4	69	4.1	0	0	0	2	0	0	0	1	0	1	4
FAIRWOOD F1	91	4.1	0	2	0	0	0	0	1	1	0	0	4
HAMPTON F2	89	4.1	1	1	1	0	1	0	0	0	0	0	4
MARLEY F2	103	4.1	1	1	0	1	0	1	0	0	0	0	4
WOODWARD F6	349	4.1	0	3	0	0	0	0	0	1	0	0	4
DRURY F3	55	4.1	0	0	1	0	0	0	0	0	2	0	3
ELGIN F3	40	4.1	0	0	0	0	1	1	0	0	0	1	3
HAMPTON F4	194	4.1	0	0	0	0	2	1	0	0	0	0	3
HOWARD F1	46	4.1	0	0	1	1	1	0	0	0	0	0	3
APPLEBY F3	47	4.1	0	2	0	0	0	0	0	0	0	0	2
BRANT F2	211	4.1	0	0	1	0	0	1	0	0	0	0	2
GRAHAMS F3	176	4.1	1	0	0	0	1	0	0	0	0	0	2
HAMPTON F5	211	4.1	1	0	0	0	0	1	0	0	0	0	2
MAPLE F4	3	4.1	0	0	0	0	0	0	0	0	2	0	2
PINECOVE F2	260	4.1	0	0	0	0	0	2	0	0	0	0	2
PT NELSON F3	131	4.1	0	0	0	1	0	0	0	0	0	1	2
PT NELSON F4	125	4.1	0	0	0	1	0	1	0	0	0	0	2
WOODWARD F1	58	4.1	0	1	0	0	1	0	0	0	0	0	2
WOODWARD F4	118	4.1	0	0	0	0	0	0	1	0	1	0	2
FAIRVIEW F4	124	13.8	0	1	0	0	0	0	0	0	0	0	1
GRAHAMS F1	120	4.1	0	0	0	0	0	0	0	0	0	1	1
MARTHA F4	51	4.1	1	0	0	0	0	0	0	0	0	0	1
PINEDALE F3	295	4.1	1	0	0	0	0	0	0	0	0	0	1
FAIRWOOD F3	0	4.1	0	0	0	0	0	0	0	0	0	0	0
MAPLE F7	88	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F8	4	4.1	0	0	0	0	0	0	0	0	0	0	0
Total			401	341	345	337	343	413	409	302	241	261	3393

Appendix A2

APPENDIX A2

2012 Feeder Auto-Reclosures (Sorted by 2012)

FEEDER	# CUSTOMERS	KV	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
LOWVILLE F3	256	13.8	33	17	25	35	22	26	30	36	25	28	277
RESERVOIR F1	1615	13.8	14	6	11	19	6	12	10	7	4	23	112
TYANDAGA F2	883	13.8	10	13	13	18	14	23	19	10	7	11	138
TYANDAGA F3	481	13.8	5	4	8	3	2	6	5	10	6	10	59
SPRUCE F1	281	4.1	5	3	1	1	2	13	1	1	1	9	37
ORCHARD F2	524	13.8	5	3	8	5	6	6	6	3	3	8	53
PALMER F1	147	13.8	11	4	10	5	7	3	8	5	3	8	64
TYANDAGA F4	1036	13.8	11	5	9	6	24	4	13	12	10	8	102
FAIRVIEW F2	29	13.8	5	9	4	9	4	4	2	4	1	7	49
LOWVILLE F1	146	13.8	2	5	3	6	2	5	6	4	7	7	47
PALMER F3	833	13.8	4	3	9	3	5	2	4	3	11	7	51
TOWERLINE F2	331	13.8	11	9	16	10	9	12	5	1	3	7	83
APPLEBY F1	420	4.1	1	0	1	1	1	0	2	2	1	6	15
PALMER F4	938	13.8	5	9	10	0	2	1	2	6	3	6	44
TYANDAGA F1	1122	13.8	13	1	1	4	5	0	6	4	6	6	46
13M27	55	27.6	0	0	0	0	0	0	3	4	1	5	13
39M32	3691	27.6	0	2	1	2	3	3	3	4	1	4	23
76M28	3336	27.6	3	4	3	3	3	6	8	7	0	4	41
EASTERBROOK F3	135	4.1	0	2	1	4	5	9	6	7	1	4	39
ELGIN F1	52	4.1	7	6	0	1	3	0	5	0	2	4	28
39M2	2741	27.6	1	2	1	0	3	5	5	1	2	3	23
76M23	2029	27.6	4	1	2	5	2	3	7	3	3	3	33
EASTERBROOK F2	240	4.1	1	0	1	4	1	2	0	2	0	3	14
INTERCHANGE F2	53	13.8	1	6	5	2	5	6	4	4	6	3	42
ORCHARD F1	865	13.8	9	2	3	5	10	6	0	4	1	3	43
PALMER F2	548	13.8	8	5	2	2	1	4	8	4	4	3	41
PARTRIDGE F1	326	4.1	1	2	4	3	2	2	2	1	1	3	21
PT NELSON F2	419	4.1	2	3	2	2	1	3	5	7	2	3	30
RESERVOIR F2	816	13.8	4	1	0	0	2	2	2	1	7	3	22
13M28	324	27.6	0	0	0	0	0	1	3	2	1	2	9
39M1	1990	27.6	2	1	1	0	2	0	0	1	2	2	11
39M4	2233	27.6	1	0	0	1	0	1	0	0	1	2	6
39M5	2911	27.6	2	0	0	1	2	1	2	0	1	2	11
76M24	1553	27.6	2	3	3	0	4	1	13	1	2	2	31

APPLEBY F5	382	4.1	0	0	0	0	2	0	1	0	0	2	5
ELGIN F2	227	4.1	1	0	0	0	2	1	1	1	2	2	10
FAIRVIEW F3	660	13.8	4	15	4	10	14	17	13	6	5	2	90
FAIRWOOD F6	104	4.1	4	0	0	0	2	6	2	4	0	2	20
MARTHA F3	59	4.1	1	1	0	2	1	2	0	0	1	2	10
PINECOVE F1	385	4.1	1	3	1	2	1	1	5	0	2	2	18
RESERVOIR F3	929	13.8	0	1	1	1	1	1	3	2	1	2	13
RESERVOIR F4	815	13.8	5	1	5	1	1	1	6	4	1	2	27
SPRUCE F2	402	4.1	3	6	0	0	1	1	1	1	0	2	15
TOWERLINE F1	1231	13.8	2	8	6	17	8	8	10	5	11	2	77
TOWERLINE F4	55	13.8	0	9	6	12	7	11	12	5	6	2	70
WALKERS F4	185	4.1	1	8	3	1	1	2	2	4	3	2	27
13M26	3409	27.6	4	9	9	0	1	0	2	1	0	1	27
39M31	709	27.6	8	6	7	3	4	3	4	1	0	1	37
39M33	2445	27.6	1	1	1	0	0	1	0	0	0	1	5
76M21	891	27.6	7	6	8	5	5	10	7	4	4	1	57
76M22	1485	27.6	0	2	2	0	2	1	1	0	5	1	14
76M27	1516	27.6	2	2	1	3	2	6	5	6	3	1	31
A4M6	3439	27.6	0	4	2	1	3	8	6	2	0	1	27
BRANT F1	53	4.1	0	0	1	0	0	3	1	0	1	1	7
DRURY F1	444	4.1	0	1	0	0	1	1	0	1	0	1	5
ELGIN F3	40	4.1	0	0	0	0	1	1	0	0	0	1	3
ELGIN F4	69	4.1	0	0	0	2	0	0	0	1	0	1	4
ELIZ GARDENS F1	582	4.1	0	0	1	0	0	0	2	1	0	1	5
ELIZ GARDENS F2	505	4.1	2	3	0	0	0	0	1	1	1	1	9
FAIRLEIGH F3	92	4.1	0	0	2	1	2	7	4	0	0	1	17
FAIRWOOD F4	324	4.1	0	3	0	2	3	0	1	2	1	1	13
FAIRWOOD F5	328	4.1	0	0	0	0	0	1	1	3	0	1	6
GRAHAMS F1	120	4.1	0	0	0	0	0	0	0	0	0	1	1
GRAHAMS F2	50	4.1	1	0	1	0	2	1	0	0	0	1	6
LOWVILLE F2	86	13.8	4	1	4	3	2	1	3	2	1	1	22
LOWVILLE F4	413	13.8	21	18	22	32	28	18	14	2	1	1	157
MAPLE F1	297	4.1	0	0	0	0	0	1	5	2	0	1	9
MAPLE F2	297	4.1	4	1	1	5	2	3	2	0	1	1	20
MAPLE F6	183	4.1	0	0	2	0	0	4	1	0	0	1	8
PT NELSON F3	131	4.1	0	0	0	1	0	0	0	0	0	1	2
TOWERLINE F3	1249	13.8	2	0	0	1	2	2	2	3	1	1	14
WALKERS F1	460	4.1	3	2	1	4	4	0	3	2	5	1	25
WALKERS F2	475	4.1	3	2	1	0	1	1	0	5	1	1	15
FAIRLEIGH F2	339	4.1	0	1	0	0	0	0	2	0	2	1	6
13M25	1210	27.6	3	4	3	3	1	2	2	6	5	0	29

39M3	877	27.6	0	0	1	0	0	2	2	2	0	0	7
39M34	4228	27.6	3	1	0	0	0	1	3	1	0	0	9
39M35	837	27.6	1	1	1	2	1	0	1	0	1	0	8
39M36	966	27.6	0	0	1	0	0	0	1	1	1	0	4
39M6	1494	27.6	4	0	1	2	1	0	3	1	2	0	14
76M25	3201	27.6	2	7	1	1	3	1	2	2	0	0	19
76M26	1204	27.6	0	0	1	0	0	4	3	0	0	0	8
76M29	467	27.6	3	4	1	1	5	3	2	0	0	0	19
76M30	480	27.6	2	8	3	7	3	5	4	5	5	0	42
A4M5	3973	27.6	4	3	3	1	8	2	4	1	0	0	26
APPLEBY F2	202	4.1	2	0	1	0	0	0	1	0	0	0	4
APPLEBY F3	47	4.1	0	2	0	0	0	0	0	0	0	0	2
APPLEBY F4	241	4.1	2	2	0	0	0	3	2	1	0	0	10
APPLEBY F6	391	4.1	0	4	1	1	0	0	0	0	3	0	9
BRANT F2	211	4.1	0	0	1	0	0	1	0	0	0	0	2
BRANT F3	187	4.1	4	1	2	0	2	3	3	8	0	0	23
BRIDGEVIEW F1	131	4.1	1	0	3	3	0	4	1	1	0	0	13
BRIDGEVIEW F2	155	4.1	7	1	8	3	3	4	2	1	1	0	30
DRURY F2	154	4.1	0	0	0	3	0	1	1	0	0	0	5
DRURY F3	55	4.1	0	0	1	0	0	0	0	0	2	0	3
DRURY F4	253	4.1	3	1	4	2	1	2	1	2	0	0	16
EASTERBROOK F1	394	4.1	3	1	0	2	3	3	0	1	1	0	14
ELIZ GARDENS F3	521	4.1	3	1	1	1	1	1	1	1	0	0	10
FAIRLEIGH F1	176	4.1	2	0	1	0	0	0	1	1	1	0	6
FAIRVIEW F1	124	13.8	0	2	0	0	0	2	1	0	0	0	5
FAIRVIEW F4	124	13.8	0	1	0	0	0	0	0	0	0	0	1
FAIRWOOD F1	91	4.1	0	2	0	0	0	0	1	1	0	0	4
FAIRWOOD F2	328	4.1	0	0	0	1	0	0	2	2	0	0	5
FAIRWOOD F3	0	4.1	0	0	0	0	0	0	0	0	0	0	0
GRAHAMS F3	176	4.1	1	0	0	0	1	0	0	0	0	0	2
GRAHAMS F4	17	4.1	3	0	0	0	1	0	0	2	0	0	6
HAMPTON F1	278	4.1	6	2	0	1	0	1	0	1	1	0	12
HAMPTON F2	89	4.1	1	1	1	0	1	0	0	0	0	0	4
HAMPTON F3	18	4.1	0	0	1	1	2	1	0	0	0	0	5
HAMPTON F4	194	4.1	0	0	0	0	2	1	0	0	0	0	3
HAMPTON F5	211	4.1	1	0	0	0	0	1	0	0	0	0	2
HAMPTON F6	144	4.1	0	1	3	1	1	0	1	0	1	0	8
HARVESTER F1	285	4.1	7	1	1	1	1	0	0	0	1	0	12
HARVESTER F2	160	4.1	4	7	3	2	3	0	0	0	1	0	20
HARVESTER F3	255	4.1	2	0	1	0	3	4	0	0	3	0	13
HOWARD F1	46	4.1	0	0	1	1	1	0	0	0	0	0	3

HOWARD F2	36	4.1	5	0	2	1	1	10	4	3	1	0	27
HOWARD F3	126	4.1	1	2	0	0	0	1	0	1	1	0	6
INTERCHANGE F1	22	13.8	2	4	3	2	7	3	3	1	0	0	25
MAPLE F3	226	4.1	2	1	2	1	0	4	0	0	1	0	11
MAPLE F4	3	4.1	0	0	0	0	0	0	0	0	2	0	2
MAPLE F5	343	4.1	3	1	5	1	0	0	2	0	1	0	13
MAPLE F7	88	4.1	0	0	0	0	0	0	0	0	0	0	0
MAPLE F8	466	4.1	6	3	6	0	2	0	2	1	2	0	22
MARLEY F1	283	4.1	1	4	2	0	0	1	0	0	0	0	8
MARLEY F2	103	4.1	1	1	0	1	0	1	0	0	0	0	4
MARLEY F3	458	4.1	1	0	1	0	0	9	2	4	1	0	18
MARTHA F1	96	4.1	0	1	0	1	1	4	0	0	2	0	9
MARTHA F2	105	4.1	1	0	0	0	0	3	1	1	1	0	7
MARTHA F4	51	4.1	1	0	0	0	0	0	0	0	0	0	1
MARTHA F5	93	4.1	0	0	2	6	0	1	0	0	1	0	10
MARTHA F6	47	4.1	1	0	1	1	0	1	0	0	2	0	6
MARTHA F7	58	4.1	2	0	2	3	1	3	2	0	0	0	13
MARTHA F8	4	4.1	0	0	0	0	0	0	0	0	0	0	0
MT FOREST F1	585	4.1	2	0	1	0	0	3	2	1	1	0	10
MT FOREST F2	280	4.1	7	0	3	0	3	1	0	1	0	0	15
MT FOREST F3	300	4.1	0	0	1	1	0	3	1	2	0	0	8
PARTRIDGE F2	230	4.1	6	2	0	1	2	1	1	0	2	0	15
PARTRIDGE F3	389	4.1	1	0	1	0	3	2	0	1	0	0	8
PINECOVE F2	260	4.1	0	0	0	0	0	2	0	0	0	0	2
PINECOVE F3	293	4.1	0	0	4	0	3	0	1	0	0	0	8
PINEDALE F1	520	4.1	1	2	1	1	0	1	0	4	2	0	12
PINEDALE F2	392	4.1	4	1	0	0	1	4	1	3	0	0	14
PINEDALE F3	295	4.1	1	0	0	0	0	0	0	0	0	0	1
PT NELSON F1	255	4.1	1	1	0	3	0	1	1	1	1	0	9
PT NELSON F4	125	4.1	0	0	0	1	0	1	0	0	0	0	2
SPRUCE F3	204	4.1	3	1	0	0	1	1	4	1	0	0	11
SPRUCE F4	152	4.1	2	1	1	1	0	0	2	0	0	0	7
WALKERS F3	128	4.1	1	0	2	1	1	0	1	0	0	0	6
WOODWARD F1	58	4.1	0	1	0	0	1	0	0	0	0	0	2
WOODWARD F2	280	4.1	2	4	2	0	1	2	12	1	2	0	26
WOODWARD F3	330	4.1	2	0	0	2	0	1	2	0	0	0	7
WOODWARD F4	118	4.1	0	0	0	0	0	0	1	0	1	0	2
WOODWARD F5	389	4.1	0	5	3	0	1	1	1	2	0	0	13
WOODWARD F6	349	4.1	0	3	0	0	0	0	0	1	0	0	4
Total			401	341	345	337	343	413	409	302	241	261	3393

Appendix A3

APPENDIX A3

2012 Feeder Lockouts (Sorted by Total)

FEEDER	# CUSTOMERS	KV	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
LOWVILLE F4	413	13.8	3	0	1	5	5	2	6	7	2	5	36
PT NELSON F2	419	4.1	2	1	3	1	0	2	1	10	1	2	23
39M1	1990	27.6	6	3	5	0	0	2	3	1	1	1	22
LOWVILLE F3	256	13.8	1	1	2	4	1	2	1	2	1	4	19
PINEDALE F2	392	4.1	1	0	2	1	2	7	1	2	0	1	17
ORCHARD F2	524	13.8	2	0	0	2	2	3	2	2	3	0	16
ORCHARD F1	865	13.8	2	1	0	2	2	4	0	3	1	1	16
39M2	2741	27.6	4	1	0	0	0	3	0	4	1	3	16
76M23	2029	27.6	2	2	1	1	0	4	2	2	0	0	14
FAIRLEIGH F2	339	4.1	3	1	3	0	1	0	0	2	0	4	14
39M6	1494	27.6	4	1	0	0	1	1	3	3	0	0	13
TYANDAGA F2	883	13.8	1	0	2	1	3	1	4	1	0	0	13
A4M5	3973	27.6	2	0	1	3	1	1	2	1	0	0	11
39M31	709	27.6	4	1	1	1	0	1	0	0	2	1	11
39M35	837	27.6	2	0	3	1	0	3	1	0	0	1	11
39M36	966	27.6	4	0	4	0	0	0	2	0	0	1	11
PINECOVE F1	385	4.1	1	3	1	0	0	1	0	1	3	1	11
TYANDAGA F4	1036	13.8	1	1	3	1	3	1	0	0	0	1	11
76M26	1204	27.6	2	3	2	0	0	1	0	0	2	0	10
FAIRVIEW F3	660	13.8	0	0	1	1	1	0	4	0	3	0	10
HOWARD F2	36	4.1	1	0	0	0	0	1	1	1	6	0	10
39M4	2233	27.6	4	1	0	0	0	1	0	3	0	1	10
RESERVOIR F3	929	13.8	2	0	0	0	0	3	4	0	0	1	10
39M3	877	27.6	1	1	1	0	0	2	0	1	1	3	10
76M21	891	27.6	5	0	0	1	0	0	0	3	0	1	10
RESERVOIR F1	1615	13.8	2	1	0	1	0	1	0	0	2	3	10
13M25	1210	27.6	1	0	1	0	0	2	0	5	0	0	9
13M26	3409	27.6	1	1	1	0	0	2	0	4	0	0	9
39M32	3691	27.6	3	1	3	1	0	0	0	0	1	0	9
TOWERLINE F1	1231	13.8	0	2	0	0	0	1	2	0	4	0	9
INTERCHANGE F1	22	13.8	0	0	0	0	2	1	0	3	1	2	9
PARTRIDGE F2	230	4.1	1	2	1	1	0	0	0	2	0	2	9
PALMER F3	833	13.8	0	0	1	0	2	0	0	3	1	2	9

76M28	3336	27.6	5	0	0	0	0	2	0	1	0	0	8
TOWERLINE F3	1249	13.8	0	0	1	3	1	2	0	0	1	0	8
39M33	2445	27.6	2	1	1	0	0	1	0	0	2	1	8
39M5	2911	27.6	1	1	1	0	0	2	1	0	1	1	8
HARVESTER F1	285	4.1	0	0	0	1	1	2	0	3	0	1	8
PALMER F1	147	13.8	2	1	1	1	1	0	1	0	0	1	8
SPRUCE F3	204	4.1	0	0	2	2	1	0	0	0	2	1	8
A4M6	3439	27.6	3	0	0	0	0	1	0	2	1	1	8
WOODWARD F3	330	4.1	3	0	0	0	1	1	1	0	0	1	7
76M24	1553	27.6	2	0	1	0	2	1	1	0	0	0	7
ELIZ GARDENS F2	505	4.1	1	1	0	1	0	0	3	0	0	1	7
TOWERLINE F4	55	13.8	1	0	0	0	2	1	1	0	1	1	7
MARLEY F3	458	4.1	1	0	0	0	0	2	1	0	1	2	7
FAIRLEIGH F1	176	4.1	1	1	1	0	0	0	2	1	0	0	6
FAIRVIEW F2	29	13.8	0	1	0	2	1	0	0	1	1	0	6
INTERCHANGE F2	53	13.8	0	0	0	2	0	2	0	0	2	0	6
MAPLE F6	183	4.1	0	1	0	1	0	1	0	0	3	0	6
SPRUCE F1	281	4.1	2	0	0	1	0	1	1	1	0	0	6
TYANDAGA F1	1122	13.8	2	0	0	0	0	0	2	1	1	0	6
PALMER F2	548	13.8	1	0	1	1	0	0	1	0	0	2	6
76M22	1485	27.6	3	0	1	0	0	0	0	0	1	0	5
DRURY F4	253	4.1	1	0	1	0	2	1	0	0	0	0	5
MAPLE F1	297	4.1	0	1	0	0	2	0	1	1	0	0	5
PINEDALE F1	520	4.1	0	0	1	0	0	1	1	2	0	0	5
PT NELSON F1	255	4.1	0	1	0	2	0	0	0	0	2	0	5
WALKERS F1	460	4.1	3	1	0	0	0	0	0	1	0	0	5
GRAHAMS F1	120	4.1	0	1	1	0	0	0	1	0	1	1	5
HARVESTER F2	160	4.1	0	1	0	0	1	1	0	0	1	1	5
TOWERLINE F2	331	13.8	1	0	1	0	0	0	1	0	0	2	5
FAIRWOOD F6	104	4.1	1	0	0	0	1	0	0	0	0	3	5
76M27	1516	27.6	4	0	0	0	0	0	0	0	0	0	4
76M29	467	27.6	2	0	0	1	0	1	0	0	0	0	4
APPLEBY F4	241	4.1	0	2	1	0	0	0	1	0	0	0	4
EASTERBROOK F1	394	4.1	0	0	0	0	1	2	0	1	0	0	4
ELGIN F2	227	4.1	0	0	0	1	1	0	0	0	2	0	4
ELIZ GARDENS F1	582	4.1	2	0	0	0	1	1	0	0	0	0	4
MARLEY F2	103	4.1	1	0	0	1	1	0	1	0	0	0	4
PT NELSON F4	125	4.1	2	1	0	0	0	0	0	0	1	0	4
WOODWARD F2	280	4.1	0	0	0	0	0	0	3	1	0	0	4
ELGIN F1	52	4.1	1	0	1	0	0	0	1	0	0	1	4

GRAHAMS F4	17	4.1	0	1	2	0	0	0	0	0	0	1	4
MAPLE F8	466	4.1	0	1	0	1	0	0	0	0	1	1	4
PINECOVE F3	293	4.1	0	0	0	0	2	0	0	1	0	1	4
WOODWARD F6	349	4.1	0	0	0	0	1	0	1	1	0	0	3
13M28	324	27.6	0	0	0	0	0	2	0	1	0	0	3
39M34	4228	27.6	1	0	2	0	0	0	0	0	0	0	3
76M25	3201	27.6	2	0	0	1	0	0	0	0	0	0	3
APPLEBY F1	420	4.1	0	0	0	0	0	1	0	2	0	0	3
BRANT F3	187	4.1	1	0	1	0	0	1	0	0	0	0	3
BRIDGEVIEW F2	155	4.1	1	0	1	1	0	0	0	0	0	0	3
FAIRLEIGH F3	92	4.1	0	0	1	0	0	1	1	0	0	0	3
FAIRWOOD F1	91	4.1	1	0	0	2	0	0	0	0	0	0	3
FAIRWOOD F2	328	4.1	0	2	0	0	0	1	0	0	0	0	3
HAMPTON F1	278	4.1	1	1	0	0	1	0	0	0	0	0	3
HAMPTON F5	211	4.1	1	1	0	0	0	0	0	0	1	0	3
PARTRIDGE F3	389	4.1	1	0	0	0	1	0	0	0	1	0	3
RESERVOIR F2	816	13.8	0	0	0	2	0	1	0	0	0	0	3
SPRUCE F2	402	4.1	0	2	0	0	0	0	1	0	0	0	3
BRIDGEVIEW F1	131	4.1	1	1	0	0	0	0	0	0	0	1	3
HAMPTON F6	144	4.1	0	1	0	0	1	0	0	0	0	1	3
MAPLE F5	343	4.1	0	1	0	0	0	0	0	0	1	1	3
MT FOREST F3	300	4.1	1	0	0	0	1	0	0	0	0	1	3
TYANDAGA F3	481	13.8	2	0	0	0	0	0	0	0	0	1	3
EASTERBROOK F3	135	4.1	0	0	0	0	0	0	0	0	0	3	3
13M27	55	27.6	0	0	0	0	0	0	1	1	0	0	2
76M30	480	27.6	1	1	0	0	0	0	0	0	0	0	2
BRANT F1	53	4.1	0	0	0	0	0	2	0	0	0	0	2
ELGIN F4	69	4.1	0	0	0	2	0	0	0	0	0	0	2
ELIZ GARDENS F3	521	4.1	0	0	1	0	1	0	0	0	0	0	2
GRAHAMS F2	50	4.1	0	2	0	0	0	0	0	0	0	0	2
HAMPTON F2	89	4.1	0	1	0	0	0	1	0	0	0	0	2
HAMPTON F3	18	4.1	0	2	0	0	0	0	0	0	0	0	2
HAMPTON F4	194	4.1	1	1	0	0	0	0	0	0	0	0	2
HOWARD F1	46	4.1	1	1	0	0	0	0	0	0	0	0	2
MARTHA F1	96	4.1	0	0	0	0	0	2	0	0	0	0	2
MT FOREST F1	585	4.1	2	0	0	0	0	0	0	0	0	0	2
PARTRIDGE F1	326	4.1	0	0	0	0	0	0	1	0	1	0	2
PINECOVE F2	260	4.1	0	0	0	0	1	0	0	0	1	0	2
PINEDALE F3	295	4.1	0	0	1	0	0	0	0	1	0	0	2
WALKERS F3	128	4.1	1	0	1	0	0	0	0	0	0	0	2

WALKERS F4	185	4.1	1	0	0	0	0	0	0	0	1	0	2
BRANT F2	211	4.1	1	0	0	0	0	0	0	0	0	1	2
MAPLE F2	297	4.1	0	0	0	0	0	0	0	2	0	0	2
DRURY F1	444	4.1	0	0	0	0	0	0	0	1	0	0	1
EASTERBROOK F2	240	4.1	0	0	0	0	1	0	0	0	0	0	1
ELGIN F3	40	4.1	0	0	0	0	0	0	0	1	0	0	1
FAIRVIEW F4	124	13.8	0	1	0	0	0	0	0	0	0	0	1
FAIRWOOD F4	324	4.1	0	0	0	1	0	0	0	0	0	0	1
GRAHAMS F3	176	4.1	0	1	0	0	0	0	0	0	0	0	1
HARVESTER F3	255	4.1	1	0	0	0	0	0	0	0	0	0	1
LOWVILLE F2	86	13.8	0	0	0	0	0	0	0	0	1	0	1
MAPLE F3	226	4.1	0	0	0	0	0	0	0	1	0	0	1
MAPLE F7	88	4.1	0	1	0	0	0	0	0	0	0	0	1
MARTHA F5	93	4.1	0	0	0	0	0	1	0	0	0	0	1
MARTHA F7	58	4.1	0	1	0	0	0	0	0	0	0	0	1
MT FOREST F2	280	4.1	1	0	0	0	0	0	0	0	0	0	1
PALMER F4	938	13.8	0	0	1	0	0	0	0	0	0	0	1
PT NELSON F3	131	4.1	0	0	0	0	0	0	0	0	1	0	1
RESERVOIR F4	815	13.8	1	0	0	0	0	0	0	0	0	0	1
WALKERS F2	475	4.1	1	0	0	0	0	0	0	0	0	0	1
WOODWARD F1	58	4.1	0	0	0	0	0	0	0	1	0	0	1
WOODWARD F4	118	4.1	0	0	0	0	0	0	0	1	0	0	1
WOODWARD F5	389	4.1	0	0	0	0	0	0	0	1	0	0	1
LOWVILLE F1	146	13.8	0	0	0	0	0	0	0	0	0	1	1
MARTHA F3	59	4.1	0	0	0	0	0	0	0	0	0	1	1
APPLEBY F2	202	4.1	0	0	0	0	0	0	0	0	0	0	0
APPLEBY F3	47	4.1	0	0	0	0	0	0	0	0	0	0	0
APPLEBY F5	382	4.1	0	0	0	0	0	0	0	0	0	0	0
APPLEBY F6	391	4.1	0	0	0	0	0	0	0	0	0	0	0
DRURY F2	154	4.1	0	0	0	0	0	0	0	0	0	0	0
DRURY F3	55	4.1	0	0	0	0	0	0	0	0	0	0	0
FAIRVIEW F1	124	13.8	0	0	0	0	0	0	0	0	0	0	0
FAIRWOOD F3	0	4.1	0	0	0	0	0	0	0	0	0	0	0
FAIRWOOD F5	328	4.1	0	0	0	0	0	0	0	0	0	0	0
HOWARD F3	126	4.1	0	0	0	0	0	0	0	0	0	0	0
MAPLE F4	3	4.1	0	0	0	0	0	0	0	0	0	0	0
MARLEY F1	283	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F2	105	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F4	51	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F6	47	4.1	0	0	0	0	0	0	0	0	0	0	0

MARTHA F8	4	4.1	0	0	0	0	0	0	0	0	0	0	0
SPRUCE F4	152	4.1	0	0	0	0	0	0	0	0	0	0	0
Total			141	66	70	58	56	92	69	97	69	76	794

Appendix A4

APPENDIX A4

2012 Feeder Lockouts (Sorted by 2012)

FEEDER	# CUSTOMERS	KV	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
LOWVILLE F4	413	13.8	3	0	1	5	5	2	6	7	2	5	36
FAIRLEIGH F2	339	4.1	3	1	3	0	1	0	0	2	0	4	14
LOWVILLE F3	256	13.8	1	1	2	4	1	2	1	2	1	4	19
39M2	2741	27.6	4	1	0	0	0	3	0	4	1	3	16
39M3	877	27.6	1	1	1	0	0	2	0	1	1	3	10
EASTERBROOK F3	135	4.1	0	0	0	0	0	0	0	0	0	3	3
FAIRWOOD F6	104	4.1	1	0	0	0	1	0	0	0	0	3	5
RESERVOIR F1	1615	13.8	2	1	0	1	0	1	0	0	2	3	10
INTERCHANGE F1	22	13.8	0	0	0	0	2	1	0	3	1	2	9
MARLEY F3	458	4.1	1	0	0	0	0	2	1	0	1	2	7
PALMER F2	548	13.8	1	0	1	1	0	0	1	0	0	2	6
PALMER F3	833	13.8	0	0	1	0	2	0	0	3	1	2	9
PARTRIDGE F2	230	4.1	1	2	1	1	0	0	0	2	0	2	9
PT NELSON F2	419	4.1	2	1	3	1	0	2	1	10	1	2	23
TOWERLINE F2	331	13.8	1	0	1	0	0	0	1	0	0	2	5
WOODWARD F3	330	4.1	3	0	0	0	1	1	1	0	0	1	7
39M1	1990	27.6	6	3	5	0	0	2	3	1	1	1	22
39M31	709	27.6	4	1	1	1	0	1	0	0	2	1	11
39M33	2445	27.6	2	1	1	0	0	1	0	0	2	1	8
39M35	837	27.6	2	0	3	1	0	3	1	0	0	1	11
39M36	966	27.6	4	0	4	0	0	0	2	0	0	1	11
39M4	2233	27.6	4	1	0	0	0	1	0	3	0	1	10
39M5	2911	27.6	1	1	1	0	0	2	1	0	1	1	8
76M21	891	27.6	5	0	0	1	0	0	0	3	0	1	10
A4M6	3439	27.6	3	0	0	0	0	1	0	2	1	1	8
BRANT F2	211	4.1	1	0	0	0	0	0	0	0	0	1	2
BRIDGEVIEW F1	131	4.1	1	1	0	0	0	0	0	0	0	1	3
ELGIN F1	52	4.1	1	0	1	0	0	0	1	0	0	1	4
ELIZ GARDENS F2	505	4.1	1	1	0	1	0	0	3	0	0	1	7
GRAHAMS F1	120	4.1	0	1	1	0	0	0	1	0	1	1	5
GRAHAMS F4	17	4.1	0	1	2	0	0	0	0	0	0	1	4
HAMPTON F6	144	4.1	0	1	0	0	1	0	0	0	0	1	3
HARVESTER F1	285	4.1	0	0	0	1	1	2	0	3	0	1	8

HARVESTER F2	160	4.1	0	1	0	0	1	1	0	0	1	1	5
LOWVILLE F1	146	13.8	0	0	0	0	0	0	0	0	0	1	1
MAPLE F5	343	4.1	0	1	0	0	0	0	0	0	1	1	3
MAPLE F8	466	4.1	0	1	0	1	0	0	0	0	1	1	4
MARTHA F3	59	4.1	0	0	0	0	0	0	0	0	0	1	1
MT FOREST F3	300	4.1	1	0	0	0	1	0	0	0	0	1	3
ORCHARD F1	865	13.8	2	1	0	2	2	4	0	3	1	1	16
PALMER F1	147	13.8	2	1	1	1	1	0	1	0	0	1	8
PINECOVE F1	385	4.1	1	3	1	0	0	1	0	1	3	1	11
PINECOVE F3	293	4.1	0	0	0	0	2	0	0	1	0	1	4
PINEDALE F2	392	4.1	1	0	2	1	2	7	1	2	0	1	17
RESERVOIR F3	929	13.8	2	0	0	0	0	3	4	0	0	1	10
SPRUCE F3	204	4.1	0	0	2	2	1	0	0	0	2	1	8
TOWERLINE F4	55	13.8	1	0	0	0	2	1	1	0	1	1	7
TYANDAGA F3	481	13.8	2	0	0	0	0	0	0	0	0	1	3
TYANDAGA F4	1036	13.8	1	1	3	1	3	1	0	0	0	1	11
WOODWARD F6	349	4.1	0	0	0	0	1	0	1	1	0	0	3
13M25	1210	27.6	1	0	1	0	0	2	0	5	0	0	9
13M26	3409	27.6	1	1	1	0	0	2	0	4	0	0	9
13M27	55	27.6	0	0	0	0	0	0	1	1	0	0	2
13M28	324	27.6	0	0	0	0	0	2	0	1	0	0	3
39M32	3691	27.6	3	1	3	1	0	0	0	0	1	0	9
39M34	4228	27.6	1	0	2	0	0	0	0	0	0	0	3
39M6	1494	27.6	4	1	0	0	1	1	3	3	0	0	13
76M22	1485	27.6	3	0	1	0	0	0	0	0	1	0	5
76M23	2029	27.6	2	2	1	1	0	4	2	2	0	0	14
76M24	1553	27.6	2	0	1	0	2	1	1	0	0	0	7
76M25	3201	27.6	2	0	0	1	0	0	0	0	0	0	3
76M26	1204	27.6	2	3	2	0	0	1	0	0	2	0	10
76M27	1516	27.6	4	0	0	0	0	0	0	0	0	0	4
76M28	3336	27.6	5	0	0	0	0	2	0	1	0	0	8
76M29	467	27.6	2	0	0	1	0	1	0	0	0	0	4
76M30	480	27.6	1	1	0	0	0	0	0	0	0	0	2
A4M5	3973	27.6	2	0	1	3	1	1	2	1	0	0	11
APPLEBY F1	420	4.1	0	0	0	0	0	1	0	2	0	0	3
APPLEBY F2	202	4.1	0	0	0	0	0	0	0	0	0	0	0
APPLEBY F3	47	4.1	0	0	0	0	0	0	0	0	0	0	0
APPLEBY F4	241	4.1	0	2	1	0	0	0	1	0	0	0	4
APPLEBY F5	382	4.1	0	0	0	0	0	0	0	0	0	0	0
APPLEBY F6	391	4.1	0	0	0	0	0	0	0	0	0	0	0
BRANT F1	53	4.1	0	0	0	0	0	2	0	0	0	0	2

BRANT F3	187	4.1	1	0	1	0	0	1	0	0	0	0	3
BRIDGEVIEW F2	155	4.1	1	0	1	1	0	0	0	0	0	0	3
DRURY F1	444	4.1	0	0	0	0	0	0	0	1	0	0	1
DRURY F2	154	4.1	0	0	0	0	0	0	0	0	0	0	0
DRURY F3	55	4.1	0	0	0	0	0	0	0	0	0	0	0
DRURY F4	253	4.1	1	0	1	0	2	1	0	0	0	0	5
EASTERBROOK F1	394	4.1	0	0	0	0	1	2	0	1	0	0	4
EASTERBROOK F2	240	4.1	0	0	0	0	1	0	0	0	0	0	1
ELGIN F2	227	4.1	0	0	0	1	1	0	0	0	2	0	4
ELGIN F3	40	4.1	0	0	0	0	0	0	0	1	0	0	1
ELGIN F4	69	4.1	0	0	0	2	0	0	0	0	0	0	2
ELIZ GARDENS F1	582	4.1	2	0	0	0	1	1	0	0	0	0	4
ELIZ GARDENS F3	521	4.1	0	0	1	0	1	0	0	0	0	0	2
FAIRLEIGH F1	176	4.1	1	1	1	0	0	0	2	1	0	0	6
FAIRLEIGH F3	92	4.1	0	0	1	0	0	1	1	0	0	0	3
FAIRVIEW F1	124	13.8	0	0	0	0	0	0	0	0	0	0	0
FAIRVIEW F2	29	13.8	0	1	0	2	1	0	0	1	1	0	6
FAIRVIEW F3	660	13.8	0	0	1	1	1	0	4	0	3	0	10
FAIRVIEW F4	124	13.8	0	1	0	0	0	0	0	0	0	0	1
FAIRWOOD F1	91	4.1	1	0	0	2	0	0	0	0	0	0	3
FAIRWOOD F2	328	4.1	0	2	0	0	0	1	0	0	0	0	3
FAIRWOOD F3	0	4.1	0	0	0	0	0	0	0	0	0	0	0
FAIRWOOD F4	324	4.1	0	0	0	1	0	0	0	0	0	0	1
FAIRWOOD F5	328	4.1	0	0	0	0	0	0	0	0	0	0	0
GRAHAMS F2	50	4.1	0	2	0	0	0	0	0	0	0	0	2
GRAHAMS F3	176	4.1	0	1	0	0	0	0	0	0	0	0	1
HAMPTON F1	278	4.1	1	1	0	0	1	0	0	0	0	0	3
HAMPTON F2	89	4.1	0	1	0	0	0	1	0	0	0	0	2
HAMPTON F3	18	4.1	0	2	0	0	0	0	0	0	0	0	2
HAMPTON F4	194	4.1	1	1	0	0	0	0	0	0	0	0	2
HAMPTON F5	211	4.1	1	1	0	0	0	0	0	0	1	0	3
HARVESTER F3	255	4.1	1	0	0	0	0	0	0	0	0	0	1
HOWARD F1	46	4.1	1	1	0	0	0	0	0	0	0	0	2
HOWARD F2	36	4.1	1	0	0	0	0	1	1	1	6	0	10
HOWARD F3	126	4.1	0	0	0	0	0	0	0	0	0	0	0
INTERCHANGE F2	53	13.8	0	0	0	2	0	2	0	0	2	0	6
LOWVILLE F2	86	13.8	0	0	0	0	0	0	0	0	1	0	1
MAPLE F1	297	4.1	0	1	0	0	2	0	1	1	0	0	5
MAPLE F2	297	4.1	0	0	0	0	0	0	0	2	0	0	2
MAPLE F3	226	4.1	0	0	0	0	0	0	0	1	0	0	1

MAPLE F4	3	4.1	0	0	0	0	0	0	0	0	0	0	0
MAPLE F6	183	4.1	0	1	0	1	0	1	0	0	3	0	6
MAPLE F7	88	4.1	0	1	0	0	0	0	0	0	0	0	1
MARLEY F1	283	4.1	0	0	0	0	0	0	0	0	0	0	0
MARLEY F2	103	4.1	1	0	0	1	1	0	1	0	0	0	4
MARTHA F1	96	4.1	0	0	0	0	0	2	0	0	0	0	2
MARTHA F2	105	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F4	51	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F5	93	4.1	0	0	0	0	0	1	0	0	0	0	1
MARTHA F6	47	4.1	0	0	0	0	0	0	0	0	0	0	0
MARTHA F7	58	4.1	0	1	0	0	0	0	0	0	0	0	1
MARTHA F8	4	4.1	0	0	0	0	0	0	0	0	0	0	0
MT FOREST F1	585	4.1	2	0	0	0	0	0	0	0	0	0	2
MT FOREST F2	280	4.1	1	0	0	0	0	0	0	0	0	0	1
ORCHARD F2	524	13.8	2	0	0	2	2	3	2	2	3	0	16
PALMER F4	938	13.8	0	0	1	0	0	0	0	0	0	0	1
PARTRIDGE F1	326	4.1	0	0	0	0	0	0	1	0	1	0	2
PARTRIDGE F3	389	4.1	1	0	0	0	1	0	0	0	1	0	3
PINECOVE F2	260	4.1	0	0	0	0	1	0	0	0	1	0	2
PINEDALE F1	520	4.1	0	0	1	0	0	1	1	2	0	0	5
PINEDALE F3	295	4.1	0	0	1	0	0	0	0	1	0	0	2
PT NELSON F1	255	4.1	0	1	0	2	0	0	0	0	2	0	5
PT NELSON F3	131	4.1	0	0	0	0	0	0	0	0	1	0	1
PT NELSON F4	125	4.1	2	1	0	0	0	0	0	0	1	0	4
RESERVOIR F2	816	13.8	0	0	0	2	0	1	0	0	0	0	3
RESERVOIR F4	815	13.8	1	0	0	0	0	0	0	0	0	0	1
SPRUCE F1	281	4.1	2	0	0	1	0	1	1	1	0	0	6
SPRUCE F2	402	4.1	0	2	0	0	0	0	1	0	0	0	3
SPRUCE F4	152	4.1	0	0	0	0	0	0	0	0	0	0	0
TOWERLINE F1	1231	13.8	0	2	0	0	0	1	2	0	4	0	9
TOWERLINE F3	1249	13.8	0	0	1	3	1	2	0	0	1	0	8
TYANDAGA F1	1122	13.8	2	0	0	0	0	0	2	1	1	0	6
TYANDAGA F2	883	13.8	1	0	2	1	3	1	4	1	0	0	13
WALKERS F1	460	4.1	3	1	0	0	0	0	0	1	0	0	5
WALKERS F2	475	4.1	1	0	0	0	0	0	0	0	0	0	1
WALKERS F3	128	4.1	1	0	1	0	0	0	0	0	0	0	2
WALKERS F4	185	4.1	1	0	0	0	0	0	0	0	1	0	2
WOODWARD F1	58	4.1	0	0	0	0	0	0	0	1	0	0	1
WOODWARD F2	280	4.1	0	0	0	0	0	0	3	1	0	0	4
WOODWARD F4	118	4.1	0	0	0	0	0	0	0	1	0	0	1
WOODWARD	389	4.1	0	0	0	0	0	0	0	1	0	0	1

F5													
Total			141	66	70	58	56	92	69	97	69	76	794

Appendix B

Feeder Outage Report 39M2

Dates: Saturday January 01, 2012 through Saturday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Wed. Jan. 4, 2012	10:15	Wed. Jan. 4, 2012	10:21	0:06	0.1	274.1	39M2			LOCK-OUT - HOLDOFF IN EFFECT	DEFECTIVE TRANSFORMER	WALKERS LINE, CREW CLEAR, AND FEEDER PICKED UP. STILL NO POWER IN ALTON COMMUNITY. TR#8 FOUND DEFECTIVE TX Z73 ON STEEPLECHASE DR.	2741	257	58
Wed. Jan. 4, 2012	11:30	Wed. Jan. 4, 2012	11:30	0:00	0	0.0	39M2			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	WALKERS LINE, FOUND BLOWN ARRESTER OF F4096. TR#22 CHANGED ARRESTER AND CLOSED FUSED F4096. FEEDER TRIPPED. FUSE BLOWN AT F4096. U/G CABLES TESTED.TR#8 FOUND DEFECTIVE TX AT TX Z73. TX TO BE REPLACED. ALL OTHER CUSTOMERS RESTORED TO NORMAL	2741	257	58
Wed. May. 9, 2012	12:41	Wed. May. 9, 2012	12:45	0:04	6.666666	182.7	39M2			LOCK-OUT - HOLDOFF IN EFFECT	HIGH WINDS/T-STORM	HOLD -OFF RESET. CREW CLEAR. CLOSED AND HOLDING	2741	0	0
Thu. Sep. 13, 2012	06:54	Thu. Sep. 13, 2012	06:54	0:00	0	0.0	39M2			AUTO-RECLOSURE	UNKNOWN		2741		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Oct. 12, 2012	15:36	Fri. Oct. 12, 2012	15:36	0:00	0	0.0	39M2			AUTO-RECLOSURE	UNKNOWN	SIMULTANEOUS AUTO WITH 39M4	2741		
Thu. Nov. 1, 2012	11:17	Thu. Nov. 1, 2012	12:27	1:10	1.166666	3197.8	39M2			LOCK-OUT	TREE/LIMB	MOUNTAINSIDE DR, 39M2 & 39M4 LOCK-OUT. S6 SCADA MATE OPENED & CLOSED S2924 (LOAD TO 76M23). FOUND LIMB ON LINE IN HROW NEAR MOUNTAINSIDE. REMOVED LIMB	2741	4022	3

Feeder Outage Report 39M3

Dates: Saturday January 01, 2012 through Saturday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Oct. 29, 2012	18:57	Mon. Oct. 29, 2012	18:59	0:02	3.333333	16.3	39M3			LOCK-OUT	HIGH WINDS	PICKED-UP ON FIRST ATTEMPT.	489		
Tue. Oct. 30, 2012	01:45	Tue. Oct. 30, 2012	01:46	0:01	1.666666	8.2	39M3			LOCK-OUT - HOLDOFF IN EFFECT	HIGH WINDS	HURRICANE SANDY!	489	0	0
Tue. Oct. 30, 2012	02:13	Tue. Oct. 30, 2012	02:15	0:02	3.333333	16.3	39M3			LOCK-OUT	HIGH WINDS	HURRICANE SANDY! ONE ATTEMPT MADE TO PICK UP HELD	489	0	0

<u>Appendix C</u>

Feeder Outage Report FAIRVIEW F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Mar. 3, 2012	01:56	Sat. Mar. 3, 2012	01:56	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	HIGH WINDS		29		
Sat. Mar. 17, 2012	07:47	Sat. Mar. 17, 2012	07:47	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	SQUIRREL	SINGLE PHASE FEEDING E 528 OPEN - DEAD SQUIRREL AT BASE OF POLE.	29	5102	4
Fri. Jul. 6, 2012	14:26	Fri. Jul. 6, 2012	14:26	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	UNKNOWN	FUSE FOUND BLOWN AT FF503: 4190 SOUTH SERVICE ROAD. CLOSED OK. NO CAUSE FOUND.	29		
Sun. Jul. 22, 2012	18:20	Sun. Jul. 22, 2012	18:20	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	T-STORM		29		
Sun. Sep. 16, 2012	06:43	Sun. Sep. 16, 2012	06:43	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	SQUIRREL	3330 HARVESTER RD. AUTO ON FAIRVIEW F2 FEEDER. #36 FOUND CUT-OUT OPEN ON TX E399. #25 FOUND DEAD SQUIRREL ON TOP OF TX. SQUIRREL REMOVED, CUT OUT REFUSED AND CLOSED.	29	4804	4
Mon. Oct. 1, 2012	14:48	Mon. Oct. 1, 2012	14:48	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	UNKNOWN		29		
Mon. Nov. 12, 2012	08:00	Mon. Nov. 12, 2012	08:00	0:00	0	0.0	FAIRVIEW F2			AUTO-RECLOSURE	HIGH WINDS	VERY WARM OUT, BUT HIGH WINDS.	29		

Feeder Outage Report LOWVILLE F1

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Jan. 6, 2012	14:27	Fri. Jan. 6, 2012	14:27	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	UNKNOWN		146		
Tue. Jan. 10, 2012	09:35	Tue. Jan. 10, 2012	09:35	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	146		
Tue. Jan. 17, 2012	21:15	Tue. Jan. 17, 2012	21:15	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	HIGH WINDS/TREE	2116 NO 2 SIDE RD. LOWVILLE F1 AUTO. TR #25 FOUND SW # F1326 BLOWN, CLEARED TREE LIMBS FROM PRIMARY TREE LIMBS CLEARED. F1326 REFUSED CLOSED AND HOLDING	146	2782	5
Fri. Jun. 1, 2012	07:34	Fri. Jun. 1, 2012	07:34	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	TREE/LIMB	4075 GUELPH LINE. TR 39 REPORTS FAD28 BLOWN/ LIMB ON LINE @ 4100 GUELPH LINE. TR 30 REMOVED LIMBS. REFUSED & CLOSED @ FAD28. HOLDING POWER RESTORED	146	10911	5
Mon. Oct. 29, 2012	20:21	Mon. Oct. 29, 2012	20:21	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	HIGH WINDS		146		
Mon. Oct. 29, 2012	23:31	Mon. Oct. 29, 2012	23:31	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	HIGH WINDS		146		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Dec. 20, 2012	10:21	Thu. Dec. 20, 2012	10:25	0:04	6.666666	9.7	LOWVILLE F1			LOCK-OUT	TREE/LIMB	#2 SIDE RD, EAST OF GUELPH LINE. BESWICK DOING TREE TRIMMING. - TWIG CAME DOWN ON LINE - FEEDER LOCKED OUT. CREW CLEAR AND FEEDER PICKED BACK UP.	146		
Fri. Dec. 21, 2012	03:53	Fri. Dec. 21, 2012	03:53	0:00	0	0.0	LOWVILLE F1			AUTO-RECLOSURE	POLE FIRE	4105 CEDAR SPRINGS RD. LOWVILLE F1 AUTO AT 03:53, TR #25 FOUND POLE TOP BURNING AT TX AC46. SW # FC46 TR #25 INSTALLED POLE TOP EXTENSION AND REPAIRED PRIMARY, SW # FAC46 CLOSED	146	17229	1

Feeder Outage Report LOWVILLE F3

Dates: Sunday January 01, 2012 through MondayDecember 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Feb. 24, 2012	20:57	Fri. Feb. 24, 2012	20:57	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	5100 APPLEBY LINE, SIDRABENE CAMP. #25 FOUND FUSE BLOWN AT F1259. DOWNED TREE CLEAR REFUSED F1259, CLOSED AND HOLDING.	383	1077	29
Sat. Mar. 3, 2012	01:38	Sat. Mar. 3, 2012	04:50	3:12	3.2	1225.6	LOWVILLE F3			LOCK-OUT	HIGH WINDS/TREE-LINE DOWN	6100 WALKERS LINE. LOWVILLE F3 LOCKOUT. TREE TOOK PRIMARY DOWN, SW # F3462OPEN 3 PHASE . LOWVILLE F TREE CLEARED, PRIMARY REPAIRED. F3462 CLOSED AND HOLDING	383	16405	2
Sun. Mar. 25, 2012	07:04	Sun. Mar. 25, 2012	07:04	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	UNKNOWN		383		
Fri. May. 4, 2012	14:12	Fri. May. 4, 2012	14:12	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	UNKNOWN		383		
Sat. May. 19, 2012	19:12	Sat. May. 19, 2012	19:12	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	SQUIRREL	4143 WALKERS LINE. #36 FOUND FUSE BLOWN IN CUTOUT AT SW # FAE16, SQUIRREL TR #25 REPLACED SWITCH, NEW FUSE INSTALLED, CLOSED AND HOLDING	383	3016	7

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. May. 19, 2012	19:12	Sat. May. 19, 2012	19:12	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	SQUIRREL	AT 1240 ADVANCE ROAD	383		
Thu. Jun. 7, 2012	05:55	Thu. Jun. 7, 2012	05:55	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	SQUIRREL	4480 NO. 4 SD ROAD. TX AL43 BLOWN FUSE.	383		
Sat. Jun. 16, 2012	18:07	Sat. Jun. 16, 2012	18:07	0:00	0	0.0	LOWVILLE F3		AL43	AUTO-RECLOSURE	SQUIRREL	4480 NO 4 SIDE RD. LOWVILLE F3 AUTO, SQUIRREL BLEW FUSE AT SW # FAL43. #25 INSTALLED NEW FUSE IN FAL43, CLOSED AND HOLDING.	383	3137	18
Mon. Jun. 18, 2012	18:58	Mon. Jun. 18, 2012	18:58	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	6507 WALKERS LINE. AUTO ON LOWVILLE F3 FEEDER. #36 REPORTS FUSEE FAR1 BLOWN. TREE LIMBS ON LINE F #25 REMOVED TREE LIMBS, REFUSED AND CLOSED SW# FAR1.	383	1132	7
Mon. Jun. 18, 2012	19:16	Mon. Jun. 18, 2012	19:16	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	SQUIRREL	4480 NO 4 SIDE RD. LOWVILLE F3 AUTO. #36 REPORTS DEAD SQUIRREL ON TX AL43. #25 PUT ON NEW ARRESTER AT TX AL43 AND REPLACED SWITCH. FUSED FAL43 CLOSED AND HOLDING.	383	3137	19

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Jun. 21, 2012	19:45	Thu. Jun. 21, 2012	19:45	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	4415 NO 4 SIDE RD. LOWVILLE F3 AUTO, OTHER CALLS COMING IN. #36 REORTS FUSE F1379 BLOWN. ON PATROL, NOTHING FOUND #25 REFUSED AND CLOSED AND BLEW. FEEDER SECTIONALIZED AND FLASH SPOTTED. TREE LIMB REMOVED FROM LINE, FUSE F1379 CLOSED AND HOLDING.	383	1792	8
Thu. Jun. 21, 2012	20:42	Thu. Jun. 21, 2012	20:42	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	4415 NO 4 SIDE RD. LOWVILLE F3 AUTO, OTHER CALLS COMING IN. #36 REORTS FUSE F1379 BLOWN. ON PATROL, NOTHING FOUND #25 REFUSED AND CLOSED AND BLEW. FEEDER SECTIONALIZED AND FLASH SPOTTED. TREE LIMB REMOVED FROM LINE, FUSE F1379 CLOSED AND HOLDING.	383	1792	8

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Jun. 21, 2012	20:48	Thu. Jun. 21, 2012	20:48	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	4415 NO 4 SIDE RD. LOWVILLE F3 AUTO, OTHER CALLS COMING IN. #36 REORTS FUSE F1379 BLOWN. ON PATROL, NOTHING FOUND #25 REFUSED AND CLOSED AND BLEW. FEEDER SECTIONALIZED AND FLASH SPOTTED. TREE LIMB REMOVED FROM LINE, FUSE F1379 CLOSED AND HOLDING.	383	1792	8
Thu. Jun. 21, 2012	21:27	Thu. Jun. 21, 2012	21:27	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	4415 NO 4 SIDE RD. LOWVILLE F3 AUTO, OTHER CALLS COMING IN. #36 REORTS FUSE F1379 BLOWN. ON PATROL, NOTHING FOUND #25 REFUSED AND CLOSED AND BLEW. FEEDER SECTIONALIZED AND FLASH SPOTTED . TREE LIMB REMOVED FROM LINE, FUSE F1379 CLOSED AND HOLDING.	383	1792	8
Fri. Jul. 20, 2012	08:06	Fri. Jul. 20, 2012	08:06	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	UNKNOWN		383		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Tue. Jul. 24, 2012	16:30	Tue. Jul. 24, 2012	16:30	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	UNKNOWN	5100-51 APPLEBY LINE. #22 FOUND FUSE BLOWN @ F1259. PATROL OF AREA FOUND NO CAUSE. #22 REFUSED F1259 @ 65 AMPS. REFUSED, CLOSED AND HELD OKAY.	383	16676	2
Thu. Jul. 26, 2012	01:05	Thu. Jul. 26, 2012	01:05	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	T-STORM		383		
Sun. Jul. 29, 2012	03:09	Sun. Jul. 29, 2012	03:09	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	UNKNOWN		383		
Tue. Aug. 7, 2012	13:14	Tue. Aug. 7, 2012	13:14	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	UNKNOWN		383		
Sun. Sep. 2, 2012	06:54	Sun. Sep. 2, 2012	06:54	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	SQUIRREL	6075 APPLEBY LINE. LOWVILLE F3 AUTO, SQUIRREL BLEW FUSE AT TX AR16. #25 INSTALLED NEW FUSE IN AR16 . CLOSED AND HOLDING.	383	265	9
Tue. Sep. 4, 2012	10:29	Tue. Sep. 4, 2012	11:05	0:36	0.6	211.8	LOWVILLE F3			LOCK-OUT	TREE/LIMB	3036 BRITANNIA RD, LOWVILLE M.S.. LOWVILLE F3 FEEDER LOCKED OUT - ONE ATTEMPT MADE, BUT FEEDER REMAINED LOCKED OUT #25 PATROLLED FEEDER AND FOUND LIMB ON LINE JUST NORTH OF BRITANNIA, ON WLAKERS LINE. #25 CLEARED LIMB. CREW CLEAR AND FEEDER PICKED UP.	353	768	42

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sun. Sep. 30, 2012	08:41	Sun. Sep. 30, 2012	08:41	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	BIRD	5050 APPLEBY LINE. LOWVILLE F3 AUTO (0841 HRS). #25 FOUND FUSE BLOWN AT FAL75 & DEAD BIRD @ BASE OF #25 REFUSED FAL75, CLOSED AND HOLDING	383	4922	5
Thu. Oct. 18, 2012	13:55	Thu. Oct. 18, 2012	13:55	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	HIGH WINDS/TREE	5100-6A APPLEBY LINE. AUTO ON LOWVILLE F3. #22 FOUND FUSE F1259 BLOWN. PATROL DONE ON LINE AND FOUND BRANCH ON LINE. BRANCH REMOVED. #22 RE-FUSED F1259-CLOSED AND HOLDING.	383	1563	3
Tue. Oct. 23, 2012	10:45	Tue. Oct. 23, 2012	10:45	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB-LINE DOWN	5144 WALKERS LINE. #25 FOUND PRIMARY DOWN AND POLES LEANING.FUSE BLOWN AT FAK32. REQUIRE DIGGER.REPAIRS MADE, FAK32 REFUSED, CLOSED AND HOLDING	383	1657	9

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Oct. 29, 2012	18:30	Mon. Oct. 29, 2012	18:30	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	HIGH WINDS/TREE	3036 BRITANNIA RD, LOWVILLE M.S.. LOWVILLE F3 AUTO'D FROM HURRICANE SANDY.- FOLLOWED BY A LOCK OUT. (SEE LOCKOUT REPORTS)	383	768	43
Mon. Oct. 29, 2012	18:34	Mon. Oct. 29, 2012	20:51	2:17	2.283333	874.5	LOWVILLE F3			LOCK-OUT	HIGH WINDS/TREE	3036 BRITANNIA RD, LOWVILLE M.S.. LOWVILLE F3 LOCKED OUT FROM HURRICANE SANDY. PATROL DONE AND NOTHING FOUND. CONTROL CLOSED FEEDER AND HOLDING @ 20:51. AT 20:57 FEEDER LOCKED OUT AGAIN, FOUND LARGE TREE AT WALKERS LINE AND BRITANNIA RD. LINE CLEARED	383	768	43

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Oct. 29, 2012	20:57	Mon. Oct. 29, 2012	21:16	0:19	0.316666	121.3	LOWVILLE F3			LOCK-OUT	HIGH WINDS/TREE	3036 BRITANNIA RD, LOWVILLE M.S.. LOWVILLE F3 LOCKED OUT FROM HURRICANE SANDY. PATROL DONE AND NOTHING FOUND. CONTROL CLOSED FEEDER AND HOLDING @ 20:51. AT 20:57 FEEDER LOCKED OUT AGAIN, FOUND LARGE TREE AT WALKERS LINE AND BRITANNIA RD. LINE CLEARED	383	768	43
Mon. Oct. 29, 2012	22:40	Mon. Oct. 29, 2012	22:40	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	HIGH WINDS		383		
Mon. Oct. 29, 2012	23:28	Mon. Oct. 29, 2012	23:28	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	HIGH WINDS		383		
Mon. Nov. 12, 2012	11:17	Mon. Nov. 12, 2012	11:17	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	HIGH WINDS	VERY WARM OUT, BUT HIGH WINDS.	383	0	0
Mon. Nov. 12, 2012	12:19	Mon. Nov. 12, 2012	12:19	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	6075 APPLEBY LINE. #22 FOUND LIMBS ON LINE AND FUSE F1321 BLOWN (AUTO ON LOWVILLE F3 - WINDY OUT) #22 CLEARED BRANCHES. SW# F1321 REFUSED, CLOSED AND HOLDING.	383	265	10

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Nov. 12, 2012	12:19	Mon. Nov. 12, 2012	12:19	0:00	0	0.0	LOWVILLE F3			AUTO-RECLOSURE	TREE/LIMB	6075 APPLEBY LINE. #22 FOUND LIMBS ON LINE AND FUSE F1321 BLOWN (AUTO ON LOWVILLE F3 - WINDY OUT) #22 CLEARED BRANCHES. SW# F1321 REFUSED, CLOSED AND HOLDING.	383	265	10

Feeder Outage Report LOWVILLE F4.

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Mar. 3, 2012	02:22	Sat. Mar. 3, 2012	02:23	0:01	1.666666	6.9	LOWVILLE F4			LOCK-OUT	HIGH WINDS	3036 BRITANNIA RD, LOWVILLE M.S.. WINDY, LOWVILLE F4 LOCKOUT PICKUP ATTEMPT, CLOSED AND HOLDING	413	768	40
Wed. Mar. 28, 2012	09:31	Wed. Mar. 28, 2012	10:10	0:39	0.65	268.5	LOWVILLE F4			LOCK-OUT	TREE/LIMB	2393 BRITANNIA RD. #10 REPORTS LARGE LIMB BROKEN AND ACROSS 3 PHASE PRIMARY. #22 REMOVED LIMB, LOWVILLE F4 CLOSED AND HOLDING	413	409	8
Fri. Apr. 6, 2012	17:59	Fri. Apr. 6, 2012	19:07	1:08	1.133333	468.1	LOWVILLE F4			LOCK-OUT	BROKEN	2662 BRITANNIA RD, LOWVILLE HEIGHTS GOLF & COUNTRY CLUB. LOWEVILLE F4 LOCK OUT. BROKEN POLE @ TX AH109. TAPS TO AH109 OPEN. LOWVILLE F4 CLOSED AND HOLDING.	413	2228	7

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Apr. 9, 2012	13:35	Mon. Apr. 9, 2012	13:35	0:00	0	0.0	LOWVILLE F4			AUTO-RECLOSURE	UNKNOWN	SUSPECT WINDS	413		
Sat. Aug. 4, 2012	18:35	Sat. Aug. 4, 2012	18:45	0:10	0.166666	52.2	LOWVILLE F4	S4205		LOCK-OUT	TREE/LIMB	3036 BRITANNIA RD, LOWVILLE M.S.. LOWVILLE F4 LOCKED OUT - CONTROL OPENED INTELLIRUPTER S4206 AND CLOSED S4205 TO PICK UP SOME CUSTOMERS. #36 FOUND TREE ON PRIMARY @ 2487 BRITTANIA RD. TR#25 CLEARED TREE AND LOWVILLE F4 BRK CLOSED TO PICK UP CUSTOMERS.	313	768	41
Sat. Aug. 4, 2012	18:35	Sat. Aug. 4, 2012	21:18	2:43	2.716666	271.7	LOWVILLE F4	S4206		LOCK-OUT	TREE/LIMB	3036 BRITANNIA RD, LOWVILLE M.S.. LOWVILLE F4 LOCKED OUT - CONTROL OPENED INTELLIRUPTER S4206 AND CLOSED S4205 TO PICK UP SOME CUSTOMERS. #36 FOUND TREE ON PRIMARY @ 2487 BRITTANIA RD. TR#25 CLEARED TREE AND LOWVILLE F4 BRK CLOSED TO PICK UP CUSTOMERS.	100	768	41

Feeder Outage Report ORCHARD F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Apr. 6, 2012	09:30	Fri. Apr. 6, 2012	09:30	0:00	0	0.0	ORCHARD F2			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	524		
Fri. Jun. 22, 2012	02:10	Fri. Jun. 22, 2012	02:10	0:00	0	0.0	ORCHARD F2			AUTO-RECLOSURE	POLE FIRE	1429 ESTER DR. AUTO ON ORCHARD F2 - POLE ON FIRE.#25 REPORTS FUSE F3348 HAS ONE PHASE BLOWN AS WELL AS F2053. #25 HAD TO DO LOTS OF TREE TRIMMING AROUND FUSED F2053 IN ORDER TO GET TO IT. WORK COMPLETED. F2053 CLOSED AND HOLDING. F3348 CLOSED AND HOLDING	524	16846	1
Mon. Jul. 2, 2012	02:26	Mon. Jul. 2, 2012	02:26	0:00	0	0.0	ORCHARD F2			AUTO-RECLOSURE	UNKNOWN		524		
Wed. Jul. 18, 2012	21:04	Wed. Jul. 18, 2012	21:04	0:00	0	0.0	ORCHARD F2		L236	AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	1440 TYANDAGA PARK DRIVE - TRANSFORMER L236 (INSTALLED 1974)	524		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Jul. 19, 2012	04:50	Thu. Jul. 19, 2012	04:50	0:00	0	0.0	ORCHARD F2			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	1440 TYANDAGA PARK DRIVE AGAIN - PART POWER CALLS - CHECK ALL FROM SC32 - (L234, L236, L235) - WALSH ADVISED	524		
Sun. Jul. 29, 2012	02:08	Sun. Jul. 29, 2012	02:08	0:00	0	0.0	ORCHARD F2			AUTO-RECLOSURE	UNKNOWN	BLOWN FUSE AND INSULATOR FLASHED OVER AT FL236: 1440 TYANDAGA PARK DRIVE	524		
Sat. Aug. 11, 2012	19:05	Sat. Aug. 11, 2012	19:05	0:00	0	0.0	ORCHARD F2			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	SUSPECT COLD LOAD PICKUP DURING ORCHARD F1 SECTIONALIZING	524	16969	1

Feeder Outage Report PALMER F1

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Wed. Feb. 8, 2012	09:43	Wed. Feb. 8, 2012	09:43	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	DEFECTIVE CONNECTION	4430 MAINWAY DR. BURNT OFF PRIMARY TAP.	147		
Fri. Jun. 1, 2012	07:40	Fri. Jun. 1, 2012	07:40	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	BROKEN	1104 HERITAGE RD, POLE BROKEN OFF AT TOP AND ON FIRE. POLE TO BE ISOLATED.	147		
Fri. Jun. 1, 2012	08:00	Fri. Jun. 1, 2012	08:00	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	BROKEN	1104 HERITAGE RD, POLE BROKEN OFF AT TOP AND ON FIRE. POLE TO BE ISOLATED.	147	0	0
Fri. Jun. 1, 2012	08:02	Fri. Jun. 1, 2012	08:22	0:20	0.333333	49.0	PALMER F1			LOCK-OUT	BROKEN	1104 HERITAGE RD, POLE BROKEN OFF AT TOP AND ON FIRE. TR#25 OPENED SWITCH S1016 TO ISOLATE THE AREA. CONTROL PICKED UP FEEDER	147	0	0
Sun. Jun. 24, 2012	13:44	Sun. Jun. 24, 2012	13:44	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	UNKNOWN		147		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Jul. 9, 2012	18:08	Mon. Jul. 9, 2012	18:08	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	1100 WALKERS LINE. CUSTOMER HAS PART POWER. #22 FOUND FUSE BLOWN AT FN169 REFUSED FN169 AT 15 AMPS, CLOSED AND BLEW FUSE (PALMER F1 AUTO-RECLOSED). #22 FOUND DEFECTIVE CABLE.	147	2330	6
Tue. Jul. 10, 2012	09:27	Tue. Jul. 10, 2012	09:27	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	1100 WALKERS LINE. CUSTOMER HAS PART POWER. #22 FOUND FUSE BLOWN AT FN169 REFUSED FN169 AT 15 AMPS, CLOSED AND BLEW FUSE (PALMER F1 AUTO-RECLOSED). #22 FOUND DEFECTIVE CABLE.	147	2330	6
Wed. Sep. 26, 2012	17:33	Wed. Sep. 26, 2012	17:33	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	147		
Sat. Oct. 6, 2012	07:14	Sat. Oct. 6, 2012	07:14	0:00	0	0.0	PALMER F1			AUTO-RECLOSURE	SQUIRREL	1380 ARTISANS CRT, METRICAN STAMPING. #36 FOUND ONE LEG DEAD INCOMING, FUSE BLOWN AT F779, SQUIRREL. CAUSE OF PALMER F1 AUTO #25 INSTALLED NEW FUSE IN F779 , CLOSED AND HOLDING	147	5783	12

Feeder Outage Report PALMER F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Feb. 24, 2012	13:30	Fri. Feb. 24, 2012	14:04	0:34	0.566666	226.7	PALMER F2			LOCK-OUT	TREE/LIMB-LINE DOWN	1232 DILLON RD. PALMER F2 LOCKOUT. BRANCH FOUND ACROSS PRIMARY AT FN505 WHILE SECTIONALIZING BRANCH REMOVED AND ALL POWER RESTORED	400	13309	2
Mon. Apr. 16, 2012	02:11	Mon. Apr. 16, 2012	02:11	0:00	0	0.0	PALMER F2			AUTO-RECLOSURE	UNKNOWN		548		
Sat. May. 12, 2012	03:45	Sat. May. 12, 2012	04:42	0:57	0.95	235.6	PALMER F2			LOCK-OUT	DEFECTIVE U/G PRIMARY	3260 PALMER DR. PALMER F2 FEEDER LOCKED-OUT. CREW SECTIONALIZED AND FOUND 3 PHASE PRIMARY CABLE FAULTY. SECTION CAUTION TAGGED. PALMER F2 CLOSED TO PICK UP PART OF FEEDER. S3030 (SC164)	248	7839	2

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Oct. 26, 2012	15:13	Fri. Oct. 26, 2012	15:13	0:00	0	0.0	PALMER F2		N258	AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	1233 DILLON RD. NOTE PALMER F2 AUTO-RECLOSURE @ 15:13 HRS. ATTEMPT TO CLOSE TX N258, BLEW FUSE A #22 REPLACED TX N258, REFUSED, CLOSED AND HOLDING. SPOT VOLTAGE READINGS ARE OKA	548	11390	7
Fri. Oct. 26, 2012	16:25	Fri. Oct. 26, 2012	16:25	0:00	0	0.0	PALMER F2			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	AUTO RECLOSURE ON ATTEMPT TO REFUSE TX N258 AT BURLINGTON RACQUET CLUB.	548	11390	7

Feeder Outage Report PALMER F3

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sun. Apr. 1, 2012	12:51	Sun. Apr. 1, 2012	12:51	0:00	0	0.0	PALMER F3			AUTO-RECLOSURE	UNKNOWN	RED AND BLUE PHASE OVERCURRENT FAULT ALARMS AT S145, BUT NO CALLS.	833		
Sun. Apr. 15, 2012	05:32 RECLOSURE	Sun. Apr. 15,	05:32	0:00	0	0.0	PALMER F3			AUTO-	SQUIRREL		833		2012
Mon. Jul. 2, 2012	05:00	Mon. Jul. 2, 2012	05:00	0:00	0	0.0	PALMER F3			AUTO-RECLOSURE	SQUIRREL	SQUIRREL CONTACT AT FU510: 3515 UPPER MIDDLE RD. TWO PHASES REFUSED OK	833		
Sun. Jul. 22, 2012	18:19	Sun. Jul. 22, 2012	18:19	0:00	0	0.0	PALMER F3			AUTO RECLOSURE	T-STORM		833		
Fri. Aug. 31, 2012	15:50	Fri. Aug. 31, 2012	17:35	1:45	1.75	1457.8	PALMER F3			LOCK-OUT	DEFECTIVE U/G PRIMARY	2334 CABLE FAULT BX f2937 AND Tx V384 - PROTECTION MISCOORDINATION CAUSED LOCKOUT INSTEAD OF LOCAL FUSE BLOWN.	833	17009	1
Sat. Sep. 8, 2012	06:48	Sat. Sep. 8, 2012	06:48	0:00	0	0.0	PALMER F3			AUTO-RECLOSURE	POLE FIRE	F161 POLE ON FIRE. COMPLETED.	833		
Sun. Sep. 9, 2012	17:27	Sun. Sep. 9, 2012	17:27	0:00	0	0.0	PALMER F3			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	833		
Sat. Sep. 15, 2012	08:19	Sat. Sep. 15, 2012	08:19	0:00	0	0.0	PALMER F3			AUTO-RECLOSURE	UNKNOWN		833		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Tue. Oct. 23, 2012	19:49	Tue. Oct. 23, 2012	21:00	1:11	1.183333	104.1	PALMER F3	S131		LOCK-OUT	DEFECTIVE SWITCH	1841 WALKERS LINE. PALMER F3 LOCKOUT, ON PICKUP ATTEMPT CREW FOUND SW # S476 ARCING & DEFECTIVE. PA CREW OPENED S131 AND S476 AND GREEN TAGGED BOTH ENDSUNTIL SW # S476 CAN BE REPLACED	88	13852	3

Feeder Outage Report PALMER F4

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Feb. 16, 2012	01:45	Thu. Feb. 16, 2012	01:45	0:00	0	0.0	PALMER F4			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	3153 BENTWORTH DR. PALMER F4 AUTO. ALSO NO POWER AT #3152. #25 FOUND FUSE BLOWN @ F1616 - U/G CABLES TO BE TESTED TO FIND DEFECT.	806	2470	3
Thu. Feb. 16, 2012	07:13	Thu. Feb. 16, 2012	07:13	0:00	0	0.0	PALMER F4			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	3153 BENTWORTH DR. PALMER F4 AUTO. CREW THOUGHT THEY FOUND DEFECTIVE CABLE FAULT. FUSE F1616 CLOSED AND AUTO'D FEEDER. CREW TO CONTINUE LOOKING FOR FAULTED CABLE	806	2470	3
Mon. Mar. 26, 2012	13:07	Mon. Mar. 26, 2012	13:07	0:00	0	0.0	PALMER F4			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	TRUCK #22 FOUND DEFECTIVE CABLE BETWEEN TX N60 AND TX N59. CABLE ISOLATED CUSTOMERS PICKED UP.	812	5656	2
Fri. Apr. 13, 2012	19:18	Fri. Apr. 13, 2012	19:18	0:00	0	0.0	PALMER F4			AUTO-RECLOSURE	UNKNOWN		938		
Mon. May. 28, 2012	11:54	Mon. May. 28, 2012	11:54	0:00	0	0.0	PALMER F4			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	1517 RUSHOLME CRES.	938	15042	2
Sat. Oct. 6, 2012	06:36	Sat. Oct. 6, 2012	06:36	0:00	0	0.0	PALMER F4			AUTO-RECLOSURE	UNKNOWN		938		

Feeder Outage Report RESERVOIR F1

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Apr. 9, 2012	10:44	Mon. Apr. 9, 2012	10:49	0:05	8.333333	134.6	RESERVOIR F1			LOCK-OUT	UNKNOWN	SUSPECT WINDS	1615		
Mon. Apr. 9, 2012	13:21	Mon. Apr. 9, 2012	13:21	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN	SUSPECT WINDS	1615		
Fri. Apr. 13, 2012	18:27	Fri. Apr. 13, 2012	18:27	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN		1615		
Sat. Apr. 28, 2012	23:08	Sat. Apr. 28, 2012	23:08	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	2386 GREENBANK TRAIL. DEFECTIVE TX T68 REPLACEDAND RESTORED	1615	16715	1
Thu. May. 10, 2012	14:25	Thu. May. 10, 2012	14:25	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN		1615		
Sat. May. 26, 2012	15:02	Sat. May. 26, 2012	15:02	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN		1615		
Mon. Jun. 4, 2012	09:19	Mon. Jun. 4, 2012	09:19	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	CAVENDISH AREA AGAIN - MELISSA CRS cable BX T95 and T153 TESTED BAD. ALSO RECEIVING BORDERLINE FAULT READINGS BX T147 AND T149. ** IF T147-T149 BLOWS BEFORE T95-T153 IS REPLACED, THREE TRANSFORMERS WILL BE OUT OF SERVICE AND UNABLE TO BE FED	1615		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Jun. 25, 2012	11:46	Mon. Jun. 25, 2012	11:46	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER		1615		
Mon. Jul. 2, 2012	21:58	Mon. Jul. 2, 2012	21:58	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2245 MELISSA CRES. OTHERS OFF TOO (RESERVOIR F1 AUTO @ 21:58 HRS) #25 FOUND FUSE BLOWN AT F1912 IN SC34. SECTIONALIZING FOUND CABLE FAULT FROM TX T94 TO TX T95. CABLE CAUTION TAGGED.	1615	16874	1
Sun. Jul. 22, 2012	18:02	Sun. Jul. 22, 2012	18:02	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	T-STORM		1615		
Sun. Jul. 22, 2012	19:03	Sun. Jul. 22, 2012	19:03	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	T-STORM		1615	0	0
Thu. Jul. 26, 2012	01:31	Thu. Jul. 26, 2012	01:31	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	T-STORM		1615	0	0
Thu. Jul. 26, 2012	02:01	Thu. Jul. 26, 2012	02:01	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	T-STORM		1615	0	0
Tue. Aug. 14, 2012	12:45	Tue. Aug. 14, 2012	12:45	0:00	0	0.0	RESERVOIR F2			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2197 LANCASTER CRES. CALLER HEARD LOUD BANG ON GUELPH LINE (F1646?) FAULTY CABLE SECTION F1646 X TX T54 CAUTION TAGGED @ BOTH ENDS, NORMAL OPEN POINT AT TX T49 CLOSED TO RESTORE.	816	3411	7

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Aug. 24, 2012	08:04	Fri. Aug. 24, 2012	08:04	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2251 MANCHESTER DR. RESERVOIR F1 AUTO (08:04 HRS). NO POWER CALLS FROM MIDDLESMOOR, HOLYHEAD AND MANCHESTER AREA #22 FOUND CABLE FROM F1902 TO TX T119 FAULTY.	1615	14765	2
Fri. Aug. 31, 2012	09:05	Fri. Aug. 31, 2012	09:05	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	BIRD	2275 DUNDAS STREET. RESERVOIR F1 AUTO, CREW FOUND DEAD BIRD, BLOWN FUSE AT TX X59 REFUSED, CLOSED AND HOLDING	1615	17005	1
Mon. Sep. 3, 2012	05:35	Mon. Sep. 3, 2012	05:35	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE SWITCH	2501 EAGLESFIELD DR. AUTO ON RESERVOIR F1. #36 REPORTS 2 FUSES BLOWN @ FT258. #25 FOUND FUSE BARREL BURNT THRU. #25 MADE REPAIRS AND REFUSED FT258 AND CLOSED. CUSTOMER BACK IN FULL POWER	1615	4908	3
Tue. Sep. 4, 2012	09:10	Tue. Sep. 4, 2012	09:15	0:05	8.333333	134.6	RESERVOIR F1			LOCK-OUT - HOLDOFF IN EFFECT	UNKNOWN	BETH. TRENCHING HAS HOLD OFF AND WORKING AT EAGLESFIELD AND DUNDAS ST. CREW IS CLEAR, HOLD OFF SURRENDERED AND FEEDER RESTORED.	1615		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Sep. 22, 2012	01:35	Sat. Sep. 22, 2012	01:35	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	1615		
Mon. Sep. 24, 2012	08:38	Mon. Sep. 24, 2012	08:38	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN	NO CAUSE FOUND OR REPORTED	1615		
Sun. Sep. 30, 2012	10:05	Sun. Sep. 30, 2012	10:05	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	BIRD	3000 DRIFTWOOD DR. #25 FOUND F2493 FUSE BLOWN AND DEAD BIRD AT BASE OF POLE. F2493 REFUSED, CLOSED & HOLDING	1215	2365	3
Fri. Oct. 5, 2012	23:49	Fri. Oct. 5, 2012	23:49	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN	ANOTHER UNKNOWN CAUSE ON RESERVOIR F1.	1615		
Fri. Oct. 12, 2012	10:22	Fri. Oct. 12, 2012	10:22	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	UNKNOWN		1615		
Sat. Oct. 13, 2012	14:10	Sat. Oct. 13, 2012	14:10	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE SECONDARY	2345 MIDDLESMOOR CRES. T119 SECONDARIES BURNED EXTENSIVELY T119 EZNA BYPASSED AND FED THROUGH SO OTHER TRANSFORMERS ARE ENERGISED WHILE T119 SECONDARY REPAIRS MADE.	1615	17078	1

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Dec. 14, 2012	01:47	Fri. Dec. 14, 2012	01:47	0:00	0	0.0	RESERVOIR F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2335 MELISSA CRES. AUTO ON RESERVOIR F1. TR#25 CONFIRMS FUSED F1904 (SC 34) IS BLOWN. CREW FOUND DEFECTIVE U/G CABLE BETWEEN TX T155 x TX T156 ON MONTGOMERY DR. TR#25 OPENED AND CAUTION TAGGED BOTH ENDS. ALL CUSTOMERS PICKED UP.	1615	17218	1

Feeder Outage Report TOWERLINE F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Tue. Feb. 28, 2012	17:10	Tue. Feb. 28, 2012	17:10	0:00	0	0.0	TOWERLINE F2			AUTO-RECLOSURE	UNKNOWN		271		
Tue. Mar. 13, 2012	00:35	Tue. Mar. 13, 2012	00:35	0:00	0	0.0	TOWERLINE F2			AUTO-RECLOSURE	UNKNOWN	HEAVY RAIN	271		
Tue. Mar. 13, 2012	02:51	Tue. Mar. 13, 2012	05:28	2:37	2.616666	709.1	TOWERLINE F2			LOCK-OUT	SQUIRREL	2099 APPLEBY LINE, TOWERLINE M.S.. TOWERLINE F2 FEEDER LOCKED OUT. #22 PATROLLED FEEDER AND FOUND NOTHING. CONTROL CLOSED BREAKER AND HELD. (FOUND B/O LEADS, FUSES BLOWN AND DEAD SQUIRRAL AT 930 SHELDON CRT)	271	116	57
Sat. Apr. 7, 2012	16:36	Sat. Apr. 7, 2012	16:36	0:00	0	0.0	TOWERLINE F2			AUTO-RECLOSURE	SQUIRREL	945 SHELDON COURT.	271	1355	6
Wed. Apr. 11, 2012	07:28	Wed. Apr. 11, 2012	07:28	0:00	0	0.0	TOWERLINE F2			AUTO-RECLOSURE	UNKNOWN		271		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sun. Apr. 29, 2012	09:59	Sun. Apr. 29, 2012	09:59	0:00	0	0.0	TOWERLINE F2		G464	AUTO-RECLOSURE	SQUIRREL	955 CENTURY DR, KERNIC EQUIPMENT. - CONTRACTOR CALLED TO BUILDING FOR LOW VOLTAGES ON 600V SUPPLY. CONTRACTOR NOTICED CUT-OUT OPEN TRUCK 29 REFUSED CLOSED AND HOLDING	271	2604	6
Sun. Jul. 8, 2012	06:07	Sun. Jul. 8, 2012	06:07	0:00	0	0.0	TOWERLINE F2			AUTO-RECLOSURE	UNKNOWN		271		
Fri. Jul. 27, 2012	19:04	Fri. Jul. 27, 2012	19:04	0:00	0	0.0	TOWERLINE F2			AUTO-RECLOSURE	RACCOON	PART POWER AT 3 PHASE TX G694. RACCOON AT 5370 MUNRO COURT. REPORTED ON JULY 30, 2012.	271	16935	1
Sat. Oct. 6, 2012	04:09	Sat. Oct. 6, 2012	05:23	1:14	1.233333	246.7	TOWERLINE F2			LOCK-OUT	POLE FIRE	921 GATEWAY, PHARMETICS INC.. POLE FIRE AT TX G119. TOWERLINE F2 LOCKOUT. SW # S1721 OPEN. TOWERLINE F2 CLOSED REPAIRS MADE TO PRIMARY AND POLE TOP. TX G119 LEFT OPEN UNTIL SECONDARY CAN BE CONFIRMED IN BUILDING	200	1582	5

Feeder Outage Report TYANDAGA F1

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Tue. Jan. 31, 2012	13:18	Tue. Jan. 31, 2012	13:18	0:00	0	0.0	TYANDAGA F1			AUTO-RECLOSURE	BLOWN ELBOW	BLOWN ELBOW ON ATTEMPT TO CLOSE TX T31 TO TXT30.		1122	
Wed. Mar. 28, 2012	02:32	Wed. Mar. 28, 2012	02:32	0:00	0	0.0	TYANDAGA F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2301-22 CAVENDISH DR. #25 FOUND FUSE F1563 BLOWN IN SC10. #25 FOUND CABLE FAULT FROM F1563 (SC10) TO TX T268.	1122	5295	2
Wed. Mar. 28, 2012	04:45	Wed. Mar. 28, 2012	04:45	0:00	0	0.0	TYANDAGA F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2301-22 CAVENDISH DR. #25 FOUND FUSE F1563 BLOWN IN SC10. #25 FOUND CABLE FAULT FROM F1563 (SC10)	1122	5295	2
Wed. Mar. 28, 2012	07:10	Wed. Mar. 28, 2012	07:10	0:00	0	0.0	TYANDAGA F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2301-22 CAVENDISH DR. #25 FOUND FUSE F1563 BLOWN IN SC10. #25 FOUND CABLE FAULT FROM F1563 (SC10) TO TX T268.	1122	5295	2
Fri. May. 11, 2012	22:44	Fri. May. 11, 2012	22:44	0:00	0	0.0	TYANDAGA F1			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	2018 CORAL CRES. TYANDAGA F1 AUTO , CREW FOUND TX T35 DEFECTIVE	1122	16748	1

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. May. 26, 2012	20:14	Sat. May. 26, 2012	20:14	0:00	0	0.0	TYANDAGA F1			AUTO-RECLOSURE	UNKNOWN	CLEAR NIGHT. PATROLLED BY TRUCK 29 - FOUND TREE LIMB - TREE LIMB REMOVED - PICKED UP OK	1122		

Feeder Outage Report TYANDAGA F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sun. May. 6, 2012	21:27	Sun. May. 6, 2012	21:27	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	989		
Mon. Jun. 4, 2012	12:32	Mon. Jun. 4, 2012	12:32	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	CAVENDISH AREA AGAIN - MELISSA CRS cable BX T95 and T153 TESTED BAD. ALSO RECEIVING BORDERLINE FAULT READINGS BX T147 AND T149. ** IF T147-T149 BLOWS BEFORE T95-T153 IS REPLACED, THREE TRANSFORMERS WILL BE OUT OF SERVICE AND UNABLE TO BE FED.	989	0	0
Fri. Jun. 22, 2012	09:12	Fri. Jun. 22, 2012	09:12	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	2317 DUNCASTER DR. TYANDAGA F2 AUTO, TR #34 FOUND TX T198 DEFECTIVE, CREW ISOLATED TX T198 FOR REPL RESTORED.	989	16848	1
Sat. Jul. 28, 2012	09:14	Sat. Jul. 28, 2012	09:14	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	UNKNOWN	BLOWN FUSE FOUND AT FX11. REFUSED OK. NO CAUSE FOUND	989		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Sep. 14, 2012	17:24	Fri. Sep. 14, 2012	17:24	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	UNKNOWN		989		
Tue. Sep. 18, 2012	11:08	Tue. Sep. 18, 2012	11:08	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	UNKNOWN	2252 MANCHESTER DR. SMOKE SEEN RISING OUT OF MANHOLE NEAR TIME OF TYANDAGA F2 AUTO RECLOSURE @ 11:08 TR #25 CHECKED TX T116 VAULT OUT AND FOUND NO PROBLEMS	989	17044	1
Sat. Oct. 6, 2012	07:10	Sat. Oct. 6, 2012	07:10	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	UNKNOWN		989		
Sat. Oct. 13, 2012	14:54	Sat. Oct. 13, 2012	14:54	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2251 HANBURY CRT. WHEN ATTEMPTING TO CLOSE NORMAL OPEN AT TX T111, AUTO'D TYANDAGA F2 AND BLEW FUSE AT F1901 (SC.33)- CABLE TESTED FAULTY BETWEEN TX T111 x TX T112. BOTH ENDS OPENED AND CAUTION TAGGED.	989	17080	1
Mon. Oct. 29, 2012	22:40	Mon. Oct. 29, 2012	22:40	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	HIGH WINDS		989		
Mon. Oct. 29, 2012	23:28	Mon. Oct. 29, 2012	23:28	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	HIGH WINDS		989		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Dec. 13, 2012	23:11	Thu. Dec. 13, 2012	23:11	0:00	0	0.0	TYANDAGA F2			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	2660 CAVENDISH DR. AUTO ON TYANDAGA F2. TR#25 FOUND FUSE F1883 BLOWN. CREW REPORTS TX T200 FAULT INDICATOR SHOWS NO FAULT. NORMAL OPEN POINT CLOSED TO PICK UP CUSTOMERS. DEFECTIVE U/G CABLE FOUND BETWEEN F1883 x TX T61. BOTH ENDS OPENED AND C/T'D.	989	9092	6

Feeder Outage Report TYANDAGA F3

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Jan. 20, 2012	11:06	Fri. Jan. 20, 2012	11:06	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	UNKNOWN	NO CAUSE REPORTED.	481		
Wed. Jan. 25, 2012	10:05	Wed. Jan. 25, 2012	10:07	0:02	3.333333	16.0	TYANDAGA F3			LOCK-OUT - HOLDOFF IN EFFECT	DEFECTIVE SWITCH	1380 GUELPH LINE. SW # FM329 ARCED OVER WHEN OPENED, TYANDAGA F3 FEEDER LOCKED OUT WITH HOLD OFF CREW CLEAR, SW # FM329 OPEN 3 PHASES. HOLD OFF SURRENDERED TYANDAGA F3 FEEDER CLOSED	481	8360	2
Thu. Feb. 16, 2012	03:58	Thu. Feb. 16, 2012	03:58	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	UNKNOWN	NO OUTAGES REPORTED AFTER AUTO.	481		
Fri. Feb. 17, 2012	03:58	Fri. Feb. 17, 2012	03:58	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	3002-6 PALMER DR. AUTO ON TYANDAGA F3 @ 03:58. TR#9 REPORTS TX N349 CSP TRIPPED. TR#29 REPORTS TX N349 IS DEFECTIVE - NEEDS TO BE REPLACED. #29 REPLACED TX N349 - CUSTOMERS BACK IN FULL POWER.	481	16578	1

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Feb. 23, 2012	12:12	Thu. Feb. 23, 2012	12:12	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	UNKNOWN		481		
Sat. Mar. 17, 2012	09:20	Sat. Mar. 17, 2012	09:20	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	TREE/LIMB		481		
Thu. Apr. 19, 2012	15:31	Thu. Apr. 19, 2012	15:31	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY		481		
Sat. May. 19, 2012	16:00	Sat. May. 19, 2012	16:00	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	SQUIRREL	1240 ADVANCE RD, SWISS LINE INDUSTRIES. ANIMAL CONTACT RE-FUSED, CLOSED AND HOLDING	481	188	10
Fri. Jun. 1, 2012	08:38	Fri. Jun. 1, 2012	08:38	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	TREE/LIMB	3061 NORTHVIEW CRES. TREE ON LINES: BLOWN FUSES F2531 & F2530. TYANDAGA F3 AUTO. TX #S N335,N336,N553 TR#22 REMOVED LIMBS, REFUSED CLOSED AND HOLDING.	481	3488	4
Sun. Sep. 30, 2012	07:19	Sun. Sep. 30, 2012	07:19	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	SQUIRREL	3080 CENTENNIAL DR. #25 FOUND DEAD SQUIRREL AND BLOWN FUSE AT TX N336. REFUSED TX N336, CLOSED AND HOLDING.	481	1853	3
Thu. Dec. 27, 2012	00:09	Thu. Dec. 27, 2012	00:09	0:00	0	0.0	TYANDAGA F3			AUTO-RECLOSURE	BLOWN ELBOW	1251 NORTHSIDE RD. #25 FOUND FUSE BLOWN AT FN233. CREW INSPECTED TX N233 AND FOUND BLOWN ELBOW.#25 REPLACED ELBOW, FN233 REFUSED, CLOSED AND HOLDING	481	4515	2

Feeder Outage Report TYANDAGA F4

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Jan. 13, 2012	06:59	Fri. Jan. 13, 2012	06:59	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	UNKNOWN	SNOWING /	1036		
Mon. Jan. 16, 2012	13:48	Mon. Jan. 16, 2012	13:48	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	DEFECTIVE SPLICE U/G PRIMARY	1023 HAVENDALE BLVD. TYANDAGA F4 AUTO, CREW FOUND SW # F1655 BLOWN. TESTING FOUND DEFECTIVE CABLE SPLICE ON PRIMARY DIP, F1655 X TX L81.	1036	9871	2
Mon. Jan. 16, 2012	18:05	Mon. Jan. 16, 2012	18:05	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	DEFECTIVE SPLICE U/G PRIMARY	1023 HAVENDALE BLVD. TYANDAGA F4 AUTO, CREW FOUND SW # F1655 BLOWN. TESTING FOUND DEFECTIVE CABLE SPLICE ON PRIMARY DIP, F1655 X TX L81.	1036	9871	2
Mon. Jan. 16, 2012	18:06	Mon. Jan. 16, 2012	18:06	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	DEFECTIVE SPLICE U/G PRIMARY	1023 HAVENDALE BLVD. TYANDAGA F4 AUTO, CREW FOUND SW # F1655 BLOWN. TESTING FOUND DEFECTIVE CABLE SPLICE ON PRIMARY DIP, F1655 X TX L81.	1036	9871	2

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Jan. 20, 2012	10:35	Fri. Jan. 20, 2012	10:35	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	BLOWN ELBOW	2188 FAIRCHILD BLVD. BLOWN ELBOW ON ATTEMPT TO OPEN TX L82 TO TX L81 (OTO 12-20). ALSO CAUSED BLOWN E BH2-4860 ISSUED TO MAKE REPAIRS AT TX L60, TX L81 AND TX L82. FULL REPAIRS MADE	1036	8926	3
Wed. Mar. 14, 2012	13:35	Wed. Mar. 14, 2012	13:55	0:20	0.333333	324.3	TYANDAGA F4			LOCK-OUT - HOLDOFF IN EFFECT	DIG-IN	2260 BELGRAVE CRT. TYANDAGA F4 LOCKED OUT - HOLD OFF IN EFFECT. TR#22 CALLED TO LOCATION TO CHECK KNICKED CABLE BY CONTRACTOR #29 ISOLATED TX L108 FROM SUPPLY SIDE. CONTROL CLOSED BREAKER TO PICK UP MOST CUSTOMERS	973	16640	1
Sun. May. 27, 2012	04:50	Sun. May. 27, 2012	04:50	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	UNKNOWN		1036		
Fri. Jul. 6, 2012	15:04	Fri. Jul. 6, 2012	15:04	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY		1036		
Sun. Aug. 26, 2012	21:13	Sun. Aug. 26, 2012	21:13	0:00	0	0.0	TYANDAGA F4			AUTO-RECLOSURE	DEFECTIVE CONNECTION	2185-54 FAIRCHILD BLVD. AUTO ON TYANDAGE F4. #22 FOUND FUSE F1927 BLOWN. FIRST CABLE TESTED OK HOWEVER TX L288 NEEDS TO BE CHANGED DUE TO OIL LEAKING AND CREW ALSO FOUND BLOWN OFF ELBOW IN TX L286.	1036	16992	1

Appendix D

Feeder Outage Report APPLEBY F1

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Feb. 25, 2012	21:18	Sat. Feb. 25, 2012	21:18	0:00	0	0.0	APPLEBY F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	404 BRYANT CRES. #25 REPORTS DEFECTIVE U/G CABLE #10 WAS DISPATCHED TO ASSESS AND IT WAS DECIDED TO INSTALL A GENERATOR TO THE 10 CUSTOMERS UNTIL REPAIRS MADE.	420	16596	1
Sat. Feb. 25, 2012	22:35	Sat. Feb. 25, 2012	22:35	0:00	0	0.0	APPLEBY F1			AUTO-RECLOSURE	DEFECTIVE U/G PRIMARY	404 BRYANT CRES. #25 REPORTS DEFECTIVE U/G CABLE #10 WAS DISPATCHED TO ASSESS AND IT WAS DECIDED TO INSTALL A GENERATOR TO THE 10 CUSTOMERS UNTIL REPAIRS MADE.	420	16596	1
Sun. Jul. 22, 2012	15:52	Sun. Jul. 22, 2012	15:52	0:00	0	0.0	APPLEBY F1		G37	AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	296 BRYANT CRES. SUSPECT TX G37 OUT, TX G38 CONFIRMED POWER. APPLEBY F1 AUTO 1552. CREW REPLACED TX AND RESTORED	420	9160	2
Sun. Jul. 22, 2012	15:52	Sun. Jul. 22, 2012	15:52	0:00	0	0.0	APPLEBY F1			AUTO-RECLOSURE	T-STORM		420		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Oct. 29, 2012	22:27	Mon. Oct. 29, 2012	22:27	0:00	0	0.0	APPLEBY F1			AUTO-RECLOSURE	HIGH WINDS		420		
Fri. Nov. 16, 2012	09:06	Fri. Nov. 16, 2012	09:06	0:00	0	0.0	APPLEBY F1			AUTO-RECLOSURE	UNKNOWN	FAULT AT TX G448 CAUSED THE FEEDER TO AUTO*	420		

Feeder Outage Report EASTERBROOK F3

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Fri. Mar. 9, 2012	15:13	Fri. Mar. 9, 2012	15:13	0:00	0	0.0	EASTERBROOK F3			AUTO-RECLOSURE	HIGH WINDS		135	0	0
Thu. Jun. 14, 2012	18:36	Thu. Jun. 14, 2012	18:39	0:03	0.05	6.8	EASTERBROOK F3			LOCK-OUT - HOLDOFF IN EFFECT	COLD LOAD	CLOSED IN TX L143 - AMPS AT STN JUMPED FROM 121 TO 144 ON RED PHASE - HOLD OFF HOLDER CONTACTED, HOLD OFF RETURNED, BREAKER CLOSED AND HOLDING - AMPS RETURNED TO 121 APPROXIMATELY 2 MINUTES AFTER CLOSURE	135		
Sun. Jul. 15, 2012	06:28	Sun. Jul. 15, 2012	06:28	0:00	0	0.0	EASTERBROOK F3			AUTO-RECLOSURE	UNKNOWN		135		
Sun. Jul. 22, 2012	18:12	Sun. Jul. 22, 2012	18:12	0:00	0	0.0	EASTERBROOK F3			AUTO-RECLOSURE	T-STORM		135		
Mon. Oct. 29, 2012	23:30	Mon. Oct. 29, 2012	23:31	0:01	1.666666	2.3	EASTERBROOK F3			LOCK-OUT	HIGH WINDS	MANUAL RECLOSE SUCCESSFUL	135		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Tue. Oct. 30, 2012	00:21	Tue. Oct. 30, 2012	01:11	0:50	0.833333	112.5	EASTERBROOK F3			LOCK-OUT	HIGH WINDS	HURRICANE SANDY! ONE ATTEMPT MADE TO PICK UP FEEDER. DID NOT HOLD , CREW NOTICED LOTS OF TREES OUTSIDE OF EASTERBROOK STATION SLAMMING UP AGAINST FEEDER. ANOTHER ATTEMPT MADE TO PICK UP FEEDER AND HELD.	135	0	0
Tue. Oct. 30, 2012	03:49	Tue. Oct. 30, 2012	03:49	0:00	0	0.0	EASTERBROOK F3			AUTO-RECLOSURE	HIGH WINDS	HURRICANE SANDY!	135	0	0

Feeder Outage Report FAIRLEIGH F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Mar. 3, 2012	04:25	Sat. Mar. 3, 2012	05:28	1:03	1.05	356.0	FAIRLEIGH F2			LOCK-OUT	TREE/LIMB-LINE DOWN	216 HART AVE. TREE FELL ONTO 3 PHASE PRIMARY AT NORMAL OPEN SWICH S93, CAUSING FEEDER TO LOCK- CREWS MADE REPAIRS AND ISOLATED SECTION RESTORED TO NORMAL.	339	8017	3
Wed. Jul. 4, 2012	21:25	Wed. Jul. 4, 2012	22:58	1:33	1.55	525.5	FAIRLEIGH F2			LOCK-OUT	TREE/LIMB	3045 LAKESHORE RD. FIRE DEPT ON SCENE AT 22:45 HRS AND REPORT TREE LIMB ON 3 PHASE PRIMARY. #25 REMOVED TREE LIMB FROM PRIMARY LINE.	339	14308	2
Mon. Jul. 23, 2012	09:10	Mon. Jul. 23, 2012	09:10	0:00	0	0.0	FAIRLEIGH F2		F170	AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	4171-11 MORRIS DR. BLOWN ARRESTER FOUND. FAIRVIEW F2.REPLACED, REFUSED AND CLOSED. AUTO ON FAIRVIEW REPLACED TX AND BACK IN SERVICE.	339	16918	1

DATE OUT	*TIME OUT*	*DATE IN*	*TIME IN*	*Duration h:m*	*Duration hr's*	*Customer Hr's*	*FEEDER*	*LINE SECTION*	*TX(S)*	*OPERATION*	*CAUSE*	*LOCATION/REMARKS*	*# OF CUSTOMERS*	*CUSTOMER #*	*REPORT #*
Mon. Oct. 29, 2012	07:20	Mon. Oct. 29, 2012	07:33	0:13	0.216666	73.5	FAIRLEIGH F2			LOCK-OUT	TREE/LIMB	3060 LAKESHORE RD. FAIRLEIGH F2 LOCKOUT, TREE LIMB ON PRIMARY TR #22 REMOVED LIMB, FAIRLEIGH F2 CLOSED AND HOLDING	339	17115	1
Mon. Oct. 29, 2012	14:39	Mon. Oct. 29, 2012	14:40	0:01	1.666666	5.7	FAIRLEIGH F2			LOCK-OUT	HIGH WINDS		339		

Feeder Outage Report FAIRWOOD F6

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Thu. Sep. 20, 2012	09:32	Thu. Sep. 20, 2012	09:33	0:01	1.666666	1.7	FAIRWOOD F6			LOCK-OUT	BURNED OFF PHASE-LINE DOWN	54 PARK AVE. LOCK-OUT . FEEDER PICKED UP AFTER ONE ATTEMP MADE. LOUD BANG REPORTED BY CALLER AND SMOKE TR 25 REPAIRED RED PHASE CABLE, SLEEVED AND REPLACED CABLE. BACK TO NORMAL.	104	17047	1
Thu. Sep. 20, 2012	09:52	Thu. Sep. 20, 2012	09:52	0:00	0	0.0	FAIRWOOD F6			AUTO-RECLOSURE	BURNED OFF PHASE-LINE DOWN	54 PARK AVE. AUTO ON FAIRWOOD F6 . LOUD BANG REPORTED BY CALLER AND SMOKE TR 25 REPAIRED RED PHASE CABLE, SLEEVED AND REPLACED CABLE. BACK TO NORMAL. NO ONE OUT OF POWER.	104	17047	1
Sun. Oct. 7, 2012	10:41	Sun. Oct. 7, 2012	10:41	0:00	0	0.0	FAIRWOOD F6			AUTO-RECLOSURE	UNKNOWN	NO CALLS RECEIVED	104		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Oct. 15, 2012	03:24	Mon. Oct. 15, 2012	03:26	0:02	3.333333	3.5	FAIRWOOD F6			LOCK-OUT	UNKNOWN	FEEDER LOCKED OUT. MADE ONE ATTEMPT TO CLOSE IN AFTER 2 MIN. AND HELD. (HAD SOME WIND AT THE TIME OF LOCKOUT)	104		
Wed. Oct. 17, 2012	09:18	Wed. Oct. 17, 2012	10:18	1:00	1	104.0	FAIRWOOD F6			LOCK-OUT - HOLDOFF IN EFFECT	TREE/LIMB-LINE DOWN	800 LASALLE PARK RD. FAIRWOOD F6 LOCKED OUT UNDER HOLDOFF TO ARBORWOOD TREE. CONTRACTOR CONFIRMED CLEAR AND FEEDER LOCKED OUT AGAIN. BRANCH FOUND AND CLEARED AT 800 LASALLE PARK AND FAIRWOOD F6 CLOSED OK TO RESTORE ALL CUSTOMERS.	104	11097	6

Feeder Outage Report PARTRIDGE F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Mon. Oct. 29, 2012	21:33	Mon. Oct. 29, 2012	21:35	0:02	3.333333	7.7	PARTRIDGE F2			LOCK-OUT	HIGH WINDS	MANUAL RECLOSE SUCCESSFUL AT 2135	230		
Tue. Oct. 30, 2012	00:30	Tue. Oct. 30, 2012	02:17	1:47	1.783333	410.2	PARTRIDGE F2			LOCK-OUT	HIGH WINDS	912 PARTRIDGE DR, PARTRIDGE M.S.. PARTRIDGE F2 LOCK-OUT. TO BE PATROLLEDBY TR 15. FOUND PHASES TANGLED IN TREE. WIRES FIXED- WHOLE CCT PICKED BACK UP.	230	179	22

Feeder Outage Report PT NELSON F2

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Mar. 3, 2012	04:25	Sat. Mar. 3, 2012	05:38	1:13	1.216666	509.8	PT NELSON F2			LOCK-OUT	TREE/LIMB-LINE DOWN	216 HART AVE. TREE FELL ONTO 3 PHASE PRIMARY AT NORMAL OPEN SWICH S93, CAUSING FEEDER TO LOCK- CREWS MADE REPAIRS AND ISOLATED SECTION RESTORED TO NORMAL	419	8017	3
Sun. Sep. 2, 2012	22:48	Sun. Sep. 2, 2012	22:48	0:00	0	0.0	PT NELSON F2			AUTO-RECLOSURE	TREE/LIMB	3126 PRINCESS BLVD. PT NELSON F2 AUTO F285 BLOWN - LIMB ON LINE FOUND AND REMOVED - F285 RE-FUSED, CLOSED AND HOLDING.	419	1826	2
Sun. Sep. 2, 2012	22:48	Sun. Sep. 2, 2012	22:48	0:00	0	0.0	PT NELSON F2		E166,E167	AUTO-RECLOSURE	TREE/LIMB	3126 PRINCESS BLVD. PT NELSON F2 AUTO F285 BLOWN - LIMB ON LINE FOUND AND REMOVED - F285 RE-FUSED, CLOSED AND HOLDING.	419	1826	2
Mon. Oct. 29, 2012	20:05	Mon. Oct. 29, 2012	21:16	1:11	1.183333	413.0	PT NELSON F2			LOCK-OUT	HIGH WINDS	3092 NEW ST, PT NELSON M.S.. LOCK-OUT INSPECTION NEEDED. TR#30 TO PATROL. S284 @ HART AND PRINCESS OPEN 3 PHASE. TREE ZONE ISOLATED UNDER OTO 12-642.	349	2795	23

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Wed. Dec. 5, 2012	21:50	Wed. Dec. 5, 2012	21:50	0:00	0	0.0	PT NELSON F2			AUTO-RECLOSURE	BURNED OFF PHASE - SINGLE PHASING	245 ROSELAND CRSC REAR - SINGLE PHASE DOWN, REPAIRS MADE, ALL NORMAL.	419	17209	1

Feeder Outage Report SPRUCE F1

Dates: Sunday January 01, 2012 through Monday December 31, 2012

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sat. Mar. 3, 2012	01:36	Sat. Mar. 3, 2012	01:36	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	HIGH WINDS		281		
Sat. Mar. 3, 2012	02:52	Sat. Mar. 3, 2012	02:52	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	HIGH WINDS		281		
Sat. Mar. 3, 2012	07:53	Sat. Mar. 3, 2012	07:53	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	HIGH WINDS		281		
Sat. Mar. 3, 2012	09:36	Sat. Mar. 3, 2012	09:36	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	HIGH WINDS		281		
Sun. Jun. 17, 2012	15:54	Sun. Jun. 17, 2012	15:54	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	TREE/LIMB	200 STRATHCONA DR. #25 FOUND LIMB HAD HIT PRIMARY AND FELL CLEAR. #25 CLEARED LIMB FROM ROAD AND SIDEWALK.	281	16830	1
Sun. Jul. 22, 2012	15:52	Sun. Jul. 22, 2012	15:52	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	T-STORM		281		
Sun. Jul. 22, 2012	15:52	Sun. Jul. 22, 2012	15:52	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	4251 LAKESHORE RD. TR #22 FOUND FUSE BLOWN AT TX F154, CAUSE OF SPRUCE F1 AUTO @ 15:52. CREW REFUSE NEW TX F154 INSTALLED, CLOSED AND HOLDING	281	14265	2
Sun. Jul. 22, 2012	18:38	Sun. Jul. 22, 2012	18:38	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	T-STORM		281		

DATE OUT	TIME OUT	DATE IN	TIME IN	Duration h:m	Duration hr's	Customer Hr's	FEEDER	LINE SECTION	TX(S)	OPERATION	CAUSE	LOCATION/REMARKS	# OF CUSTOMERS	CUSTOMER #	REPORT #
Sun. Jul. 22, 2012	18:38	Sun. Jul. 22, 2012	18:38	0:00	0	0.0	SPRUCE F1			AUTO-RECLOSURE	DEFECTIVE TRANSFORMER	4251 LAKESHORE RD. TR #22 FOUND FUSE BLOWN AT TX F154, CAUSE OF SPRUCE F1 AUTO @ 15:52. CREW REFUSE NEW TX F154 INSTALLED, CLOSED AND HOLDING	281	14265	2

Appendix E

Attachment 2 (of 5):

Appendix B - Asset Management Strategy

Burlington hydro inc.

Asset Management Strategy 2013

TABLE OF CONTENTS

Appendices

Burlington Hydro Inc.

Asset Management Strategy

1. Burlington Hydro Overview

Burlington Hydro Inc. (BHI) was originally established in 1945 as the Burlington Public Utilities Commission. The company serves over 62,000 residential and business customers in the City of Burlington. It is committed to engineering and service delivery excellence and is an incorporated entity, owned by its sole shareholder, the City of Burlington. BHI maintains 32 substations and almost 1,600 kilometres of distribution lines throughout the municipality of Burlington. Its reliability statistics and Operation & Maintenance costs indicate that the distribution system is being well managed; recognizing that parts of the system are mature and include older facilities and sub-stations. These facilities are comprised of more components than many newer distribution systems and therefore require more attention to asset management.

2. Corporate Mission and Values

Mission Statement

- To efficiently deliver reliable electrical energy to our customers in the City of Burlington
- To provide a safe and rewarding work environment for our employees
- To assure that future supply is available to meet Burlington's growing needs
- To provide our shareholder with a superior rate of return.
- To be a community partner

Corporate Values

In pursuit of our goals, Burlington Hydro holds certain core values toward its stakeholders and key aspects of its operation.

Burlington Hydro Cares for People

- We provide a safe, healthy and fulfilling work environment for our employees, with fair remuneration, fair management and opportunities for learning and professional development;
- We value our relationships with our customers and work to win their trust and support;
- We interact with customers, employees, the public, and our business partners with integrity and respect, and at all times act in a responsible and professional manner.

Burlington Hydro Cares for the Community

- We are good corporate citizens and take pride in making significant contributions to community programs in which we can add value such as fundraising, energy conservation projects, business development activities, school safety programs, clean air initiatives, crime prevention programs, and other community giving such as blood donor clinics;
- We value the communities we serve and the environment in which we operate, managing environmental risks to eliminate or minimize adverse impacts associated with our businesses.

Burlington Hydro Cares about Stewardship

- We value the long term health and sustainability of Burlington Hydro;

- We will assure availability of a future electricity supply to meet customer needs and growth.

Burlington Hydro Cares about Performance

- We value a fully integrated business model: we deliver superior products to our customers in a safe and efficient manner, striving for excellence and continuous improvement in all aspects of our business.

Burlington Hydro Cares about Shareholder Value

- We create sustainable value for our shareholder by understanding and addressing customer needs, focusing on and promoting core business strengths, and pursuing appropriate business opportunities.

3. Asset Management Overview

BHI has established a comprehensive system of inspection and performance reporting procedures to provide for continuous assessments of its distribution business and to achieve consistency with its corporate mission and value statements. These procedures present information to satisfy the reporting requirements of the Ontario Energy Board's (OEB) Distribution System Code (DSC). However, BHI has also developed reporting mechanisms that go beyond these regulatory obligations and are focused on continuous performance improvements to ensure the availability of long term capacity to meet the needs of the growing community, all of which contribute to effective and successful management of the distribution system assets.

BHI regards asset management as the foundation for the performance of its distribution system. Senior management is committed to the process and ensures that sufficient resources are allocated to implement the strategy. This requires an upfront investment in personnel, internal and outsourced, to set up the strategy and the long term resources to complete the annual planning, inspecting, reporting and implementation activities. The quality and consistency of the reporting data is paramount to a successful plan. The responsibility for the continuous management of the strategy is assigned to a Project Engineer in the role of Asset Manager. The Asset Manager's responsibilities primarily involve risk management (Section 5 below), i.e. ensuring that:

- The inspection process is organized with assets identified in reasonable zones and segments.
- Inspections and follow up maintenance is continuously being effectively organized and performed
- Records are accurate and current including those in the GIS
- Condition analysis is completed correctly
- Potential Maintenance and Capital Budget recommendations are captured from the annual inspections and the Annual System Performance Report
- The condition of the distribution system, for the short, medium and long term periods, is reviewed to maintain and enhance the reliability of the system in the most cost effective manner

This up to date information provides key inputs to the maintenance budget and capital investment proposals.

3.1 Performance Initiatives

BHI continuously reviews its performance by addressing the primary operational issues that ensure the reliable supply of electricity to all customers including its obligations for regulatory compliance and the delivery of mandated initiatives by the Government of Ontario.

Use of an up-to-date SCADA system provides continuous data about the status, performance and loadings of all substations and distribution feeders. Investment in automated switching systems has also contributed significantly to the enhancement of performance that has been reflected in its reliability performance indices.

It also produces an annual System Performance Report that is a significant driver for recommendations on future expenditures.

Annual System Performance Report

This report provides an annual critique of the previous year's performance and provides constructive direction on the up-coming priorities for maintenance and capital investments with a strong emphasis on reliability performance improvements.
The following specific attributes are reviewed and addressed within the Annual System Performance Report:

1) Substation and feeder performance at 4.16, 13.8 and 27.6 kV primary voltage levels

2) Underground distribution

3) System demand and critical loading issues

4) System maintenance activities and priorities

5) Reliability statistics and observations

6) Future maintenance recommendations

7) Future capital budget recommendations

BHI operates a distribution system comprising high voltage networks at 27.6 kV, 13.8 kV and 4.16 kV. Outage data is monitored and records accumulated on the performance of all feeders at all voltage levels. This data is reviewed continuously and analyzed with attention given to the causes of feeder lock-outs, momentary interruptions and loadings. Any patterns of system failures are analyzed e.g. tree or animal contacts, underground cable failures. This performance analysis contributes to the prioritization of the maintenance activities and capital budgets projects.

3.2 Inspections and Assessments

The DSC clearly reinforces the principles of good utility practice and identifies a systematic approach to distribution system inspection and maintenance. BHI has enhanced these requirements to provide more complete condition assessments for all of its key facilities. This process provides for regular monitoring of these facilities and a balance to the performance measures of the distribution system.

4. Asset Management Considerations and Priorities

To provide consistency with its corporate mission and values BHI has to manage its assets while recognizing realistic performance goals. Customer expectations for the delivery of safe, reliable electricity at a reasonable price have to be respected. The following considerations are critical to the strategy:

- The strategy should create opportunities for improved efficiencies.
- The activities should demonstrate good stewardship in the long term up-keep of the distribution system.
- Service delivery should be safe, fair and consistent within all customer groups.
- The performance measures should demonstrate progress towards and/or achievement of the goals within reasonable budget considerations.
- Maintenance plans should be consistent with good utility practice but capture specific items from the annual assessments and performance report.
- Capital investment plans should justify proposed expenditures and be flexible to respond to new priorities and extended life expectancies.
- Annual reviews of the strategies and asset management processes.

5. Risk Management

Risk management is a fundamental activity in any business and in the electrical distribution industry it requires a systematic approach to assess the following attributes of each asset:

- Condition
- Risk exposure
- Age and life expectancy
- Location
- Operational data, and
- Maintenance

BHI developed a detailed process to consistently record and track the attributes of its major system assets. The baseline for the condition of these assets was addressed in a comprehensive 2008/9 assessment of all components in the summary categories of Overhead Lines, Underground Lines and Stations. The data from these assessments was used to complete condition analyses, and to take into account the performance considerations from the annual System Performance Report. This forms the basis for maintenance and capital investment recommendations. The continuous collection and upkeep of this data capitalizes on the inspection activities required by the DSC plus the maintenance activities of its field crews and specialized contractors. This upkeep, plus the results of any capital improvements, is critical to maintaining accurate and current records of the assets.

Details of the annual inspection processes and the associated forms are included in the Appendices. The framework for the assessments and the performance of the distribution system are contained within the following activities.

5.1 Inspections, Condition Assessments and Analysis

For ease of administration BHI has established a grid of 3 geographic areas within the city. The grids are identified on the Inspection Grids map in Appendix A1.

The overhead and underground inspections are performed in each grid using the appropriate Overhead and Underground asset inspection check lists in BHI's Mobile Asset Inspections Software (MAIS). Typical forms are shown in Appendices B and C. Any Concern items are defined and categorized as follows:

1. **Emergency** (reported to control room and rectified immediately)
2. **Not Urgent** (not an emergency but engineering needs to review and make a decision)
3. **O.K.** (asset in good condition)

Panasonic Thoughtbook tablets are used to collect the data for the Overhead and Underground assets and the information is populated within the MAIS, allowing for efficient summary of all concern items within each grid. Each concern is checked/described within the software which automatically creates an email to the responsible person who then addresses each concern via a trouble report or system priority and updates the status in MAIS accordingly.

The upkeep of this data is critical as concern reports are addressed either by maintenance activities or capital investments.

The Minimum Inspection Requirements of the DSC have to be addressed and reported annually. The Asset Manager ensures that these inspection cycles are coordinated to minimize duplication of effort and maximize the efficiency of the process. He/she also ensures that any changes to the condition of the components, in a grid, due to inspection, maintenance and/or capital investments are updated within the database. Periodic audits of inspections are made to ensure that consistent, accurate records are maintained.

All substations are inspected monthly with the results documented on the Station Maintenance Check List (Appendix D). As there are only 32 substations within the BHI system this data is currently collected and maintained using existing hard copy forms. The Manager of Operations reviews the assessments to identify any issues requiring immediate attention or consideration within the budget recommendations. All substations are shut down and recommissioned every 5 years during which time all equipment is thoroughly tested and overhauled. Comprehensive inspection and testing data is collected and reviewed for signs of deterioration and potential failure. Such reviews may contribute to future budget recommendations.

5.2 Performance Considerations

BHI's annual System Performance Report provides detailed information on the performance of its substations and distribution feeders at all primary voltage levels. It analyses the worst performing feeders and provides commentary and recommendations for improvements.

The feeder performance details include the history of Auto-Reclosures and Lock-Outs for all feeders, for the last 10 years. The commentaries note all feeders experiencing 5 or more Auto-Reclosures or 2 or more Lock-Outs, during the last year, and summarize the causes of the performance issues. Substation capacities and loadings are reviewed to identify any weaknesses in the system capabilities for station and feeder back-ups. Maintenance activities and priorities are also reviewed, in detail, to confirm consistency with the budgetary plans and identify issues requiring renewed or accelerated attention. Reliability statistics (SAIDI, SAIFI, CAIDI and SAARI) are tracked over the last 10 years and provide a perspective on the longer term trends for the performance of the distribution system.

Another significant characteristic is the number of customers supplied by each feeder. These are identified in the report and are also taken into account in budget recommendations.

5.3 Innovation and New Technology

Duration of outage times has not been a particularly serious concern at BHI. The SAIDI indicator has continually improved and long duration outages greater than 2 hours are fairly uncommon.

This is due to the nature of the mainly urban design of the distribution system with inherent back-up feeders in place. Any long duration outages are likely to result from circumstances beyond the control of BHI for example loss of supply from Hydro One, extreme weather, vehicle accidents.

BHI introduced its GridSmartCity™ initiative to transform its electricity distribution system into a true Smart Grid. New opportunities to apply “Smart Grid” technologies to enhance service reliability are researched and evaluated as pilot projects to improve the performance of individual feeders. An example of applying new metering technology to feeder and transformer monitoring is capitalizing on the data from Smart Meters to detect and minimize losses.

BHI expects to make continued investments in these “Smart Grid” technologies, building on the knowledge and experience gained from its pilot projects. This innovation will be reflected in future capital budget expenditures.

5.4 Risk Analysis and Recommendations

The annual System Performance Report includes monitoring and commentary on reliability indices (SAIDI, CAIDI, SAIFI, SAARI) with recommendations on maintenance and capital expenditures based on the performance of the individual feeders. These performance considerations have to be rationalized with the results of the annual inspections and the potential for Smart Grid/New Technology applications to arrive at maintenance and Capital Budget recommendations that represent the best value to BHI and its customers. The recommendations also have to reflect the potential timeframes resulting from the annual inspections and require experienced judgment. The Asset Manager consults with the appropriate engineering and operations personnel to arrive at consensus for these recommendations.

6. Maintenance Planning

BHI carries out the following annual maintenance activities that are consistent with good utility practices:

- **Wood pole testing and replacement**

  BHI has taken a proactive approach to the annual testing and replacement of wood poles. The testing is performed by an engineering company using specialized test equipment. Defective poles are identified for replacement with critical poles replaced immediately and a high priority placed on those equipped with transformers or underground dips.

- **Insulator Washing**

  Insulator washing is an important preventative measure to minimize flashovers and pole fires. Particular attention is given to the 27.6kV system including any areas where there are underbuilt circuits and areas with potential for high salt contamination i.e. adjacent to highways.

- **Infrared Thermography of the Overhead system and Municipal Substations**

  Annual inspection and scanning of the overhead system and substations is an important and worthwhile part of a BHI’s preventative maintenance work.

- **Cleaning of Switching Cubicles (Dry-ice cleaning)**

BHI has approximately 162 pad mounted switching cubicles within its distribution system. Inspections are carried out and any defects are identified and corrected. A specialized maintenance technique, using “dry ice”, is employed, to clean a selected number of the cubicles. This work is safely completed with the equipment energized, therefore reducing the time and cost for switching activities.

- **PCB Testing and Replacement of Distribution Transformers**

  BHI has approximately 9000 distribution transformers within its system. As a result of environmental legislation, only those units manufactured prior to 1980 are candidates for PCB contamination. By the end of 2007 BHI had tested all of these transformers. All will be replaced in accordance with the legislation, by 2014.

- **Tree Trimming**

  BHI’s tree trimming is completed in accordance with its established 3 year cycle; this is usual utility practice. A typical 3 year Tree Trimming Schedule is shown in Appendix A2.

- **Vault Inspection and Cleaning**

  Customer owned vaults that contain BHI distribution equipment are inspected with an eye on condition of equipment, operational and public safety.

These activities are organized geographically and are coordinated with the Minimum Inspection Requirements of the DSC. Any maintenance recommendations resulting from the poor performance of particular feeders that are required within a one year period are addressed within this plan and documented on the O & M Budget Request Form (Appendix E). As noted in section 5.1, the Asset Manager captures any changes to the condition of the components, due to maintenance, and updates them within the database to ensure the records are kept current.

7. Capital Planning

Short Term

Any capital investment recommendations resulting from the performance analysis of particular feeders, the annual inspections and any applicable new technology solutions, that are required within a one year period, are considered annually within this plan. These are prepared, by the responsible engineering or operations manager and are documented on the Capital Budget Request form (Appendix F) and forwarded to the Engineering and Operations senior management.

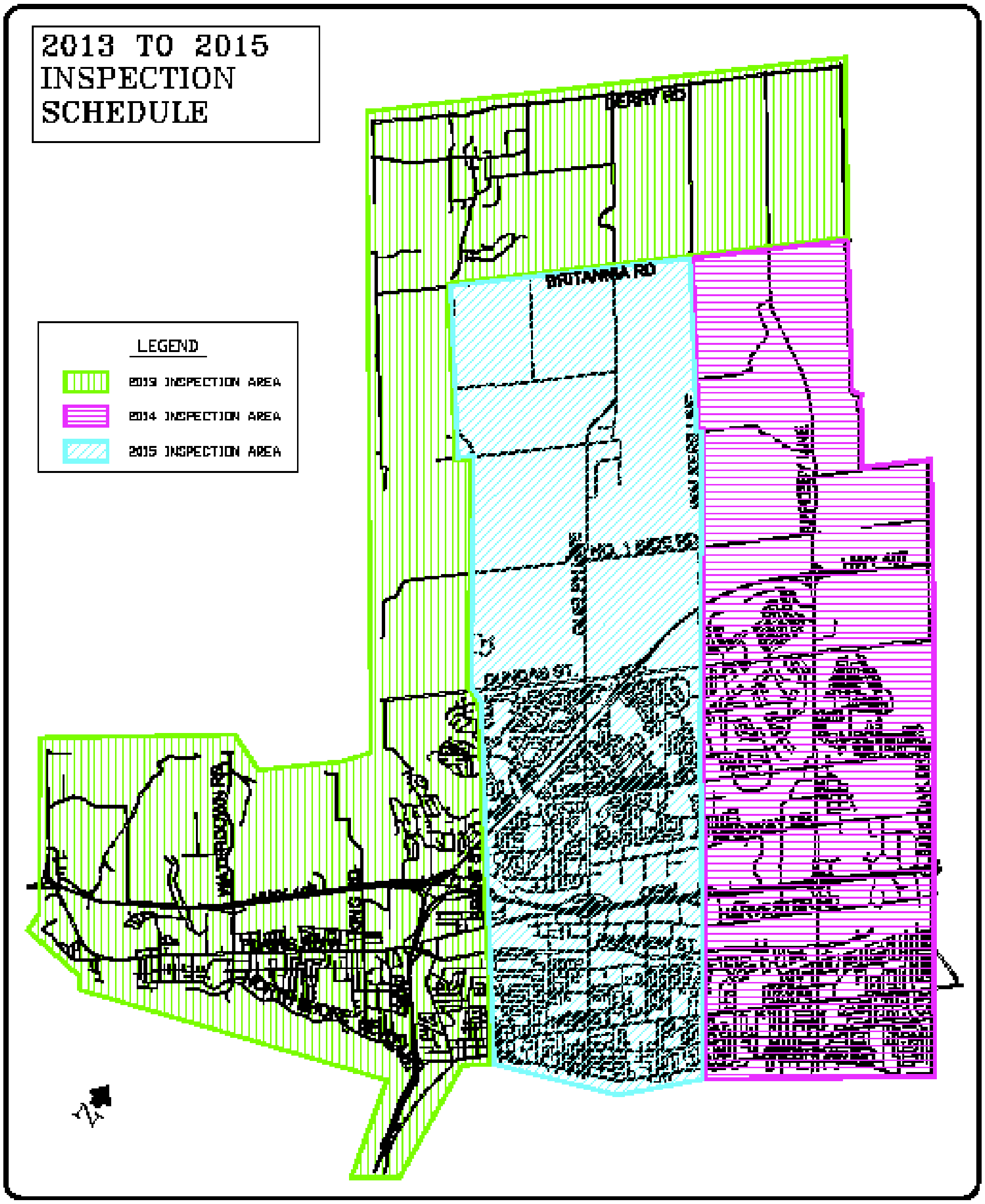
Long Term

The longer term recommendations resulting from the performance analysis of particular feeders, the annual inspections and any applicable new technology solutions are captured and summarized for internal budget purposes. Potential timeframes and budgetary estimates for individual projects are documented on the Capital Budget Request form (Appendix F) and subjected to annual review and prioritization.

This plan is updated and refined annually to capture the progress in maintaining and upgrading of the distribution system and any significant changes in the performance of the distribution system.

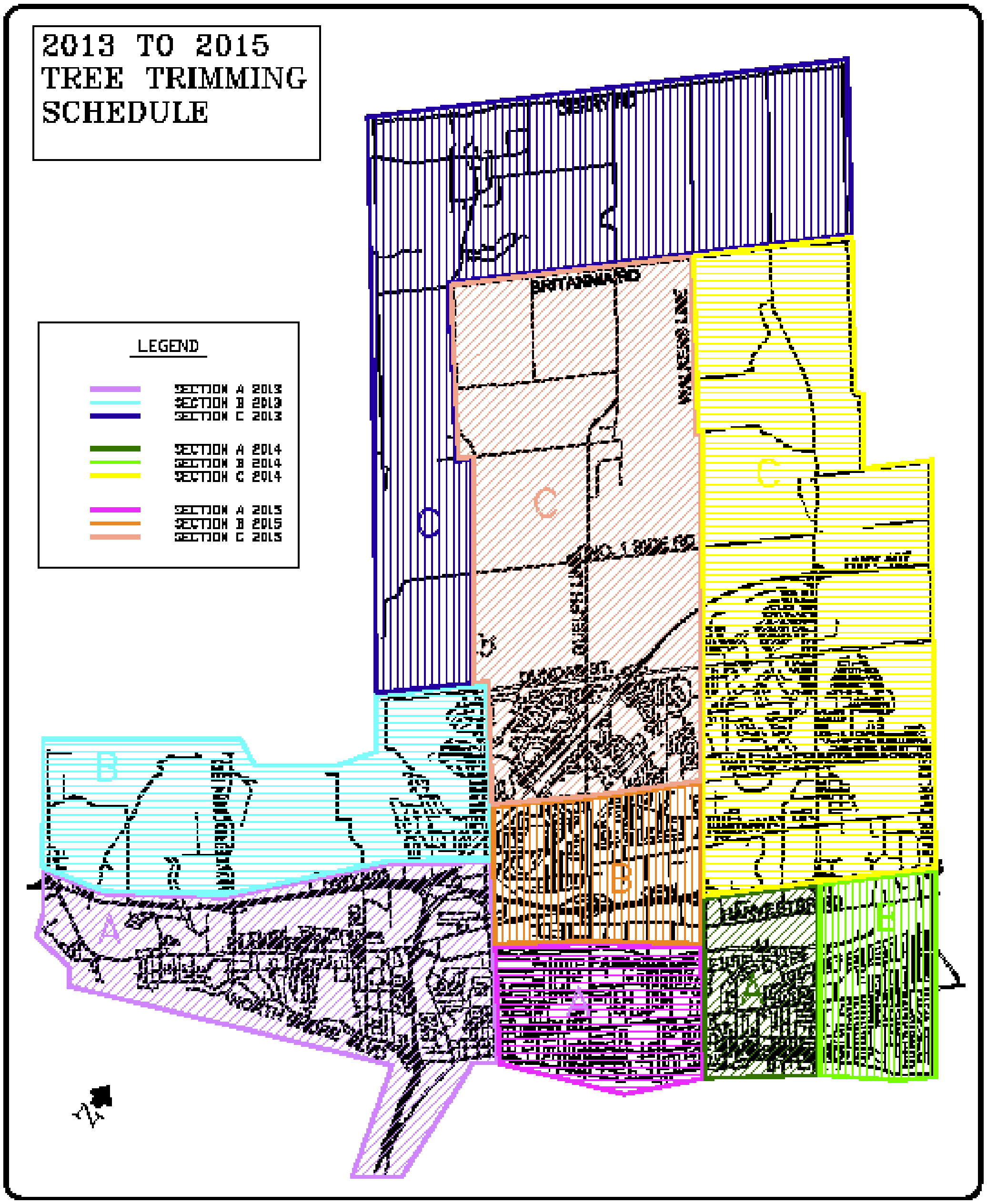
APPENDIX A

Appendix A1



2013 TO 2015
INSPECTION
SCHEDULE
LEGEND
2013 INSPECTION AREA
2014 INSPECTION AREA
2015 INSPECTION AREA
DERRY RD
BRITANNIA RD
DUNDAS ST
WATERDOWN RD
HWY 407

Appendix A2


2013 TO 2015
TREE TRIMMING
SCHEDULE
LEGEND
SECTION A 2013
SECTION B 2013
SECTION C 2013
SECTION A 2014
SECTION B 2014
SECTION C 2014
SECTION A 2015
SECTION B 2015
SECTION C 2015

APPENDIX B

Pole inspection:		Emergency	Not Urgent	OK
POLE	Pole Exists (optional)	Yes	No	
	Broken / Rotten			
	Leaning			
	Condition (Damaged)			
	Finished Grade			
	Crossarms / Brackets			
	Insulators / Brackets			
	Pins			
	Loose Hardware			
	Grounding			
	Southern Yellow Pine			
RISER	Terminators			
	Arresters			
	Cables / Guards			
	Brackets			
	Tension			
ANCHORS AND DOWN GUYS	Guy Guard			
	Rod Condition			
	Guy Breaker			
	Strut Guy Required	Yes	No	
	Guy Steel			
PRIMARY CONDUCTOR	Sag			
	Size - #4 Al/Cu, #6 Al/Cu	Yes	No	
	Repairs (i.e. Splices)			
	Broken Strands			
SECONDARY CONDUCTOR	Open Wire			
	Triplex			
	Sag / Clearance			
SAFETY	Public Safety			
	Worker Safety			

Switch inspection:		Emergency	Not Urgent	OK
CONDITION	Connections	○	○	○
	Alignment	○	○	○
	Insulators	○	○	○
	Grounding	○	○	○
	Arrester Replacement	○ Yes	○ No	
	Locks	○ Yes	○ No	
	Designation Condition		○	○
	Porcelain Underslung	○ Yes	○ No	
SAFETY	Public Safety	○	○	○
	Worker Safety	○	○	○
	Vegetation Interference	○	○	○
	Environmental Hazards	○	○	○

Bank inspection:		Emergency	Not Urgent	OK
CONDITION	Oil Leaks	○	○	○
	Below Secondary (Location)	○ Yes	○ No	
	Cracked Bushings	○ Yes	○ No	
	Arrestor Replacement	○ Yes	○ No	
	Brackets	○	○	○
	Cut-Outs	○	○	○
	Cluster-Mount (3ph)	○	○	○
	Designation Condition		○	○
	Rust	○	○	○
SAFETY	Public Safety	○	○	○
	Worker Safety	○	○	○
	Vegetation Interference	○	○	○
	Environmental Hazards	○	○	○

APPENDIX C

Padmount inspection:		Emergency	Not Urgent	OK
CONDITION	Paint	○	○	○
	Rust	○	○	○
	Is Lock Installed	○ Yes	○ No	
	Are Pentahead Bolts Installed	○ Yes	○ No	
	Designation Condition		○	○
	Physical Damage	○	○	○
	Evidence of Animal Intrusion	○ Yes	○ No	
	Switching Access	○	○	○
	Grounding	○	○	○
	Doors Open	○ Yes	○ No	
	Elbows	○	○	○
	Concrete Pad	○	○	○
	Grade Concerns	○	○	○
	Are Bollards Required	○ Yes	○ No	
	Condition of Bollards	○	○	○
OTHER	Danger Signage		○	○
	Clearance Signage		○	○
	Oil Leaks	○	○	○
	Is There Vehicle Access	○ Yes	○ No	
SAFETY	Is There a Public Safety Issue	○ Yes	○ No	
	Is There a Worker Safety Issue	○ Yes	○ No	
	Vegetation Interference	○	○	○
	Environmental Hazards	○ Yes	○ No	

Submersible inspection:		Emergency	Not Urgent	OK
CONDITION	Paint	◯	◯	◯
	Rust	◯	◯	◯
	Securing Nuts	◯ Yes	◯ No	
	Is There a Transformer ID Tag	◯ Yes	◯ No	
	Physical Damage	◯	◯	◯
	Grade Concerns	◯	◯	◯
	Switching Access	◯	◯	◯
	Grounding	◯	◯	◯
	Access Cover	◯	◯	◯
	Elbows	◯	◯	◯
	Primary Connection Bar	◯	◯	◯
	Secondary Connection Bar	◯	◯	◯
	Vault Condition	◯	◯	◯
OTHER	Oil Leaks	◯	◯	◯
	Is There Vehicle Access	◯ Yes	◯ No	
SAFETY	Is There a Public Safety Issue	◯ Yes	◯ No	
	Is There a Worker Safety Issue	◯ Yes	◯ No	
	Vegetation Interference	◯	◯	◯
	Environmental Hazards	◯ Yes	◯ No	

CUBICLE INSPECTION:		Emergency	Not Urgent	OK
TYPE	K-Bar dead-front elbow		○	○
	S & C (PMH) live-front	○	○	○
	Vista	○	○	○
CONDITION	Paint	○	○	○
	Rust	○	○	○
	Locks	○ Yes	○ No	
	Pentahead Bolts	○ Yes	○ No	
	Designation Condition		○	○
	Physical Damage	○	○	○
	Animal Intrusion	○ Yes	○ No	
	Switching Access	○	○	○
	Grounding	○	○	○
	Doors Do Not Open	○ Yes	○ No	
	Water Present	○ Yes	○ No	
	Danger Signage		○	○
	Clearance Signage		○	○
IR	IR Present	○ Yes	○ No	
	IR Compartment	[dropdown]		
	IR Cell	[dropdown]		
	IR Termination	○ Yes	○ No	
OTHER	Public Safety	○	○	○
	Worker Safety	○	○	○
	Vegetation Interference	○	○	○
	Environmental Hazards	○ Yes	○ No	
	Insulator	[dropdown]		
	Change out Unit	○ Yes	○ No	
	Change out Insulator	○ Yes	○ No	
	Cleaning Required	○ Yes	○ No	

Manhole inspection:		Emergency	Not Urgent	OK
ACCESS	Vehicle Access	○ Yes	○ No	
	Worker Access	○ Yes	○ No	
CONDITION	Vault Condition	○	○	○
	Grounding	○	○	○
SAFETY	Public Safety	○	○	○
	Worker Safety	○	○	○
	Vegetation Interference	○	○	○
	Environmental Hazards	○	○	○

Vault inspection:		Emergency		Not Urgent		OK
VAULT	Indicating Gauges					
	Grounding (room door)					
	Grounding (ground bus)					
	Vault Condition					
	Service Required		Yes		No	
	Light and Recepticles					
SAFETY	Area Lighting					
	Area Ventilation					
	Security					
	Smoke Detection					
	Drip Proof Design					
	Public Safety					
	Worker Safety					
	Vegetation Interference					
	Environmental Hazards					
	Danger Signage					
	Clearance Signage					
	Worker Access		Yes		No	

APPENDIX D

Station Maintenance Check List

Station: **Date:** **Checked By:**

Feeder Checks	F1	F2	F3	F4	F5	F6	F7	F8
Check Manual Reclosure Blocked/Unblocked								
Check Reclosing Relay In Reset Position								
Check Amp Meters Set on High Scale								
Check Cell Lights note replacements								
Battery Condition circle one	Good	Fair	Bad	Battery Water Added circle one			Yes	No
Eyewash Station water replacement	Date replaced		dd_mmm_yy →					
Record Charger Volts	( )Volts							
Record Charger Amps	( )Amps							
Record Transformer	T1 ( )		Oil Level		T2 ( )		Oil Level	
Gauge Reading and	T1 (/)		Oil Temp		T2 (/)		Oil Temp	
Reset (act/peak)	T1 (/)		Winding Temp		T2 (/)		Winding Temp	

	Check	Notes
Check TX for Oil Leaks Confirm TX fans auto position		
Check for Broken Porcelain and Tracking on dip poles		
Check Lighting and Timers		
Check Raceway for Drainage		
Check Fence and gate Condition (weed growth)		
Check Warning Signs Fence and Walls		
Check Grounds at Fence and Transformer		
Check Overall Building Clean interior/exterior		
Check Fire Extinguishers date & sign tag		
Check All Heating Units operational seasonal		

Check Exhaust Fan Operation seasonal		
Check Vent Filter seasonal		
Check Dehumidifier seasonal set at 45% Off Oct-->Apr		
Check / Test Fire Alarm Station Entry Door Lock/Unlock Check Mayday alarm with Control Jan,Mar,May,Jul,Sep,Nov		

APPENDIX E

APPENDIX F

Attachment 3 (of 5):

Appendix C - Green Energy Act (GEA) Plan

Burlington Hydro Inc.

Green Energy Act Plan

Date Due
September 2013

Prepared By
Archie Bax, P. Eng.

Submitted by
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Green Energy Act Plan

Privileged and Confidential Work Product for Burlington Hydro Inc.

TABLE OF CONTENTS

Executive Summary

Burlington Hydro Inc. (BHI) is an energy services company in the power distribution business, serving approximately 65,000 residential and commercial customers. The company is wholly owned by the City of Burlington.

This Plan is the corporation's response to the requirements of the Green Energy Act (GEA) and the Ontario Energy Board's Filing Requirements (EB-2009-0397).Based on current information, the Plan represents a five year perspective of BHI's plans for its distribution system to connect and integrate renewable generation facilities.

BHI's distribution system is capable of accommodating all known renewable generator applications with the exception of the two feeders emanating from Palermo TS which are transmission constrained. Hydro One has no immediate plans to make modifications to this station to mitigate the constraints so they will be in place for the foreseeable future. Looking to the future and considering only the BHI distribution system and not the Hydro One TS's, the 27.6 kV system has ample capacity to accommodate new renewable generation, the 13.8 kV less capacity but is still viable, and the 4.16 kV system is limited in its ability to accommodate significant amounts of new renewable generation. The limitations relate directly to the system voltage levels and what each voltage level can accommodate.

The BHI distribution system can accommodate all known projects, as is. At present there are no renewable generation and connection capital projects planned to accommodate new renewable generation. This capability will be further enhanced by the addition of the new Tremaine TS in 2013, also on the 27.6 kV system.

There is potential for the development of renewable energy within the BHI service area. Roof top units in the urban areas and ground mounts solar units in the rural area particularly have lots of room to grow. In response BHI has a website with Form downloads to assist customers and developers in proceeding with their applications.

BHI's Smart grid plans are part of the Distribution System Plan report and are not included in this report. BHI considers Smart Grid implementation to be part of the normal operating plans and expenses and so are addressed in those plans.

Customer Engagement and Communication is also included in the Distribution System Plan report.

The expenditures for planned connections for renewable generation as well as SCADA, Renewable Enabling Improvements and Smart Grid investigations are expected to be minimal based on the applications received and the capability of the distribution system to accommodate these applications. All expenditures are included in the Capital Expenditure Plan.

1. BHI PLAN

The GEA plan is divided into two main sections and an appendix. These sections follow the requirements of the OEB Filing Requirements EB-2009-0397, as follows:

- Section 2 describes the present situation, the anticipated future connections and the ability to accommodate them.
- Section 3 covers the planned development and costs to accommodate renewable generation over the next 5 years, including Renewable Enabling Improvements, such as SCADA and Smart Grid.
- Appendix A covers the technical criteria used by BHI.

2. CURRENT ASSESSMENT

BHI serves the City of Burlington. Included in their service area is the downtown core, suburban residential areas, as well as surrounding semi-rural areas, and comprising a service area of approximately 185 square kilometres. Part of the surrounding semi-rural area comes under the Green Belt Plan Area. In 2011 Burlington has a population of 175,000. BHI is responsible for providing all regulated distribution services within its service area and supplies approximately 65,000 residential and commercial customers. The System Peak load occurred in July 2011 and was 380 MW

BHI is presently supplied by Hydro One from five transformer station (TS), namely Burlington, Cumberland, Bronte,Palermo and in 2013, a new station, Tremaine TS, was added. All of the TS's are owned and operated by Hydro One including the feeder breakers. BHI has twenty eight (28) 27.6 kV distribution feeders emanating from the TS's and these supply BHI customers either via the 27.6 kV main feeders, or through Municipal Substations (MS's) that step the voltage down to 13.8 kV and 4.16 kV for use by local customers. BHI owns and 13 - 27.6/13.8 kV MS's with 28- 13.8 kV feeders, and 29 - 27.6/4.16 kV MS's and 99 - 4.16 kV feeders. The new Tremaine TS will provide BHI with 4 feeders initially in 2013 with a provision for two additional breaker positions in the future. .

All the feeders within the service area belong to and are operated by BHI. BHI does not have any feeders embedded within another utility's system. Even the two feeders emanating from Palermo TS are owned by BHI all the way from the TS, with metering at the City boundary. The metering allows for the adjustment of line losses incurred outside the BHI service area.

BHI does not have any other LDCs embedded within its distribution system.

There is a high potential for development of renewable generation. Roof top solar units could be installed on some of the many roofs in the downtown core and surrounding suburbs. As well, the area in the north west of the City is predominantly rural land, suitable for ground mount solar installations. Even though this semi-rural is largely within the Greenbelt, renewable generation for farmers is encouraged. For example, farms located within Ontario's Greenbelt that satisfy current eligibility requirements for the cost-share program, have ready access to government funding through an agricultural program. Currently there are no known developers of renewable generation pursuing development in this area.

BHI has identified the actual location on the grid of all existing generators as well the probable connection points and feeders for all proposed projects that they are aware of. Hence the description and the tables include current connected and future proposed generation by station and feeder based on this information. Some potential projects, where only information such as location and generator size were given and no further follow-up by the generator has happened, have not been included since they are too preliminary. These projects amount to about 13,000kW of generation with 10,000kW of this total concentrated in three projects: two of 3,500kW and one of 3,000kW. These projects are not active at this time so they have not been included in the calculations that follow.

2.1. BHI's Capacity to Accommodate Renewable Generation

BHI is a summer peaking LDC with a peak load of 380 MW. Load growth is modest particularly in light of the current economic situation as well as energy efficiency and demand management programs. New residential subdivisions and commercial developments have been installed for the past years. This is expected to continue for several years into the future.

2.1.1. Transmission Station

TS Loading

Bronte TS. BHI has Four (4) breaker positions at Bronte TS, voltage 27.6 kV.

Burlington TS. BHI has twelve (12) breaker positions at Burlington TS, voltage 27.6 kV.

Cumberland TS. BHI has ten (10) breaker positions at Cumberland TS, voltage 27.6 kV.

Palermo TS. BHI has two (2) breaker positions at Palermo TS, voltage 27.6 kV.

Tremaine TS. BHI has 4 feeders to be connected in 2013 and has provision for 2 additional breaker positions in the future.

TS Constraints

Hydro One has indicated on their list of existing station capacity dated 26th October 2012, the capacities for the BHI supply stations. This list shows that Bronte, Burlington and Cumberland have sufficient short circuit and thermal capacity, but Palermo does not.

Palermo has zero short circuit capacity available. The following table shows the available capacity values as retrieved from the Hydro One list:

Table 4: Transformer Station Constraints

TS	Bus Name	Short Circuit Capacity (MVA)	Thermal Capacity (MW)
Bronte	Q	135.8	63.9
	BY	No BHI feeders	No BHI feeders
Burlington	BY	86.3	46.8
	JQ	87.1	47.7
Cumberland	B	51.0	41.7
	Q	49.8	44.2
Palermo	BY	0.0	71.2

Thermal Capacity represents the estimated name plate amount of generation that can be added to that bus or station, taking into account the projects that have been allocated capacity as of the 26th Oct. 2012.

The Short Circuit capacity represents the remaining ability of the station to accept additional short circuit contributions. Palermo is in effect short circuit constrained and proposed projects connecting to this station are on hold. Because any additional generation must be able to operate within both the station's thermal capacity and the short circuit capacity, and taking into account commitments made, Hydro One only allows the approved bus capacity stated.

There are, however, exceptions to the present transmission constraint:

- This constraint does not affect projects that have been previously approved and have a completed Connection Impact Assessment (CIA). Provided they comply with Hydro One's ongoing requirements, these projects will be able to proceed.
- MicroFIT projects are exempt from transmission constraints.

Summary

BHI has sufficient TS capacity available to connect renewable generation with the exception of Palermo TS. Hydro One has no plans to upgrade Palermo the feeders from this station will not be able to accommodate new projects nor the projects presently on hold.

BHI’s plan is to continue to advise prospective developers of the constraint until there is a change in the conditions at the station.

2.1.2. 27.6kV Distribution Feeders

Feeder Availability

Table 5 following shows BHI’s 27.6 kV distribution feeders and their potential for renewable generation connections. This table does not take into account any transmission system limitations, it relates purely to the feeders under BHI’s ownership and control.

Values in Table 5 are derived from the BHI’s Connection Criteria as detailed in the Appendix A.

BHI’s customers are supplied by main feeders that meet or exceed present requirements. Table 5 below shows this clearly, the main feeders have excess capacity that can be used to support renewable generation. The reason for this is a main feeder system that is designed and built consistent with good utility practice.

Summary

The 27.6 kV main distribution feeders are capable and ready to accommodate additional renewable generation.

Table 5. 27.6 kV Feeders - Available Renewable Generation Capacity

Feeder	Voltage (kV)	Rating (amps)	Max Line Loading (amps)	Line Loading (MW)	Existing Generation (MW)	Generation Pending (MW)	Available Capacity at Breaker (MW)
Note 4			Note 1	Note 3		Note 2	
13M25	27.6	600	400	19.000	0.000	0.400	18.600
13M26	27.6	600	400	19.000	0.004	0.026	18.971
13M27	27.6	600	400	19.000	0.250	0.500	18.250
13M28	27.6	600	400	19.000	0.000	0.250	18.750
39M1	27.6	600	400	19.000		0.000	19.000
39M2	27.6	600	400	19.000	0.080	0.147	18.773
39M3	27.6	600	400	19.000		0.000	19.000
39M4	27.6	600	400	19.000	0.040	0.269	18.691
39M5	27.6	600	400	19.000	0.017	0.020	18.963
39M6	27.6	600	400	19.000	0.010	0.364	18.626
39M31	27.6	600	400	19.000	0.010	0.011	18.979
39M32	27.6	600	400	19.000	0.016	0.261	18.724
39M33	27.6	600	400	19.000	0.063	0.019	18.918
39M34	27.6	600	400	19.000	0.103	0.000	18.897

39M35	27.6	600	400	19.000	0.020	0.000	18.980
39M36	27.6	600	400	19.000		0.012	18.989
76M21	27.6	600	400	19.000	0.050	1.104	17.847
76M22	27.6	600	400	19.000	0.009	0.050	18.941
76M23	27.6	600	400	19.000		0.104	18.897
76M24	27.6	600	400	19.000	0.010	0.260	18.730
76M25	27.6	600	400	19.000	0.007	0.004	18.990
76M26	27.6	600	400	19.000	0.013	0.000	18.987
76M27	27.6	600	400	19.000		0.004	18.997
76M28	27.6	600	400	19.000	0.017	0.010	18.973
76M29	27.6	600	400	19.000		0.104	18.897
76M30	27.6	600	400	19.000	0.438	1.325	17.237
A4M5	27.6	600	400	19.000	0.005	0.003	18.992

Notes:

1. Applies to any section of the feeder.

2. Pending means any renewable generation for which there is an application or that BHI is aware of.

3. Available capacity applies to the main feeder only, it does not apply to the TS, or radial taps.

4. Only feeders with renewable generation connected and / or proposed are listed in the table.

2.1.3. 13.8 kV Municipal Substations

Table 6 shows the status of the 13.8 kV MS's and their ability to accommodate renewable generation. It does not take into account any limitations on the transmission system.

As can be seen, based on the existing generation and the total pending possible projects that BHI is aware of, the 13.8 kV MS's have sufficient capacity to connect all known possible projects that they are aware of. In calculating the capacity to connect generation, as noted in Appendix A, the value is the maximum rating of a single transformer plus the minimum load on the transformer. Since BHI does not have the minimum load values for the transformers available at this time, the capacity used in Table 6 is 60% of the nominal bank rating (ONAN) and no allowance for minimum Load. This gives a conservative estimate of the available capacity for the station but this conservative estimate is still more than adequate to allow all the presently known, proposed generation to be connected.

Table 6 - 13.8 kV Municipal Substations – Available Generation Capacity

Station Name	Bank	Bank Rating (MVA)	Gen. capacity available (MW)	Existing Generation (kW)	Generation Existing + Pending (kW)	Available Generation Capacity at MS (kW)
			Note 1		Note 2	Note 3
Fairview	T1	10	6	0	0	6000.0
Fairview	T2	10	6	0	350	5650.0
Interchange	T1	10	6	0	150	5850.0
Lowville	T2	10	6	53.7	303.7	5696.3
Orchard	T1	10	6	10	10	5990.0
Palmer	T1	10	6	0	365	5635.0
Palmer	T2	10	6	0	0	6000.0
Reservoir	T1	10	6	26.5	36.5	5963.5
Reservoir	T2	10	6	10	10	5990.0
Towerline	T1	12	7.2	0	0	7200.0
Towerline	T2	10	6	6.44	6.44	5993.6
Tyandaga	T1	10	6	30	30	5970.0
Tyandaga	T2	10	6	10	60	5940.0

Note 1: This is the amount of generation that can be connected to the station. See text above for limitations noted.

Note 2: This includes all existing connected generation and all proposed generation projects that BHI is aware of at this time.

Note 3: This is the residual capacity to connect new generation based on the station capacity only and not including upstream or downstream limitations.

Summary

The 13.8 kV MS's are capable of connecting new load beyond the current existing and proposed loads and do not represent a limitation at this time.

2.1.4. 13.8 kV Main Feeders

The BHI 13.8 kV feeders have a specific capability to accommodate generation. The details are provided in Appendix A. Table 7 shows the actual peak load for 2012 as well as the existing connected generation and the existing generation plus all projects that BHI has been contacted about and have details as to location and size of the possible generation installations. This information has been processed further to include the feeders the generators would be connected to.

The table shows that the 13.8 kV feeders have adequate capacity to connect all existing and proposed generation projects based solely on the feeder capacities. This does not mean that no constraints exist in the system upstream from the feeder but only that the feeder is not a limitation.

In Table 7 a column showing the peak load current less the current supplied by the existing and proposed generation. This was created to give insight into potential relaying issues at the feeder breaker.

A feeder normally has overcurrent protection that operates with the premise that current flows from the station transformer, through the feeder breaker, through the feeder to the load. When a generator is connected to the feeder, as long as the net current as seen by the feeder breaker protection is toward the load the protection will operate properly. If the net current flow is in the opposite direction as seen by the breaker protection then the protection needs to be checked if this condition can be accommodated. This may involve the replacement of any protection equipment that does not accommodate reverse power flow.

The correct way to assess this possible change in current flow is to take the minimum load current on the feeder during daylight hours and subtract the maximum generator current. The minimum load current on the feeder figures are not available from BHI but from the table it can be seen that there are only a few instances involving the larger generators where this is a remote concern. We can also make an assumption that for the larger generators a three phase connection would be used or conversely if the generators are single phase then they would be connected to different phases. Hence for the larger generation capacity it is assumed to be three phase generation when calculating the table values for the net current.

Also note that the larger renewable generator installations are all proposed. The reverse power considerations need to be addressed in the future if and when these projects proceed.

Table 7. 13.8 kV Distribution Feeders – Available Capacity

Feeder	Actual Peak Load (amps)	Existing Generation (kW)	Total + Pending Generation (kW) Note 1	Total Allowable Generation (kW)	Available Capacity (kW)	Load (amps) less Generation (amps) Note 2
Fairview F1	110		0	9600	9600.0	110
Fairview F2	120		0	9600	9600.0	120
Fairview F3	195		350	9600	9250.0	180
Fairview F4	40		0	9600	9600.0	40
Interchange F1	196		0	9600	9600.0	196
Interchange F2	169		150	9600	9450.0	163
Lowville F1	88		0	9600	9600.0	88
Lowville F2	125	33.9	33.9	9600	9566.1	121
Lowville F3	111	19.8	269.8	9600	9330.2	100
Lowville F4	63		0	9600	9600.0	63
Orchard F1	186		0	9600	9600.0	186
Orchard F2	138	10	10	9600	9590.0	137
Palmer F1	163		0	9600	9600.0	163
Palmer F2	175		365	9600	9235.0	160
Palmer F3	336		0	9600	9600.0	336
Palmer F4	156		0	9600	9600.0	156
Reservoir F1	276	26.5	36.5	9600	9563.5	271
Reservoir F2	154		0	9600	9600.0	154
Reservoir F3	173		0	9600	9600.0	173
Reservoir F4	203	10	10	9600	9590.0	202
Towerline F1	231		0	9600	9600.0	231
Towerline F2	217		0	9600	9600.0	217
Towerline F3	292	6.44	6.44	9600	9593.6	291
Towerline F4	192		0	9600	9600.0	192

Tyandaga F1	169		0	9600	9600.0	169
Tyandaga F2	213	30	30	9600	9570.0	209
Tyandaga F3	184		50	9600	9550.0	178
Tyandaga F4	265	10	10	9600	9590.0	264

Note 1: This includes all existing connected generation and all proposed generation projects that BHI is aware of at this time.

Note 2: This gives the current from the breaker when the total known generation projects are connected and supplying rated output into the system. See description before table for more details.

Summary

The 13.8 feeders are capable of connecting all the generation capacity that BHI is aware of at this time.

2.1.5. 4.16 kV Municipal Substations

MS Availability

Table 8 shows the status of BHI's 4.16 kV MS's and their potential for renewable generation. It does not take into account any upstream system limitations.

As can be seen, based on the existing generation and the total pending possible projects that BHI is aware of, the 4.16 kV MS's have sufficient capacity to connect all known possible projects that they are aware of. In calculating the capacity to connect generation, as noted in Appendix A, the value is the maximum rating of a single transformer plus the minimum load on the transformer. Since BHI does not have the minimum load values for the transformers available at this time, the capacity used in Table 8 is 60% of the nominal bank rating (ONAN) and no allowance for minimum Load. This gives a conservative estimate of the available capacity for the station but this conservative estimate is still more than adequate to allow all the presently known, proposed generation to be connected.

As can be seen from Table 8, there is limited capacity available in the MS's due to the smaller size of the transformers. Each application will have to be reviewed in detail to ensure it can be accommodated on the specified MS. In addition the effect of installing generation reduces the load on the station transformer and the feeder. While this is desirable particularly on heavily loaded feeders and stations it also introduces a risk for the BHI power system since in the event of a large generator dropping off line, the load would need to be carried by the BHI system. In performing the system planning function, this needs to be taken into account and appropriate provisions made to be able to deal with these contingencies.

BHI does not have any plans to replace its 4.16 kV system. Selected MS's will be refurbished as necessary. The plan details for this are included in the Distribution System Plan. Adding new capacity to a 4.16 kV system is relatively expensive in comparison with adding equivalent capacity to the 27.6kV system and is to be avoided if possible. Where feasible, FIT applications will preferably be accommodated on the 27.6kV system using the capacity that is readily available on that voltage system. BHI will review each application on a case by case basis and make the appropriate decision.

Table 8 – 4.16 kV Municipal Substations – Available Generation Capacity

Station Name	Bank	Bank Rating (MVA)	Gen. capacity available (MW)	Existing Generation (kW)	Generation Existing + Pending (kW)	Available Generation Capacity at MS (kW)
			Note 1		Note 2	Note 3
Appleby	T1	6	3.6	12.08	12.08	3587.9
Appleby	T2	6	3.6	0	0	3600.0
Brant	T1	6	3.6	5	86	3514.0
Bridgeview	T1	5	3	0	4.5	2995.5
Drury	T1	6	3.6	10	10	3590.0
Easterbrook	T1	6	3.6	0	250	3350.0
Elgin	T1	6	3.6	0	0	3600.0
Eliz Gardens	T1	5	3	3.5	3.5	2996.5
Fairleigh	T1	5	3	20	20	2980.0
Fairwood	T1	6	3.6	0	0	3600.0
Fairwood	T2	6	3.6	10.3	10.3	3589.7
Grahams	T1	5	3	0	0	3000.0
Hampton	T1	6	3.6	0	0	3600.0
Hampton	T2	6	3.6	0	0	3600.0
Harvester	T1	6	3.6	2.66	2.66	3597.3
Howard	T1	5	3	0	0	3000.0
Maple	T1	10	6	0	410	5590.0
Maple	T2	10	6	5	105	5895.0
Marley	T1	5	3	0	0	3000.0
Martha	T1	10	6	0	0	6000.0

Station Name	Bank	Bank Rating (MVA)	Gen. capacity available (MW)	Existing Generation (kW)	Generation Existing + Pending (kW)	Available Generation Capacity at MS (kW)
Martha	T2	10	6	0	0	6000.0
Mt. Forest	T1	6	3.6	10	10	3590.0
Partridge	T1	5	3	5	5	2995.0
Pine Cove	T1	5	3	3.04	3.04	2997.0
Pinedale	T1	5	3	0	0	3000.0
Pt Nelson	T1	6	3.6	4	64	3536.0
Spruce	T1	6	3.6	2.85	2.85	3597.2
Walkers	T1	6	3.6	7.8	7.8	3592.2
Woodward	T1	6	3.6	0	0	3600.0
Woodward	T2	6	3.6	0	0	3600.0

Note 1: This is the amount of generation that can be connected to the station. See text above for limitations noted.

Note 2: This includes all existing connected generation and all proposed generation projects that BHI is aware of at this time.

Note 3: This is the residual capacity to connect new generation based on the station capacity only and not including upstream or downstream limitations.

Summary

The 4.16 kV MS's have adequate ability to accommodate existing and known proposed renewable generation installations. BHI will continue to maintain the system as required, but will not expand its capability. Applications for connection to this system will be reviewed on a case by case basis.

2.1.6. 4.16kV Distribution Feeders

Feeder Availability

The BHI 13.8 kV feeders have a specific capability to accommodate generation. The details are provided in Appendix A. Table 9 shows the actual peak load for 2012 as well as the existing connected generation and the existing generation plus all projects that BHI has been contacted about and have details as to location and size of the possible generation installations. This information has been processed further to include the feeders the generators would be connected to.

The table shows that the 4.16 kV feeders have adequate capacity to connect all existing and proposed generation projects based solely on the feeder capacities. This does not mean that no constraints exist in the system upstream from the feeder but only that the feeder is not a limitation.

In Table 9, a column showing the peak load current less the current supplied by the existing and proposed generation. This was created to give insight into potential relaying issues at the feeder breaker.

A feeder normally has overcurrent protection that operates with the premise that current flows from the station transformer, through the feeder breaker, through the feeder to the load. When a generator is connected to the feeder, as long as the net current as seen by the feeder breaker protection is toward the load the protection will operate properly. If the net current flow is in the opposite direction as seen by the breaker protection then the protection needs to be checked if this condition can be accommodated. This may involve the replacement of any protection equipment that does not accommodate reverse power flow.

The correct way to assess this possible change in current flow is to take the minimum load current on the feeder during daylight hours and subtract the maximum generator current. The minimum load current figures are not available from BHI but from the table it can be seen that there are only a few instances involving the larger generators where this is a remote concern. We can also make an assumption that for the larger generators a three phase connection would be used or conversely if the generators are single phase then they would be connected to different phases. Hence for the larger generation capacity it is assumed to be three phase generation when calculating the table values for the net current.

Also note that the larger renewable generator installations are all proposed. The reverse power considerations need to be addressed in the future if and when these projects proceed.

BHI does not have any plans to upgrade its 4.16 kV feeders. This is an older system of limited capacity. Adding new capacity to a 4.16 kV system is relatively expensive in comparison with adding equivalent capacity to the 27.6kV system and is to be avoided if possible. Where feasible FIT applications will preferably be accommodated on the 27.6 kV system using the capacity that is readily available on this voltage system. BHI will review each application on a case by case basis and make the appropriate decision.

Table 9. 4.16 kV Distribution Feeders – Available Capacity

Feeder	Actual Peak Load (amps)	Existing Generation (kW)	Total + Pending Generation (kW) Note 1	Total Allowable Generation (kW)	Available Capacity (kW)	Load (amps) less Generation (amps) Note 2
Appleby F1	264		0	1450	1450.0	264
Appleby F2	230	12.08	12.08	1450	1437.9	225
Appleby F3	97		0	1450	1450.0	97
Appleby F4	255		0	1450	1450.0	255
Appleby F5	220		0	1450	1450.0	220
Appleby F6	253		0	1450	1450.0	253
Brant F1	168		0	1450	1450.0	168
Brant F2	224		0	1450	1450.0	224
Brant F3	299	5	86	1450	1364.0	263
Bridgeview F1	142		4.5	1450	1445.5	140
Bridgeview F2	116		0	1450	1450.0	116
Drury F1	271		0	1450	1450.0	271
Drury F2	95		0	1450	1450.0	95
Drury F3	123	10	10	1450	1440.0	119
Drury F4	147		0	1450	1450.0	147
Easterbrook F1	280		0	1450	1450.0	280
Easterbrook F2	301		0	1450	1450.0	301
Easterbrook F3	291		250	1450	1200.0	256
Elgin F1	108		0	1450	1450.0	108
Elgin F2	243		0	1450	1450.0	243
Elgin F3	41		0	1450	1450.0	41
Elgin F4	215		0	1450	1450.0	215
Eliz Gardens F1	256		0	1450	1450.0	256
Eliz Gardens F2	170	3.5	3.5	1450	1446.5	169
Eliz Gardens F3	316		0	1450	1450.0	316
Fairleigh F1	156		0	1450	1450.0	156
Fairleigh F2	252	10	10	1450	1440.0	248
Fairleigh F3	75	10	10	1450	1440.0	71
Fairwood F1	125		0	1450	1450.0	125
Fairwood F2	214		0	1450	1450.0	214
Fairwood F4	291		0	1450	1450.0	291

Feeder	Actual Peak Load (amps)	Existing Generation (kW)	Total + Pending Generation (kW) Note 1	Total Allowable Generation (kW)	Available Capacity (kW)	Load (amps) less Generation (amps) Note 2
Fairwood F5	289	10.3	10.3	1450	1439.7	285
Fairwood F6	192		0	1450	1450.0	192
Grahams F1	122		0	1450	1450.0	122
Grahams F2	267		0	1450	1450.0	267
Grahams F3	189		0	1450	1450.0	189
Grahams F4	149		0	1450	1450.0	149
Hampton F1	264		0	1450	1450.0	264
Hampton F2	190		0	1450	1450.0	190
Hampton F3	279		0	1450	1450.0	279
Hampton F4	134		0	1450	1450.0	134
Hampton F5	117		0	1450	1450.0	117
Hampton F6	283		0	1450	1450.0	283
Harvester F1	193	2.66	2.66	1450	1447.3	192
Harvester F2	293		0	1450	1450.0	293
Harvester F3	294		0	1450	1450.0	294
Howard F1	102		0	1450	1450.0	102
Howard F2	25		0	1450	1450.0	25
Howard F3	113		0	1450	1450.0	113
Maple F1	245		0	1450	1450.0	245
Maple F2	205		400	1450	1050.0	149
Maple F3	203		10	1450	1440.0	199
Maple F4	197		0	1450	1450.0	197
Maple F5	207	5	5	1450	1445.0	205
Maple F6	135		0	1450	1450.0	135
Maple F7	205		0	1450	1450.0	205
Maple F8	273		100	1450	1350.0	259
Marley F1	213		0	1450	1450.0	213
Marley F2	160		0	1450	1450.0	160
Marley F3	307		0	1450	1450.0	307
Martha F1	221		0	1450	1450.0	221
Martha F2	98		0	1450	1450.0	98
Martha F3	159		0	1450	1450.0	159

Feeder	Actual Peak Load (amps)	Existing Generation (kW)	Total + Pending Generation (kW) Note 1	Total Allowable Generation (kW)	Available Capacity (kW)	Load (amps) less Generation (amps) Note 2
Martha F4	123		0	1450	1450.0	123
Martha F5	211		0	1450	1450.0	211
Martha F6	135		0	1450	1450.0	135
Martha F7	187		0	1450	1450.0	187
Martha F8	177		0	1450	1450.0	177
Mt. Forest F1	271		0	1450	1450.0	271
Mt. Forest F2	154		0	1450	1450.0	154
Mt. Forest F3	196	10	10	1450	1440.0	192
Partridge F1	260		0	1450	1450.0	260
Partridge F2	176		0	1450	1450.0	176
Partridge F3	211	5	5	1450	1445.0	209
Pine Cove F1	295		0	1450	1450.0	295
Pine Cove F2	245		0	1450	1450.0	245
Pine Cove F3	198	3.04	3.04	1450	1447.0	197
Pinedale F1	267		0	1450	1450.0	267
Pinedale F2	231		0	1450	1450.0	231
Pinedale F3	198		0	1450	1450.0	198
Pt Nelson F1	232		0	1450	1450.0	232
Pt Nelson F2	296		60	1450	1390.0	271
Pt Nelson F3	170	4	4	1450	1446.0	168
Spruce F1	254		0	1450	1450.0	254
Spruce F2	326		0	1450	1450.0	326
Spruce F3	196		0	1450	1450.0	196
Spruce F4	87	2.85	2.85	1450	1447.2	86
Walkers F1	274	7.8	7.8	1450	1442.2	271
Walkers F2	242		0	1450	1450.0	242
Walkers F3	113		0	1450	1450.0	113
Walkers F4	191		0	1450	1450.0	191
Woodward F1	103		0	1450	1450.0	103
Woodward F2	262		0	1450	1450.0	262
Woodward F3	187		0	1450	1450.0	187
Woodward F4	165		0	1450	1450.0	165

Feeder	Actual Peak Load (amps)	Existing Generation (kW)	Total + Pending Generation (kW) Note 1	Total Allowable Generation (kW)	Available Capacity (kW)	Load (amps) less Generation (amps) Note 2
Woodward F5	204		0	1450	1450.0	204
Woodward F6	223		0	1450	1450.0	223

Note 1. Available capacity does not mean an ability to connect equal to this value.

Summary

The 4.16kV feeders are capable of connecting all the generation capacity that BHI is aware of at this time.

2.2. Factors that Limit BHI's to Connect

The current limitation on BHI's ability to connect new generation is Palermo TS and this station is limited by its short circuit capacity. The 13.8 kV system and the 4.16 kV systems are capable of accepting new generation at this time but the magnitude of the projects beyond that identified to date is limited by the transformer size (thermal capacity) as well as the minimum feeder loads during daylight hours which could result in reverse power flow at the breakers. Reverse power flow would require the review and possible replacement of the protection relays at the 13.8 and 4.16 kV stations where it can occur. The backup feeders would also need to be reviewed for reverse power flow and remediation implemented as necessary. Voltage limits at specific locations may also limit the total generation that can be connected. The extent of these constraints will depend on the size, exact location and nature of the renewable development.

Considering that the 27.6kV system is the most likely system for renewable generation connection, it has been reviewed for the impact of the possible constraints. Tables 4 and 5 show that with the exception of Palermo TS there is capacity to accept new generation at the TS level and at the feeder level there is significant capacity for new generation.

2.3. Expenditures in Approved Plans Related to Renewable Connections

At the present time, BHI does not have any OEB approved plans and expenditures specifically relating to renewable generation. The work required is considered to be part of the general operation of the business and is included in the normal rate filing information. This will be the approach moving forward as well since the costs are not considered to be significant in the bigger picture and would merely add to administrative overhead to keep the costs separated.

2.4. Unique Challenges

BHI faces a number of unique challenges in accommodating renewable generation, including the geography of BHI's service and system technical issues.

The distribution system operated by BHI supplies a mix of rural and urban loads. The rural system is designed for a relatively low load density and depending on where the developer wishes to connect the generation; the system may or may not be able to accommodate the connection without reinforcement of the local feeders. It is not practical to reinforce the whole system to be able to accommodate generation wherever and whenever; the only reasonable approach is to consider the situation on a case by case basis and reinforce the system as required and as is reasonable. While it is appropriate to have a general plan, the future details can, and will, vary. To date this has not caused problems and it is anticipated that sufficient lead time will be available to address any specific project.

2.5. Technical Challenges

There also technical challenges faced by BHI. They include:

- Protection systems that have been designed, installed and commissioned for unidirectional power flow, where two way flows may occur
- Equipment not rated for bi-directional power flow, such as the existing 4.16 kV breakers and relaying
- Special protection arrangements and agreements between the generator and the upstream feeder breaker, which may preclude the generator being switched to another feeder
- Short circuit levels which vary depending on how the renewable generator is switched
- Power quality which may be degraded by the renewable generation
- Voltage Regulation at the location of the renewable generation
- MS and / or MS feeder capacity at peak times. If renewable generation is disconnected from the power grid after momentary or sustained interruptions the generation will not be available immediately and overloads on the BHI system may occur. Also if the larger generators are out of service at peak times overloads may result.

Reverse Power Flow

Reverse power flow may be an issue for relatively large generators. An example is the reverse power flow expected on the 76M30 feeder following the connection of a 3 MW Solar Farm. [This project is currently in pre-FIT consultation and is not active. This reference is made to demonstrate possible technical challenges, not imminent issues.] The protection at the T.S. is owned and operated by Hydro One. Hydro One will address any metering or bus protection blocking scheme issues.

BHI will limit renewable generation connections on the 4.16kV system to reduce the possibility of reverse current flow considering the unknown reverse current capability of the 4.16kV system under these conditions and the cost to upgrade the protection relays.

4.16kV System Limitations

Renewable generation connections on the 4.16kV system will be carefully assessed based on a multiple set of criteria, including reverse power, protection, equipment, ability to switch, power quality, feeder capability, reliability, overall condition, the potential to exceed established feeder limits under all circumstances, the impact of any sections of undersized conductor, and the potential to overload the power transformer. If the proposed connection passes these basic criteria, then the overall effects of the application will be assessed through the Connection Impact Assessment process.

The 4.16kV system was designed and built as an interconnected system. With the exception of 6 out of 24 MS sites the remainder of the MSs have only one power transformer. Reliability and operability is normally achieved by switching feeders and sections of feeders between MS's. The ability to continue this switching unimpeded is a system requirement. Renewable generation on the 4.16 kV system will have to comply with this system capability under all operational circumstances.

Power Quality

Solar cells generate DC power which is converted to AC by inverters. These inverters may distort the voltage waveform and degrade the local power quality. Developers and installers will have to provide evidence that the proposed installation will meet BHIs criteria or propose mitigation technology.

Voltage Regulation

Renewable generation can and does affect the local voltage. An example of this would be a PV installation in direct sunlight and behind a cloud. These two situations will markedly change the generator output and the local voltage. Developers and installers will have to provide evidence that the proposed installation will meet BHI's supply criteria and propose plans for regulating the voltage if it does not.

3. Planned Development of the System to Accommodate Renewable Generation Connection

3.1. Anticipated Connections and Infrastructure Projects

Current Connections

To date BHI has connected 6 FIT solar photovoltaic renewable generator projects, total value 1,053kW. In addition 47 Micro-FIT installations have been connected for a total generation of 363 kW.

FIT Applications have been received that total an additional 19,667 kW, as follows:

Pre-FIT consultations:	21 consultations, totaling 14,574 kW; 13,964kW is very preliminary or dormant; 3 projects account for 10,000kW.
Offer to Connect sent:	10 OTCs sent, totaling 2,000kW
On hold:	5 on hold, totaling 890kW
In Progress	9 totaling 2,203kW

Note: Where an application is on hold, it is either at the request of the applicant or due to lack of capacity at Palermo TS.

Micro-Fit Applications have been received that total an additional 858 kW, as follows:

Pre-Micro-FIT consultations:	62 consultations, totaling 532 kW
Offer to Connect sent:	17 OTC's sent totaling 140kW
On hold:	13 on hold, totaling 120kW
In Progress	7 totaling 65kW

3.2. Smart Grid Investigations

Smart Grid considerations are part of the Distribution System Plan and this is presented in the Distribution System Plan report.

3.3. SCADA – Renewable Generation Impact

BHI currently has a commercial SCADA system developed by Survalent Technology. There are also 71 remote operated switches located throughout the 27.6 kV distribution system providing monitoring, fault detection and control activities. All switching activities at this stage are under the control of system operators.

Impact of Renewable Generation

At present, BHI has an Inter-Control Center Communications (ICCP) connection to Hydro One at Barrie. This operational link enables BHI to gather Hydro One's operational information in real time as it relates to BHI's system - common practice in the industry.

The Plan also includes the installation of ION 8600 meters with an expansion module at each renewable facility site ≥ 250 kW. This module is designed for generator monitoring and control and is an effective way to gather the generators output information, especially where metering has to be installed. The estimated cost is $20,000 per installation, including the expansion module. The distribution system investment plan includes the cost for all anticipated connections for the period in question.

As the addition of this relatively small number of monitoring points to the SCADA system will not materially impact it, no additional operational expenditures for this function are anticipated.

3.4. Renewable Enabling Improvements

Renewable Enabling Improvements (REI) also covers modifications to the distribution system to enable the connection of renewable generation facilities. REI includes:

- Equipment to manage and control bi-directional electrical flows, such as the replacement of breaker protection relays
- Additions to the protection schemes, including the prevention of islanding, and feeder switchability

At present, there is no known requirement to install an advanced MS control and protection scheme. So far all the significant renewable facilities have been connected to the 27.6kV system and this is likely to continue in the future. The transfer trip schemes on the 27.6kV system are the responsibility of Hydro One and BHI has no financial role. Should however, an advanced control and protection be required at an MS for example, costs can be as high as $150,000 per installation. For the purposes of this Plan, no such capital or operational expenditures are envisaged.

3.5. Infrastructure Projects – Direct Benefit Calculation

Under the concept of "Direct Benefit", BHI will claim the following costs as per the OEB decisions and standards:

- Capital Investments Capital investments enable the connection of renewable generation to BHI's distribution system while preserving reliability and power quality. In accordance with the Distribution System Code, there is a "renewable energy expansion cost cap" of $90,000 per MW based on the name plate rating of the generation facility. BHI will contribute up to this cap and any incremental expansion costs beyond the cap are to be borne by the generator. Up to this threshold the accepted funding split is - provincial ratepayers 83%, BHI customers 17%.

- Renewable Enabling Improvements REI addresses modifications or additions to the distribution system in order to accommodate increased levels of renewable energy generation. An example of REI would be the modifications or additions to manage and control the 2-way flows or reverse flows, including but not limited to – bidirectional reclosers, tap changer controls or relays, replacement of breaker protection relays. REI projects are typically recoverable under the formula - provincial ratepayers 94%, BHI customers 6%.
- SCADA SCADA projects follow the same typical funding split as the REI, namely - provincial ratepayers 94%, BHI customers 6%.
- Smart Grid As yet the OEB does not consider the Smart Grid as a direct benefit and these costs are 100% payable by BHI customers.

Based on the modest amount of existing and proposed renewable generation the amounts anticipated to be spent on infrastructure is not material and no application is contemplated at this time.

3.6. Method and Criteria Used to Prioritize Expenditures

Considering the small number of renewable energy projects within the BHI service area, the prioritizing and scheduling of renewable generation facilities has not been an issue. BHI has been able to accommodate all applicants. In the future, should there ever be a situation where competing projects are applying for limited distribution resources, they will be connected on a first come first served basis, based on the date of completion of the CIA and any required agreements, for example a cost recovery agreement. This first come first served decision however assumes that the project would proceed within a reasonable time, failing which and after ample warning; the next applicant would be given priority. Also if the volume of work were to exceed what BHI can reasonably complete with BHI's staff, excess work can be contracted out in order to meet required timing.

3.7. Consultations

Regular meetings and discussions are held with Hydro One and the OPA as follows:

- Regular meetings with the Hydro One Account Representative
- Regular discussions with the OPA
- Regular discussions with the Hydro One generation connection staff
- Ongoing discussions with Hydro One relating to TS capacity
- Threshold applications are submitted to Hydro One to confirm the connection situation

3.8. Customer Engagement and Communication

The Distribution System plan addresses all communication plans. Of particular interest for renewable Generation is the Community Energy Plan segment of the report which includes:

Burlington Hydro is actively participating in the development of a Community Energy Plan for the City of Burlington. Other participants at the table include the City of Burlington, Union Gas, and the Region of Halton, among others.

The CEP will help the city to, among other objectives:

- *Identify areas where conservation and efficiency measures can be focused;*
- *Assess the potential for local generation, particularly renewable energy; and,*
- *Assess land-use planning issues and their energy implications.*

The CEP will also identify opportunities and synergies to help ensure that the community continues to build on its conservation practices and its efficient use of energy.

These customer engagement activities are considered part of the normal BHI operation and all costs are included in the Distribution System Plan.

3.9. Smart Grid Awareness

BHI is the founding member of "GridSmartCity" whereby a group of LDC utilities share information about the smart grid. This includes the requirements, capabilities and the progress of the members.

BHI will continue to participate and contribute to this group as it is a cost effective means to give and receive smart grid information and remain informed about other LDC member's progress and experience with the smart grid.

3.10. Letter of Comment from the OPA

To be added later……

3.11. Summary

BHI is well positioned to deal with all aspects of Renewable Energy Generators that are known at this time. The power system and the control systems have the capacity and the capability to address the known new generation and therefore can accommodate them.

4. Appendix: A - BHI Connection Criteria

Where not specifically covered by BHI, the latest version of Hydro One's "Distributed Generation Technical Interconnection Requirements – Interconnections at Voltages 50 kV and Below" DT-10-015 R2 will apply. The relevant part is included below:

1.6 CAPACITY LIMITATIONS ON GENERATOR INTERCONNECTIONS FEEDER LOADING LIMITS

The capacity for all sections of all feeders, the "feeder limitation" is based mainly on the distance from the Hydro One Networks Inc. supply station to the DG's Point of Common Coupling (PCC). The feeder limitation applies to all DGs connected or connecting to the feeder and considers the rated output capacity of each DG. Any single DG connection can affect the capacity available for all sections of the feeder. For all sections of the feeder, the total current shall not exceed:

a) 400 Amps for HONI feeders operating at voltages 13kV or greater; and
b) 200 Amps for HONI feeders operating at voltages below 13kV.

ACCEPTABLE GENERATION LIMIT AT A TS OR A DS (MS)

The acceptable generation limit at a TS or a DS is established by adding together: 60% of maximum MVA rating of the single transformer and the minimum station load.

SHORT CIRCUIT (SC) LIMITS

The SC limits at TS low voltage bus or at any portion of distribution feeder shall not be exceeded by the addition of DG Facilities. Refer to Section 2.1.16 for requirement.

1.6.1 THREE PHASE GENERATORS

i) The acceptable individual generation limits for three-phase DG Facilities interconnecting to HONI Distribution System feeders shall not exceed:

a) 1 MW per connection on feeders operating below 13kV; and
b) 5 MW per connection on 27.6kV feeders supplied via a 44kV:27.6kV step-down transformer.

ii) The feeder limitation determines the total acceptable three-phase generation allowed for all sections of HONI`s Distribution System feeders and shall not exceed:

a) 30 MW for feeders operating at 44kV;
b) 19 MW for feeders operating at 27.6kV;
c) 9.6 MW for feeders operating at 13.8kV;
d) 4.3 MW for feeders operating at 12.48kV;
e) 2.9 MW for feeders operating at 8.32kV; and
f) 1.45 MW for feeders operating at 4.16kV.

1.6.2 SINGLE PHASE GENERATORS

i) The maximum single phase generation limits for specific feeders shall not exceed:

a) 150kW for single phase generators connecting to feeders operating at nominal voltage levels of 13kV or greater; and *b) 100kW for single phase generators connecting to feeders operating at nominal voltage levels less than 13kV.*

Note: While the absolute limits are stated above, the actual acceptable individual single phase generation limit for specific feeders or TS/DS is determined in Connection Impact Assessment (CIA)

Attachment 4 (of 5):

Appendix D - Policy on System Access, Renewal and Service Invest.

Burlington Hydro Inc.

Asset Lifecycle Optimization Policies and Practices – Draft Proposal

Purpose

The purpose of these policies and practices is to provide direction to Burlington Hydro Inc. (BHI) staff so as to ***minimize the overall cost to BHI customers*** when staff are acquiring and maintaining assets while providing service at required performance standards.

Introduction

The lifecycle cost for an asset includes, but is not limited to, the acquisition, operating, maintenance, disposal, refurbishment and replacement costs over the lifetime of the asset.

The required performance standards include both the technical performance standards necessary for the asset to correctly perform its inherent task (e.g. for distribution system equipment this would include meeting reliability and power quality standards among others) together with other mandatory and required performance standards[1] (e.g. system and physical security, environmental, etc.).

The asset's optimal lifecycle cost is the minimal total cost over the long-term of acquiring and utilizing the assets. Establishing the true optimal lifecycle cost for any specific asset is a very complex exercise and requires substantial amounts of data that are not always available. Consequently, as a practical consideration, the policies and practices set out in this document provide direction for BHI staff to minimize refurbishment and replacement costs collectively, and to separately minimize maintenance costs; all this is done while meeting required minimal performance standards.[2] As BHI staff continually refines its industry-leading expertise in establishing optimal practices, the directives in this document will, from time to time, be revised to remain consistent with that expertise.

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[1] Unless there is inherent value to the customer by BHI exceeding the required *minimal* performance standards (i.e. the enhanced performance standard is something the customer would willingly pay for), then no additional value can be attributed to this factor in the cost analyses described in this document.

[2] The overall optimum for a system is not necessarily the sum of the optima for the individual sub-systems. Thus, the overall minimal lifecycle cost is not necessarily achieved by separately achieving the sum of the minimal long-term refurbishment and replacement cost, and separately achieving the minimal long-term maintenance cost. Nevertheless, because of the disparity in the magnitude of costs involved together with practical considerations, this sub-optimization is considered to be a reasonable approximation at this time.

Policy on System Access, Renewal and Service Investments

Purpose

The purpose of this policy is to ensure that in making system access, system renewal and system service investments, BHI staff appropriately optimizes, prioritizes and schedules the candidate investments consistent with the available budget envelopes.

Details of the Policy

Optimizing Lifecycle Costs

When contemplating significant expenditure decisions, BHI staff shall:

- Perform the selection decision in recognition that the goal of BHI's asset lifecycle optimization policies and practices is *to strike the best balance from the customers' perspective.* This is acknowledgement that it is the customer who ultimately pays for the assets and receives the associated benefits.
- Consider the full lifecycle cost of all the practical and reasonable alternatives that could meet the identified need.
- Seek to identify the alternative that complies with all design, construction and safety standards while achieving the lowest lifecycle cost. The lowest lifetime cost will be one of the factors considered when making the ultimate decision.
- Use the most accurate quantitative and qualitative information available to them when making their analyses and in coming to their determination, use both corporate and individual staff's technical knowledge and experience and, most importantly, use their *professional best judgment*.
- Give careful consideration to the possibility of refurbishing existing facilities rather than replacing them in order to achieve lifecycle cost optimization. (The BHI document ***"Policy on the Evaluation of Asset Replacement and Refurbishment"*** provides specific direction to staff faced with a replacement/refurbishment decision.)
- Consider lease options when viable.
- Ensure pertinent information is recorded and added to the database of information available for future lifecycle optimizing analyses.

Prioritizing Expenditures

In deciding which expenditures should be made within established budget envelopes, BHI staff shall pay particular consideration to the following:

Legislated and Mandatory Requirements

- The company's legislated and mandatory requirements including:
  - System access in order to meet the obligation to connect customers.
  - Accommodating City, Region, Ministry, etc. mandatory project requirements.

    - The Green Energy Act.
    - The company's CDM conditions of license.
    - Meeting the OEB's – and other regulatory bodies' – quality, reliability, health, safety, environmental, etc. performance standards.

Maintenance of Current Standards

- Safeguarding major investments already made by continuing to maintain and perform essential upgrades in order to keep the systems reasonably current.
- Intensify condition monitoring where practical in order to minimize uncertainty regarding decisions relating to equipment maintenance, renewal and replacement.
- Refurbish distribution equipment in-situ where economically viable in order to extend the equipment's reliable working life.
- Just maintaining current reliability levels where minimal required standards are already being met.

Investments

- Leverage additional supply capacity etc. by utilizing investments previously made.
- Invest in opportunities to permit early harvesting of operational efficiency improvements from established investments.
- Consider the lifecycle cost of all reasonable alternatives in decisions regarding replacement vs. refurbishment.
- Continue to invest prudently in modern information technology in order to improve both customer service and communications.
- Prudently acquire smart grid equipment where there will be direct economic/efficiency benefits.

Affordability

- To the extent that funding is available, consider accelerated replacement of critical over-aged items for that equipment where the optimal life has already been reached.
- Acknowledge that some desirable investments are realistically not immediately affordable within budget envelopes.

Scheduling Investments

Having performed the required in-depth analyses and having decided on the investments that are to be pursued, careful attention must be given to scheduling the selected expenditures.

- Seek to schedule investments in such a way as to minimize year-to-year fluctuations in total expenditure and thus minimize fluctuations in customers' rates; this scheduling should be utilized to the extent that quality of service will not suffer, legislated and mandatory requirements are met, and that other key factors have been considered.
- Consider implementing the highest priority investments early in the period in order to protect them from an unforeseen funding shortage later in the year. This is in recognition that despite the best planning, unexpected and unfunded contingencies can arise that demand funding priority. In such situations, some planned expenditures in the year may require to be cancelled in favour of the new contingency.

Policy on the Evaluation of Asset Replacement and Refurbishment

Purpose

The purpose of this policy is to ensure that in determining whether a major item of equipment should be replaced or refurbished, BHI staff has a true comparison of the lifecycle costs of the various alternatives available.

Details of the Policy

When determining whether a *major* item of equipment should be replaced or refurbished, BHI staff shall:

- Perform an economic evaluation (sometimes called a cost comparison) on the various alternatives that meet the technical needs. For the purpose of this Policy, a major item of equipment is deemed to be an item of equipment costing $150,000 or more. (This threshold follows from the definition of a *material investment* as contained in OEB Filing Requirements.)
- Fully justify selecting any alternative with a lifecycle cost that is higher than the minimal lifecycle cost alternative.
- Conduct the economic evaluation using established costing and economic evaluation principles.
- Perform the economic evaluation over a sufficient number of years so that all the significant costs are identified and captured in the comparison of costs.
    - The period over which the comparison will take place will generally be the expected life of a new item of the subject equipment.
    - If there are other replacement equipment options that are expected to have a longer life than a new version of the equipment being considered for replacement, then consideration should be given to choosing a longer comparison period.
    - In the relatively rare circumstance that the equipment is not expected to be needed for the full duration of its life (and therefore may be sold or scrapped after the period it is needed for), then the shorter period for which the equipment will be needed should be selected.
- Give consideration in the economic evaluation to all reasonable alternatives that, as a minimum, meet the required performance standards.
    - Every effort should be made to include as the base case, a "do nothing" alternative; that is, the existing equipment is envisaged as being maintained with minimal investment for the selected duration without replacement or substantial refurbishment. (While in many circumstances this may not be a truly practical alternative nor may not result in the minimal cost alternative even if it is practical, it nevertheless provides a reference point in the decision making process.)
    - In addition to the base case, at least one replacement alternative and one refurbishment alternative shall be included if such options are physically possible and practical.
- Factor the full lifecycle costs for every alternative into the evaluation. The lifecycle cost will include but not be limited to:
    - Removal and sale (or scrap) of existing equipment together with any site reclamation.
    - Purchase of new replacement equipment.

- Refurbishment of the existing equipment. (During the selected evaluation period it may be necessary to include more than one refurbishment.)
    - Lifetime operating and maintenance.
    - At the end of evaluation period, the removal and sale (or scrap) of refurbished/new equipment together with any site reclamation.
- Ensure the legitimacy of any indirect costs or attributing monetary benefits to superior performance of any alternative.
- Discount cash flows using time-value-of-money factors provided by the Accounting Department.

Policy on Optimal Maintenance Planning Practices

Purpose

The purpose of this policy is to ensure that BHI assets are maintained in an appropriate condition to perform their intended purpose and that they are maintained in such a way that the selected balance of preventive/repair maintenance minimizes lifecycle costs.

The optimal degree of maintenance is that which strikes the best balance between the cost of BHI performing work on an asset in order to prevent a possible failure, and the cost and consequences of a failure of the asset[3].

Details of the Policy

When deciding on a maintenance strategy, procedure or practice, BHI staff will seek to determine the optimal balance of preventive and breakdown activity and shall:

- Consider both the *probability* and *consequences* of a failure. The probability of a failure may be based on historical data and/or professional experience. The consequences may include the impact on public or staff safety, loss of supply, inability to respond to an outage, causing a hazardous spill, etc.
- Consider both the *frequency* and *intensity* of the preventive maintenance contemplated.
- Take into account both the cost of performing the anticipated preventive work and, in the event of a failure, the cost to rectify the possible failure. The cost shall include the labour and material costs for BHI staff, contractors, out-sourced personnel, etc. These costs may include, but need not be limited to, performing asset-conditioning monitoring, adjusting equipment settings, acquiring replacement parts, refurbishing equipment components, clean-up of a hazardous spill, full replacement of a failed item, etc.
- Consider adoption of a repair-only policy for those assets for which little additional cost may result in rectifying a failure and no significant consequences are expected.
- Give due regard to the equipment manufacturer's recommendations in selecting the frequency and intensity of preventive maintenance. However, manufacturer's recommendations should only be considered a guide since equipment operates under a wide range of conditions and environments.
- Ensure that they are familiar with, and diligently follow, the practices and procedures in the company's comprehensive ***"Work Procedures Manual".*** (The index of the Manual is attached as Appendix A).

[3] "Failure" of an asset includes both the inability of the asset to actually perform its role and the gradual deterioration of the asset resulting in a loss of efficiency often with cost-impacting consequences.

Appendix

to

Policy on Optimal Maintenance Planning Practices

Workplace Inspections	GN-0001
Accident/Incident Reporting (BHI Vehicles)	GN-0002
Accident/Incident Reporting (Employees)	GN-0003
Vehicle Accidents (Public)	GN-0004
Emergency Radio Communications	GN-0005
Emergency Fuel Spills Plan	GN-0006
Emergency Evacuation Plan	GN-0007
Tampered or Unauthorized Repairs of Hydro Services	GN-0008
Wheel Chocks	GN-0009
KWH Meter Installation & The '9' Checks	GN-0010
Safe Chain Saw Operation	GN-0011
Tailboard Conference	GN-0139

Station Maintenance Work Procedures:	**Procedure No.:**
General Office Maintenance	SM-0012
General Substation Maintenance	SM-0013
Field Transformer Maintenance	SM-0014
On Load Tapchanger Maintenance	SM-0015
SCADA RTU Maintenance	SM-0016
Substation Battery Maintenance	SM-0017
Station Battery Charger Maintenance	SM-0018
Substation Breaker Maintenance	SM-0019
Substation Grounding Maintenance	SM-0020
Substation Heater and Venting Maintenance	SM-0021
Substation Transformer Maintenance	SM-0022
Re-commission Hydro Sub Station	SM-0023
Transformer Vault Maintenance	SM-0025
Under Ground Hydro Locating Procedure	SM-0030
Primary Cable Testing	SM-0031
Maintaining Protection Control Relays	SM-0032
Transformer Yard & Spill Center Maintenance	SM-0087
Secondary Cable Fault Locate	SM-0112

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Control Room Work Procedures:	Procedure No.:
Worldview Map in SCADA	C0-0033
Weekly Readings in SCADA	C0-0034
Maintaining the SCADA Database	C0-0035
Analog Point Database Maintenance (SCADA)	C0-0036
Backing up SCADA Database	C0-0037
Status Point Database Maintenance (SCADA)	C0-0038
Breaker Maintenance Report	C0-0039
Customer Owned Station Information	C0-0040
Intranet Web Page Maintenance	C0-0041
Operating Room Policies and Procedures	C0-0042
PC Backup Tapes	C0-0043
Security System Reports & Cards	C0-0044
Transformer Database Daffron	C0-0045
Trouble Report & Outage Database	C0-0046
Updating Calculation Editors	C0-0047
Issuing a Hold-Off Under Intelliteam	C0-0088
Locate Office	
General Locate Office Procedures	C0-0141
OEB Report	C0-0142
Scheduling Locate Requests	C0-0143
Verifying Invoicing	C0-0144

Meter Department Work Procedures:	Procedure No.:
Single Phase Meters	
Meter Change- Single phase, self-contained, "S" base meter	ME-0048
Meter Change - Single phase, self-contained, "A" base meter	ME-0049
Meter Change - Single phase, TX rated, "S" base meter remote from the meter cabinet	ME-0051
Meter Change - Single phase, TX rated, "S" base meter on a 400 amp meter base	ME-0052
Meter Change - Single phase, TX rated, "S" base meter on a central metering application	ME-0053
Meter Change - Single phase, TX rated, "A" base meter	ME-0054
Installation of central metering	ME-0056
Meter Change – Single phase, self contained "A" frame mounted, "A" base meter	ME-0110
Polyphase Meters	
Meter Change- Polyphase, "S" base, self-contained meters	ME-0057
Meter Change- Polyphase, "A" base, self-contained meters	ME-0058
Meter Change - Polyphase, TX rated meters	ME-0059

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Installation of self-contained meters on new polyphase services.	ME-0060
Installation of metering backplates excluding CT's & PT's.	ME-0062
Wiring of metering backplates	ME-0063

Meter Testing and Equipment Use

Use of an acrylic meter puller	ME-0064
Determination of service loading	ME-0065
Use of a single phase meter evaluator	ME-0066
Ratio checking - 3 wire CT's	ME-0067
Accuracy testing single phase, TX rated meters (in service).	MB-0068

Meter Installation Maintenance and Testing

Ground fault detection reporting	*MB-0069*
Metering installation upgrades	ME-0070
Test block installation	ME-0071
Ratio checking - 2 wire and dual ratio CT's	ME-0072
Cross phase analyzing 3 phase - 4 wire meter installations	ME-0073
Cross phase analyzing 3 phase - 3 wire meter installations	ME-0074

Meter Forms

3 Phase 4 Wire Field Test Report	ME-0078
3 Phase 3 Wire Field Test Report	ME-0079
Meter Accuracy Test Report	ME-0080
Single Phase, 3 Wire Field Test Report.	ME-0081

Line Department Work Procedures:	Procedure No.:
Lifting Manually	LN-0055
Live Line Work	LN-0082
Inspection and Selection of Rubber Gloves	LN-0096
Transporting Oversized Loads	LN-0097
Using Hand Tools	LN-0138

Overhead Live Line Work

Material Handling	LN-0024
Rigging And Hoisting	LN-0029
Installation of Scada-Mate Switches	LN-0083
Installing Single-Phase Distribution Transformers -Circuit Energized	LN-0089
Paralleling Single-Phase Distribution Transformers	LN-0090
Bucket Rescue	LN-0091
Pole Top Rescue	LN-0092
Temporary Support of Wood Poles	LN-0093
Dead-Ends (Energized Condition)	LN-0094

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ABS Maintenance or Repair	LN-0095
Radial Boom Digger Derricks	LN-0113
Insulator Change on Tangent Structure	LN-0114
Insulator Chang on Angle Structure	LN-0115
Safety Harness	LN-0116
Portable Ladders	LN-0117
Installing Underground Conductor on a Pole	LN-0137
Installing an In-line Switch (Energized Condition)	LN-0140

Underground Live Line Work

Safe Use of Mini Phasing/Potential Sticks	LN-0027
Removal, Transport, Storage & Disposal of Lead Cable	LN-0028
Replace Submersible/Padmount Single Phase Transformers	LN-0124
Replace Three Phase Transformers	LN-0125
Energizing New Single Phase Secondary Service	LN-0126
Energization of Three Phase Secondary Transformers	LN-0127
Installing House to House Jumpers	LN-0128
Installing House to House Jumpers at Ganged Meterbases	LN-0129
Isolating and Grounding Underground Primary Cables	LN-0130
Entering and Working in Confined Space	LN-0131
Colour Coding ofPrimary and Secondary Connections	LN-0132
Installing New Primary and Secondary Cables in Padmount Transformers	LN-0133
Padmount Distribution Transformers- Dry Well Loadbreak Fuse Cannisters	LN-0134

Engineering Department Work Procedures:	Procedure No.:
Commercial Service -Design & File	EN-0106
Placement of Certificate of Approvals	EN-0107
Instruction Orders, Approved Plans, Standard Drawings, Records of Inspection & Construction Verification	EN-0109
Process For Approval of Third Party Attachments	EN-0135
Subdivision/Townhome Review Procedure	EN-0136

Stores Work Procedures:	Procedure No.:
Use of Overhead Crane (Stores area) Fuel	ST-0084
Inventory (Unleaded/Diesel) Replacing	ST-0085
Propane Tanks on Tow Motors Receiving	ST-0086
Inventory	ST-0096
Receiving Non-Conforming Inventory (Incorrect Material)	ST-0097
Handling Propane	ST-0098

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Attachment 5 (of 5):

Appendix E - Historical and Future Investments by Project

Capital Project Descriptions 2009

Introduction

This overall summary provides explanations of variances for each of the capital projects within the 2009 capital budget. It should also be noted that Burlington Hydro had identified a need to collect field data and provide condition assessments of the distribution assets to enhance its asset management plan, and to populate its new Geographic Information System. To provide adequate funds to accumulate this comprehensive benchmark data it became necessary to reallocate some funds from approved projects to ensure overall capital expenditures were not exceeded. These reallocations are explained within the variances for many of the items within this summary. The Actual Expenditures shown include Burlington Hydro costs and any capital contributions.

The following summarizes the 2009 Capital Expenditures (excluding Smart Meters), funded by Burlington Hydro, and therefore the actual Burlington Hydro Cost of Asset Additions.

2009 Cost of Asset Additions
$11,419,329*

*This expenditure includes $3,226,325 that is accrued to subdivision developers for BHI's portion of the underground servicing costs in accordance with the Distribution System Code.

This demonstrates and confirms Burlington Hydro's commitment to tight fiscal controls on its annual capital expenditures.

Projects above the Materiality Threshold

SYSTEM ACCESS

1. **Project Name: Burlington Performing Arts Centre**

2009 Budget Amount: $1,200,000 Actual Expenditure: $1,760,285

Acct # 1835 - $100,686 Acct # 1840 - $542,190 Acct # 1845 – $1,117,409

This was a continuation of the 2008 project titled: "Burlington Performing Arts Centre – Burial of Pole Line".

The Burlington performing Arts Centre is a high profile City project of significant importance to the City. To enhance the appearance of the new Arts Centre, the City requested Burlington Hydro to bury 6 spans of a major pole line adjacent to the proposed development site. This section of overhead line consisted of four feeders and several underground supply points to services and feeder extensions, and underground equipment that were required to be removed from the site. Burlington Hydro engaged a consultant to design, tender, inspect and project manage this project to ensure successful completion within a defined time line. The design incorporated innovative padmounted underground switching load centres to replace the existing overhead automation device and numerous service and feeder supply points

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The final project costs were significantly over budget, however it is noted that almost 100% of these costs were funded by contributions from the City of Burlington.

2. **Project Name: General Service – Underground**

2009 Budget Amount: $1,595,000 Actual Expenditure: $1,273,706

Acct # 1840 - $160,126 Acct # 1845 - $672,890 Acct # 1855 - $440,690

This general service account captures all structure, conductor costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, and connection pedestal installations under the category of General Service – Underground. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services
- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and Burlington Hydro customers

- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- replacement materials required for maintenance work

Starting and In-service Dates

Jan. to Dec. 2009

Variance

In contrast to the General Service – Overhead budget item, this is an under-expenditure but again reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers. However, approximately 75% of the actual expenditures were provided by contributed capital from third parties.

3. Project Name: Subdivisions Assumed

2009 Budget Amount: $2,000,000 Actual Expenditure: $3,887,728

Acct # 1840 - $535,476 Acct # 1845 - $772,224 Acct # 1855 - $2,580,028

Burlington Hydro is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline Burlington Hydro's offer to connect and hires their own electrical consultant and utility contractor approved by Burlington Hydro:

- project design review
- project inspection
- project administration
- material approval
- vendor selection for transformers
- determination of financial securities to be submitted by Developer
- perform modifications to existing distribution assets as required to connect new development to the existing distribution system
- termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary

- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before Burlington Hydro assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to Burlington Hydro. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

The budget amount for subdivisions is always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the City of Burlington's zoning by-laws etc. However, 100% of the actual expenditures were provided by contributed capital from developers.

4. Project Name: City Projects – Waterdown Road, Walkers Line north of Dundas Street, Harrison Crt

2009 Budget Amount: $315,000 Actual Expenditure: $551,466

Acct # 1830 - $206,318 Acct # 1835 - $184,618 Acct # 1840 - $37,350 Acct # 1845 - $15,730 Acct # 1850 - $107,450

Walkers Line north of Dundas Street

This relocation project involved moving the existing 27.6kV pole line, comprised of approximately 20 poles, to a new offset to accommodate the City reconstruction of Walkers Line. In service date: December 2009

Waterdown Road and North Service Road intersection improvements

This project was proposed by the City of Burlington which required Burlington Hydro to reconstruct the existing 27.6kV and 4.16kV pole line to accommodate the widening of Waterdown Road and the re-grading of the intersection. An aerial crossing of the 403 HWY was included to provide service to City traffic lights. This project involved the installation of approximately 15 poles and new overhead conductor along Waterdown Road and North Service Road.

Harrison Court Realignment

The City and the property Owner/Developer initiated this project to realign Harrison Court, which runs off Appleby Line, to match up with the new Appleby Line road works involving road widening and intersections performed by the Region of Halton. Burlington Hydro installed a 27.6kV pole line in the new City road allowance to replace the pole line in the old right of way which was closed and annexed with adjacent lands for future development. The project also required the rerouting of existing services from the old pole line to the new pole line.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The Harrison Court Realignment project had not been originally identified by the City of Burlington and was therefore not included in the original budget. This became an essential 2009 project that created the budget variance. A significant portion of the funding (+70%) was provided by contributed capital from the City of Burlington and developers.

5. **Project Name: Region Projects – Appleby Line, Burloak Drive & Uppermiddle Road**

2009 Budget Amount: $1,465,000 Actual Expenditure: $857,284

Acct # 1830 - $504,036 Acct # 1835 - $264,988 Acct # 1840 - $4,001 Acct # 1845 - $83,019 Acct # 1850 - $1240

Appleby Line

This reconstruction project was initiated by the Region of Halton with plans to widen the Appleby Line corridor to 7 lanes from Harrison Court (just north of Dundas St.) south to Taywood Dr. (just north of the Appleby Line grade separation) that involved approximately 32 new hydro poles installed in a new offset location along Appleby Line and several poles on Dundas Street. There were number of service transfers and underground supply points that were transferred with the added complexity of the circuit arrangement at the intersection of Dundas St. and Appleby Line.

Uppermiddle Road and Burloak Drive

The Region of Halton had recently acquired the rights and jurisdiction of Uppermiddle Road and Burloak Drive from the City of Burlington. This last portion of Uppermiddle Road, east of Sutton Drive to Burloak Drive, was to be reconstructed to match previous reconstruction works to re-align the road and curbs, and change the streetscape from a rural cross-section to an urban cross-section. The Region of Halton also proposed the reconstruction of Burloak Drive down to the QEW HWY within the same project tender. The road widening required Burlington Hydro to relocate the existing poles the entire length of the project, approximately 1.5 km of pole line or 30 poles. There was also the challenge of crossing under the Hydro One ROW with the overhead lines while maintaining the required above ground clearances and clearances from the Hydro One transmission lines above. The re-grading of Uppermiddle Road required the installation of new underground primary cable road crossing structures to achieve the standard cover over the primary duct structure. The alignment of the road necessitated the installation of a large number of downguys and anchors to support the poles not in alignment and for storm guying.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

At the time of budgeting estimates for projects from the Region of Halton were very speculative due to limited information being provided. Approximately 25% of the actual expenditures were provided by contributed capital from the Region of Halton.

6. Project Name: General Service – Overhead

2009 Budget Amount: $740,000 Actual Expenditure: $1,201,052

Acct # 1830 - $537,005 Acct # 1835 - $561,724 Acct # 1855 - $102,323

This general service account captures all structure, conductor costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. The budget amount was based on historical values and was challenging to forecast, as a whole due, to the unknown volume yet expected capital projects that arise as a part of a utilities operation. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services
- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and Burlington Hydro customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

The over-expenditure reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers. Approximately 11% of the actual expenditures were provided by contributed capital from third parties.

7. Project Name: MTO Projects – QEW Widening, #6 Highway Reconstruction

2009 Budget Amount: $675,000 Actual Expenditure: $1,308,019

Acct # 1830 - $572,342 Acct # 1835 - $392,515 Acct # 1840 - $53,084 Acct # 1845 - $93,574 Acct # 1850 - $61,622Acct # 1855 - $134,882

These are ongoing costs of the 2008 projects titled: "QEW Widening by MTO – Brant Street to Burloak Drive" and "#6 HWY – Plains Road to Old York Road – MTO Reconstruction".

QEW Widening

The Ministry of Transportation has been working to reconstruct the QEW Provincial highway to accommodate the lanes for high occupancy vehicles (HOV Lanes). The MTO's on-going construction schedule included the QEW HWY through Burlington commencing in 2009 from Brant Street to Burloak Drive. The widening of the MTO corridor and refurbishment of right of way required the removal of Burlington Hydro assets within the MTO corridor. The hydro removals impacted the infrastructure outside the MTO ROW that required extensive perimeter adjustments along the South Service Road and North Service Road throughout the limit of the contract. Realignment of the service roads due to MTO works required numerous hydro pole relocations.

#6 Highway Reconstruction

The Ministry of Transportation proposed the reconstruction of #6 Highway from HWY 403 up to Dundas Street and the construction of a new service road parallel to #6 Highway on the east side. The MTO proposal required the removal of a three phase 27.6kV hydro line along the east side of #6 Highway. Following the construction of the new service road, Burlington Hydro would install a new pole line from Plains Road up to the CN tracks for future servicing.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

The over-expenditure reflects the uncertainty and lack of firm project scope in predicting this budget item while meeting Burlington Hydro's obligations to the road authority. However, approximately 83% of the actual expenditures were provided by contributed capital from the MTO.

8. Project Name: Transformers Installed

2009 Budget Amount: $1,000,000 Actual Expenditure: $1,617,306

Acct # 1850 - $1,617,306

This budget item provides for the supply and installation of distribution transformers for service upgrades, new services and transformer replacements.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The budget amount is always very speculative and dependent on a number of large variables relating to upgrades and new construction activity.

9. Project Name: Subdivision Assumed Transformers

2009 Budget Amount: $600,000 Actual Expenditure: $1,396,605

Acct # 1850 - $1,396,605

This budget item provides for the supply and installation of distribution transformers installed by developers within new subdivisions.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The budget amount is always very speculative and dependent on a number of large variables relating to upgrades and new construction activity.

10. Project Name: Meters Installed

2009 Budget Amount: $200,000 Actual Expenditure: $343,935

Acct # 1860 - $343,935

This account captures the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground applications; and includes primary metering units for large industrial customers, and smart meter installations by Burlington Hydro Staff.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

Some Burlington Hydro metering staff were engaged in the installation of Smart Meters, these costs were required to be charged to this budget item. The budget item was over-spent as this was not allowed for in setting the original budget. This cost to install Smart Meters was addressed in Burlington Hydro's application EB-2012-0081.

11 . Project Name: Downtown Lakeshore Road – 27.6kV Feeder Extension

2009 Budget Amount: $750,000 Actual Expenditure: $0

City plans for revitalizing the City of Burlington include the approval of new commercial and residential condominium developments in the Burlington downtown core. New development has occurred and is expected to progress over the next several years or more. The downtown core is supplied by an underground 4kV distribution system which has a limited capacity to power compared to a 27.6kV distribution system. Based upon information provided by the City of Burlington Development Committee, the estimated size and expected number of new site developments, it was quick to arrive at the conclusion that the installation of an underground 27.6kV feeder was necessary to prevent saturating or overloading the 4kV distribution system. By saturating the 4kV system, the existing customers would not have the available capacity to upgrade their service entrance. Due to the complexity of planning a new underground 27.6kV feeder in an established urban area within limited utility corridor space occupied by an existing 4kV distribution system, it was necessary to outsource the design and project management services. This project is expected to progress over several years in phases as site plan applications are approved and construction commences. Plans to convert existing general service customers from 4kV to the new 27.6kV system thus further relieving the 4kV system.

<u>Variance</u>

No expenditures occurred during 2009, the next phases will proceed when the new development progresses in the downtown core area. The majority of the funding is expected to be provided by contributed capital from the City of Burlington and developers.

12 . Project Name: 12 Mile Trail Conversion to Underground – 16kV

2009 Budget Amount: $180,000 Actual Expenditure: $0

This City of Burlington initiative is a continuation of the subdivision and road reconstruction completed by the Developer of the River Run Estate Lot development located within a pocket of lands serviced with overhead assets and is scheduled for conversion from 8kV to a 16kV underground distribution system. The River Run development is serviced by temporary means at 8kV via a temporary polemount transformer. Burlington Hydro and the City of Burlington must coordinate installation of underground infrastructure to tie in existing underground and overhead supplied customers to become an integral part of the Orchard Community supplied underground at 16kV and removal of the 8kV system.

<u>Variance</u>

This project was delayed by the developer and did not proceed in 2009.

13 . Project Name: Wholesale Metering (IT Metering at Cumberland TS)

2009 Budget Amount: $350,000 Actual Expenditure: $0

Hydro One metering requirements for compliance includes having documentation pertaining to

all TS wholesale metering equipment. The specialized IT metering equipment for Cumberland TS is located within the throat of the transformer and was installed by Hydro One (formerly Ontario Hydro). Hydro One does not have complete IT records to provide the necessary documentation to meet

Measurement Canada compliance. The action plan mandated by the IESO is for Hydro One to replace the existing IT metering equipment solely at Burlington Hydro's cost.

Variance

This project did not proceed in 2009 and is subject to rescheduling, by Hydro One.

14 . Project Name: Contributions and Grants

2009 Budget Amount: ($6,200,000) Actual Expenditure: ($6,661,564)

Acct # 1995 – ($6,661,564)

The Distribution System Code and BHI's Conditions of Service provide the basis for determining the capital contributions to be paid by customers, developers, third parties and government authorities. These funds are applied towards the associated costs for the installation and/or modification of hydro infrastructure and connection assets as required.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The Actual Expenditure is a summary of all of the capital contributions received from third parties such as developers and municipal agencies as noted in the above these budget items. They are not expenditures by Burlington Hydro. The budgets are always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the municipal road projects etc.

SYSTEM RENEWAL

1. **Project Name: Pole Replacement Program**

2009 Budget Amount: $720,000 Actual Expenditure: $449,944

Acct # 1830 - $253,394 Acct # 1835 - $137,240 Acct # 1840 - $22,548 Acct # 1845 - $28,031

Acct # 1850 - $4,670 Acct # 1855 - $4,061

Burlington Hydro's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during Burlington Hydro preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

This budget item was underspent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

2. **Project Name: PCB Compliance – Transformer Replacement**

2009 Budget Amount: $500,000 Actual Expenditure: $599,974

Acct # 1830 - $1,142 Acct # 1835 - $462 Acct # 1845 - $25,015 Acct # 1850 - $573,355

Following Burlington Hydro's transformer oil sampling and testing program, Burlington Hydro implemented a transformer replacement program to replace PCB transformers containing specified levels of PCB's in accordance with Federal Government of Canada Regulations. All transformers meeting the following conditions were replaced by the end of 2009:

- all transformers with PCB content greater than 500 ppm by 2009;
-
- all transformers with PCB content greater than 50 ppm within 100m of sensitive areas by 2009 as defined by the Regulations; and
- all transformers with PCB content greater than 50 ppm and less than 500 ppm by 2014;

The Federal Government has allowed an extension up to 2014 for the replacement of polemount transformers that do not fall within the above criteria for transformer replacement by the end of 2009.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

Actual scope of these transformer replacements exceeded the original plans. However, the completion of this work was non-discretionary for compliance with the timing requirements of the Federal Government of Canada Regulations.

3 . Project Name: Rebuild Crossing – Plains Road at Royal Botanical Gardens

2009 Budget Amount: $185,000 Actual Expenditure: $9,678

Acct # 1830 - $3,397 Acct # 1835 - $6,281

This older installation is located in a valley through dense foliage presenting difficulties for access and maintenance coupled with a deteriorated condition of the wood poles and crossarms. It was scheduled for design and reconstruction in 2009.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

Variance

Only the preliminary work and design for this pole line rebuild was completed in 2009 with the actual construction scheduled for 2010.

SYSTEM SERVICE

1. **Project Name: Motorized ABS Program**

2009 Budget Amount: $400,000 Actual Expenditure: $299,923

Acct # 1830 - $296 Acct # 1835 - $294,711 Acct # 1855 - $4,916

Burlington Hydro has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

This budget item was underspent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

GENERAL PLANT

1. **Project Name: Buildings**

2009 Budget Amount: $455,000 Actual Expenditure: $458,125

Acct # 1808 - $285,257 Acct # 1908 - $172,868

This budget item covered the upkeep requirements for Burlington Hydro's main office and its 32 substation buildings and property. Inspections had revealed that immediate structural repairs and rehabilitation work was required such as cracked foundation walls, deteriorating roofs and office refurbishment. Replacement of the old roof top HVAC system was also necessary as performance was sub-standard. This item covered the cost to install security video surveillance at Howard MS. Burlington Hydro also enlisted a consultant to perform an assessment of the station breaker chutes for the presence of asbestos. It was also intended to cover the costs associated with misc. repairs at station buildings.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

Inspections revealed additional items of critical construction that required immediate attention, including replacement tiles for the office reception area. However, costs were contained to maintain actual expenditures below the budget.

2. Project Name: New and/or Replacement Vehicles (>4500kg)

2009 Budget Amount: $370,000 Actual Expenditure: $406,635

Acct # 1930 - $406,635

Replacement of truck #23 (from 1994): The purchase of a large vehicle is tendered in 3 parts - chassis/boom/body. Upon awarding the tender, a period of 1 year is required to build and test the truck. The replacement cycle for a radial boom derrick vehicle is 12 years. This expenditure included the chassis, boom and body in the same year.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The apparent over-spend of this 2009 budget item is not a true reflection of the total costs for vehicle replacements. Due to the long lead times for vehicle ordering and deliveries the timing of purchase and delivery of vehicles and their respective components does not match the calendar years in 2008, 2009 and 2010 resulting in under and over expenditures in the respective years. A review of these 3 years indicates total actual expenditures were slightly under budget.

3 . Project Name: GIS Mapping System Upgrades, New Landbase, Asset Management

2009 Budget Amount: $650,000 Actual Expenditure: $780,293

Acct # 1925 - $780,293

Based on the RFI (Request for Information) Burlington Hydro allocated capital dollars for the acquisition, installation and conversion to the successful proponents for a Geographic Information System (GIS).

Starting and In-service Dates

Jan. to Dec. 2009

Variance

As noted above Burlington Hydro had identified a need to collect field data and provide condition assessments of the distribution assets to enhance its asset management plan, and to populate its new Geographic Information System. Some of these additional costs to populate the new GIS software were appropriately allocated to this budget item, resulting in the over-expenditure

Projects below the Materiality Threshold

System Access

1. Project Name: Spare Transformers

2009 Budget Amount: $0 Actual Expenditure: $52,510

Acct # 1850 - $52,510

This budget item provides for the supply of spare distribution transformers for service upgrades, new services and transformer replacements.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

The expenditure was considered necessary to provide for unanticipated transformer failures.

2. Project Name: Current Limiters – Customer Service

2009 Budget Amount: $5,500 Actual Expenditure: $5,192

Acct # 1860 - $5,192

Current Limiters are installed during the winter months in cases where disconnect orders have been issued for non-payment. Customer's usage is limited to 15-20 amps, which is sufficient to run small appliances and the furnace. The load limiting device is installed between the meter and the meter base and is equipped with a 15 or 20 amp breaker.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

The underspent variance on this budget item was minimal.

3 . Project Name: Relocate Wholesale Metering (Palermo TS)

2009 Budget Amount: $84,000 Actual Expenditure: $0

The wholesale metering for Burlington Hydro's two Palermo TS feeders are located within the City limits of Burlington at Tremaine Road and No 1 Side Road, approximately 2 km from Palermo TS which is located within the City limits of Oakville on Bronte Road and No. 1 Side Road. In 2008 Burlington Hydro purchased the Hydro One owned portion of the Palermo feeders between Palermo TS and the Burlington City limits and intended to relocate the wholesale metering equipment accordingly to Palermo TS.

Variance

This budget item was not spent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

4 . Project Name: Cross Phase Analysis (Rodan)

2009 Budget Amount: $30,000 Actual Expenditure: $0

Burlington Hydro intended to contract the services of Rodan to site visit all interval metered customers and perform revenue meter connection inspections and analysis to confirm the absence of revenue losses due to incorrect IT wiring.

Variance

This budget item was not spent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

5 . Project Name: Primary Metering Tank Replacement

2009 Budget Amount: $25,000 Actual Expenditure: $47,313

Acct # 1830 - $34,015 Acct # 1835 - $13,298

The oil filled primary metering unit at one of Burlington Hydro's customer owned substations was scheduled for replacement with a pole mounted dry type unit due to the poor condition of the unit. This work was scheduled in junction with the customer's expansion work which required the relocation of their substation compound and primary switchgear which housed the old primary metering unit.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The project scope changed and final costs included the cost of a new pole and installation of a required neutral conductor.

6 . Project Name: Metering Upgrades from 2.5 Element to 3 Element

2009 Budget Amount: $25,000 Actual Expenditure: $0

The installation of 3 element metering in place of 2 ½ element metering provides greater accuracy of revenue data for invoicing and profiling purposes. Measurement Canada requires that 3 element revenue metering to be installed by LDC's for all new services, and for service upgrades.

Variance

This budget item was not spent as metering staff were not available due to the increased work load installing Smart Meters.

7 . Project Name: Spare Meters & Monitoring Equipment

2009 Budget Amount: $0 Actual Expenditure: $42,109

Acct # 1860 - $42,109

This budget item provides for the supply of spare meters to support new services.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The expenditure was considered necessary to provide an adequate supply of spare meters.

8 . **Project Name: Purchase Milton Hydro Assets**

2009 Budget Amount: $0 Actual Expenditure: $743

Acct # 1835 - $743

This budget item provides for the purchase of items of overhead equipment in resolving some long term load transfers.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The expenditure was necessary to finalize the long term load transfers with Milton Hydro Distribution Inc.

System Renewal

1. **Project Name: Re-commissioning of Various Stations**

2009 Budget Amount: $130,000 Actual Expenditure: $124,734

Acct # 1820 - $124,734

Re-commissioning of various transformer substations is an integral part of Burlington Hydro's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment. The following substations were re-commissioned in 2009.

In service dates:

- Elgin MS – June 2009
- Hampton MS – June 2009
- Partridge MS – June 2009
- Port Nelson MS – November 2009
- Tyandaga MS – November 2009

Variance

The underspent variance on this budget item was minimal.

2. Project Name: Metalclad Equipment Refurbish/Paint

2009 Budget Amount: $20,000 Actual Expenditure: $0

The life of this substation equipment is extended by removing the rust and applying rust inhibitor and paint.

Variance

This budget item was not spent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

3. Project Name: Battery Bank Chargers

2009 Budget Amount: $10,000 Actual Expenditure: $2,725

Acct # 1820 - $2,725

Battery banks and chargers are replaced due to the aging and reduced performance of the existing, less reliable equipment.

The new chargers provide stable battery charge and supply all solid state equipment such as the relays and RTUs (Remote Terminal Unit).

Starting and In-service Dates

Jan. to Dec. 2009

Variance

This budget item was underspent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

4. **Project Name: Control Room Upgrades**

2009 Budget Amount: $125,000 Actual Expenditure: $141,105

Acct # 1980- $141,105

The Burlington Hydro control room is the central operational communication location for the real time status or condition of the distribution system via the construction crews and communication equipment. To achieve this, the control room operators require an up to date Supervisory Control and Data Acquisition (SCADA) system, display monitors, control consoles and computers to monitor and oversee the activities and system status, on a 24/7 basis. An ergonomic review presented recommendations to upgrade this critical work area to minimize the physical challenges for the operators.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The overspent variance on this budget item was minimal for this health and safety item.

5. **Project Name: Miscellaneous Projects**

2009 Budget Amount: $7,500 Actual Expenditure: $3,653

Acct # 1820 - $3,653

This budget item captures unforeseen minor capital costs that arise during the budget year not specifically itemized.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The underspent variance on this budget item confirmed the small number of unforeseen minor capital costs.

6. Project Name: Burlington Mall

2009 Budget Amount: $125,000 Actual Expenditure: $110,396

Acct # 1845 - $110,396

Burlington Mall was built in the 1960's and opened 1968. The mall is serviced with the original cables and switchgear with some portions having been upgraded over the years. The approximate size is 721000 sq ft with approximately 200 stores. The primary cable replacement has been considered for several years and due to aging the cable ampacity has been de-rated. Since the loop feed is supplied from one substation, cable reliability is even more critical. Site inspection of the electrical rooms and the high voltage switchgear revealed concerns on the operating clearance around the switchgear equipment presenting a potential safety concern that is minimized by the application of safe work practices and procedures. This budget item was prepared to resolve these issues.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

This project has not proceeded. There have been enquires from the Mall's consultants regarding a possible major reconstruction, therefore the replacement project has been postponed pending more information on the future options. The actual expenditure covered some of the costs of collecting the field data and providing condition assessments of the distribution assets to enhance the asset management plan, and to populate the new Geographic Information System.

7. Project Name: Butyl Insulated Cable Replacement Program

2009 Budget Amount: $50,000 Actual Expenditure: $14,811

Acct # 1830 - $1,510 Acct # 1845 - $13,301

This proactive Burlington Hydro program targeted older 5kV underground primary cables having butyl conductor insulation which inherently becomes brittle over time and ultimately fails. The existing system consists of butyl insulated cables in some areas that are supplied radially requiring the construction of temporary overhead line to maintain supply when a radial cable fails. This proactive approach considerably reduces the higher cost of such temporary solutions.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

This budget item was underspent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

8. Project Name: Cable Rebuild (North Brant Hills)

2009 Budget Amount: $25,000 Actual Expenditure: $0

This project was scheduled for field work and detailed design in 2009, with construction planned for 2010.

<u>Variance</u>

Field work and detailed design were re-scheduled into 2010 and no costs were accumulated in 2009.

System Service

1. Project Name: Upgrade Relays to Solid State

2009 Budget Amount: $80,000 Actual Expenditure: $42,243

Acct # 1820 - $42,243

The upgrades of solid state relays were necessary to replace aging electro mechanical relay systems. Solid state relays improve the performance, reliability and available fault and operation data records with less labour intensive maintenance activities.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

This budget item was underspent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

2. Project Name: Upgrade RTUs

2009 Budget Amount: $25,000 Actual Expenditure: $9,164

Acct # 1820 - $9,164

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the Burlington Hydro control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

This budget item was underspent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

3. Project Name: Transducers

2009 Budget Amount: $5,000 Actual Expenditure: $0

New transducers replace defective units which provide analog read outs through SCADA system. The transducer lowers the relay current and voltage levels to milliamps and millivolts for SCADA communications through the RTU.

Variance

This budget item was not spent to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets

4 . Project Name: Fault Indicators

2009 Budget Amount: $25,000 Actual Expenditure: $0

The installation of primary fault indicators within the distribution system provides faster detection of failures which translates into improved restoration times. Placement of this equipment in strategic locations is an on-going aspect of Burlington Hydro's system growth and improvement.

Variance

This budget item was not spent, in 2009, to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

General Plant

1. **Project Name: New and/or Replacement Vehicles (<4500kg)**

2009 Budget Amount: $85,000 Actual Expenditure: $145,446

Acct # 1930 - $145,446

The replacement cycle for small vehicles is 8 years. The replacement vehicles are reflected in Burlington Hydro's rolling stock 10 year forecast. In 2009 car #76 was replaced with a hybrid vehicle and truck #4 was replaced with pick up.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

<u>Variance</u>

As in the previous item the apparent over-spend of this 2009 budget item is not a true reflection of the total costs for vehicle replacements. Due to the long lead times for vehicle ordering and deliveries the timing of purchase and delivery of vehicles and their respective components does not match the calendar years in 2008, 2009 and 2010 resulting in under and over expenditures in the respective years. A review of these 3 years indicates total actual expenditures were slightly under budget.

2. **Project Name: Daffron Custom Programming**

2009 Budget Amount: $20,000 Actual Expenditure: $2,533

Acct # 1925 - $2,533

The OEB continued to introduce many regulatory changes in 2009. These changes had direct impact on our customer information system. In order to implement these changes in the required time, Burlington Hydro (in conjunction with other Ontario Daffron LDCs to share the costs) needed the assistance of its software vendor (Daffron) to incorporate these changes.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2009

Variance

With the exception of the programming changes to accommodate Smart Meters, which were allocated to the Smart Meter Variance account, the regulatory changes were not significant, allowing costs to be minimized.

3. Project Name: Health and Safety Software

2009 Budget Amount: $3,000 Actual Expenditure: $0

The current software is a 1990's version and requires updating due to inefficiencies/labour intensive requirements. An updated version was anticipated to payback the investment in the time (administrative) savings alone.

Variance

The benefits of this application were re-evaluated and the expenditure was postponed.

4. Project Name: OCE Printer Software

2009 Budget Amount: $6,000 Actual Expenditure: $0

To improve efficiency of its OCE digital printer/scanner, Burlington Hydro budgeted to acquire a network software application allowing the engineering technicians to send plots directly to the OCE printer from their terminals when electronic drawings are the only available source.

Variance

This expenditure was postponed to accommodate the increased budgetary requirement to enhance Burlington Hydro's asset management plan, and to populate its new Geographic Information System by collecting field data and providing condition assessments of the distribution assets.

5. Project Name: Tools, Shop and Garage Equipment

2009 Budget Amount: $25,000 Actual Expenditure: $15,644

Acct # 1940 - $15,644

This expenditure is for specialized tools used by the trades' staff for performance of Capital and Operating work on Burlington Hydro's Distribution system.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The continuous attention to specific requirements resulted in the under-spending of this budget item.

6. Project Name: Measurement and Testing Equipment

2009 Budget Amount: $14,600 Actual Expenditure: $7,872

Acct # 1945 - $7,872

This expenditure is for specialized tools used by Meter Department staff, for the performance of Capital and Operating work on Burlington Hydro's Metering system.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The continuous attention to specific requirements resulted in the under-spending of this budget item.

7. Project Name: Computer Equipment – Hardware

2009 Budget Amount: $56,000 Actual Expenditure: $28,284

Acct # 1920 - $28,284

It is necessary for Burlington Hydro to replace and update communication equipment and personal computers, to equip staff with current technological tools.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The continuous and close attention to specific computer equipment requirements resulted in the under-spending of this budget item.

8. Project Name: Furniture & Equipment

2009 Budget Amount: $77,900 Actual Expenditure: $82,457

Acct # 1915 - $82,457

This account includes a number of items primarily focused on safety. The principle element is the continued replacement of aged conventional office furniture with ergonomically designed seating and workstations. Burlington Hydro started this program in 2007, addressing areas on a priority basis. Other items included more Automatic External Defibrillators (AEDs), sound monitoring/noise reduction equipment and employee communications stations.

Starting and In-service Dates

Jan. to Dec. 2009

Variance

The overspent variance on this budget item was not materially significant, recognizing that the focus was primarily on safety.

Capital Project Descriptions 2010

Introduction

This overall summary provides explanations of variances for each of the budget items within the 2010 capital budget. It should also be noted that Burlington Hydro identified a number of significant, unforecasted, but necessary, expenditures e.g. replacement of a failed substation power transformer, replacement of additional wholesale metering equipment as required by Hydro One's schedule, the cost of an underground feeder installation within a new development area to accommodate future supply from the proposed new Hydro One Transformer Station and a large overhead line relocation to accommodate a Region of Halton road reconstruction project. To provide adequate funds to provide for these items it became necessary to reallocate some funds from approved projects to ensure overall capital expenditures were not exceeded. These reallocations are explained within the variances for many of the items within this summary. There are described as reallocations of funds for these unanticipated expenditures. The Actual Expenditures shown include Burlington Hydro costs and any capital contributions.

The following summarizes the 2010 Capital Expenditure Budget (excluding Smart Meters), funded by Burlington Hydro, and therefore the actual Burlington Hydro Cost of Asset Additions.

2010 Cost of Asset Additions
$9.590,124*

*This expenditure includes $729,199 that is accrued to subdivision developers for BHI's portion of the underground servicing costs in accordance with the Distribution System Code.

This demonstrates and confirms Burlington Hydro's commitment to tight fiscal controls on its annual capital expenditures.

Projects above the Materiality Threshold

SYSTEM ACCESS

1. **Project Name: General Service – Underground**

2010 Budget Amount: $1,595,000 2010 Actual Expenditure: $1,835,256

Acct # 1840 - $293,134 Acct # 1845 – $800,530 Acct # 1850 - $1,732 Acct # 1855 – $739,860

This general service account captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, connection pedestal installations under the category of General Service – Underground. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services
- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials required for maintenance work

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The over-expenditure reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers. Approximately 48% of the actual expenditures were provided by contributed capital from third parties.

2. **Project Name: Subdivisions Assumed**

2010 Budget Amount: $2,000,000 2010 Actual Expenditure: $1,366,078

Acct # 1840 - $724,214 Acct # 1845 - $163,096 Acct # 1855 - $478,768

BHI is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline BHI's offer to connect and hires their own electrical consultant and BHI approved contractor:

- project design review
- project inspection
- project administration
- material approval
- vendor selection
- determination of financial securities to be submitted
- perform perimeter adjustments required to connect new development to existing distribution system
- install termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary
- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before BHI assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to BHI. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The budget amount for subdivisions is always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the City of Burlington's zoning by-laws etc. However, 100% of the actual expenditures were provided by contributed capital from developers.

3. Project Name: City Projects

2010 Budget Amount: $740,000 2010 Actual Expenditure: $641,769

Acct # 1830 - $236,432 Acct # 1835 - $220,282 Acct # 1840 - $16,004 Acct # 1845 - $12,850 Acct # 1850 - $85,745 Acct # 1855 - $70,454

The City of Burlington originally proposed two major projects; the Mainway Grade Separation and the Harvester Road and Gateway projects. These projects did not proceed in 2010; however the City of Burlington initiated the following series of other projects, requiring relocations by BHI:

- Hwy 403 and Waterdown Road
- Waterdown Road & N. Service Rd.
- Walkers Line – Dundas to Palladium Way
- Harvester Rd. and Century Drive
- Appleby Line and Fairview St.
- 12 Mile Trail – Orchard
- Lakeshore Road and Fruitland

<u>Starting and In-service Dates</u>

Jan. to Dec. 2010

<u>Variance</u>

The actual expenditures on these projects totaled $641,769 of which approximately 79% was funded by contributed capital.

4. Project Name: Region Projects

2010 Budget Amount: $300,000 2010 Actual Expenditure: $573,712

Although the Region of Halton provides a two year schedule of planned projects it does not provide drawings or detailed information of utility conflicts. This budget amount was reserved for planned Region works requiring Burlington Hydro relocations in the event of conflicts.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2010

Variance

The Region of Halton required two major relocation projects, in 2010. One was a continuation of a 2009 project at Uppermiddle Road and Burloak Drive and a major relocation on Appleby Line between Taywood and Harrison Court. This work was non-discretionary for Burlington Hydro and resulted in the budget over-spend. Approximately 10% was funded by contributed capital.

5. **Project Name: General Service - Overhead**

2010 Budget Amount: $975,000 2010 Actual Expenditure: $1,477,221

Acct # 1830 - $788,625 Acct # 1835 - $400,659 Acct # 1840 - $5,434 Acct # 1845 - $2,284 Acct # 1850 - $44,375 Acct # 1855 - $235,844

This budgetary item captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services
- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The over-expenditure again reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers. Approximately 23% of the actual expenditures were provided by contributed capital from third parties.

6. Project Name: Transformers Installed

2010 Budget Amount: $1,000,000 2010 Actual Expenditure: $1,388,125

Acct # 1850 - $1,388,125

This budget item provides for the supply and installation of distribution transformers for service upgrades, new services and transformer replacements.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The budget amount is always very speculative and dependent on a number of large variables relating to upgrades and new construction activity.

7. Project Name: Subdivision Assumed Transformers

2010 Budget Amount: $600,000 2010 Actual Expenditure: $334,074

Acct # 1850 - $334,074

This budget item provides for the supply and installation of distribution transformers installed by developers within new subdivisions. The budget and equipment originates within the Subdivisions Assumed project noted above.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The budget amount is always very speculative and dependent on a number of large variables relating to upgrades and new construction activity.

8. **Project Name: Meters Installed – Residential, Commercial and Wholesale**

2010 Budget Amount: $500,000 2010 Actual Expenditure: $730,749

Acct # 1860 - $730,749

This project captures the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground applications; and includes primary metering units for large industrial customers.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The actual expenditures are non-discretionary; the over-expenditure was primarily due to the larger volume of residential meters.

9. **Project Name: Smart Meters (Installed by BHI staff)**

2010 Budget Amount: $0 2010 Actual Expenditure: $686,500

Acct # 1860 - $686,500

This project captures the labour and material costs for Smart Meters installed by BHI staff.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The actual expenditures are non-discretionary; the over-expenditure was due to the large volume of residential and commercial meters.

10. Project Name: Wholesale Metering Upgrade at Cumberland TS

2010 Budget Amount: $380,000 2010 Actual Expenditure: $704,449

Acct # 1860 - $704,449

Hydro One metering requirements for compliance includes having documentation pertaining to

all TS wholesale metering equipment. The specialized IT metering equipment for Cumberland TS is located within the throat of the transformer and was installed by Hydro One (formerly Ontario Hydro). Hydro One does not have complete IT records to provide the necessary documentation to meet Measurement Canada compliance. The action plan mandated by the IESO is for Hydro One to replace the existing IT metering equipment solely at BHI's cost.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The first of two upgrades was originally budgeted for and scheduled for 2009 but was postponed. Hydro One re-scheduled and completed both upgrades in 2010 hence the significantly higher expenditure of this budget item.

11. Project Name: Contributions and Grants

2010 Actual Contribution: ($2,905,190)

Acct # 1995 – ($2,905,190)

The Distribution System Code and BHI's Conditions of Service provide the basis for determining the capital contributions to be paid by customers, developers, third parties and government authorities. These funds are applied towards the associated costs for the installation and/or modification of hydro infrastructure and connection assets as required.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The Actual Expenditure is a summary of all of the capital contributions received from third parties such as developers and municipal agencies as noted in the above these budget items. They are not expenditures by Burlington Hydro. The budgets are always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the municipal road projects etc.

SYSTEM RENEWAL

1. **Project Name: Cable Rebuild (North Brant Hills)**

2010 Budget Amount: $500,000 2010 Actual Expenditure: $456,739

Acct # 1840 - $337,187 Acct # 1845 – $97,785 Acct # 1850 - $21,767

As part of its Asset Management Strategy BHI identifies underground subdivisions where primary cable faults have increased and reliability performance has deteriorated to unacceptable levels. This budget item was focused on the North Brant Hills neighbourhood where performance improvements were necessary.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

Actual expenditures were comfortably within budget.

2. **Project Name: Pole Replacement Program**

2010 Budget Amount: $700,000 2010 Actual Expenditure: $565,248

Acct # 1830 - $357,600 Acct # 1835 - $123,376 Acct # 1840 - $5,141 Acct # 1850 - $38,937 Acct # 1855 - $40,195

BHI's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced annually to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during BHI preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This budget item was underspent to provide funds for the unanticipated expenditures noted above.

3. Project Name: PCB Free Compliance - Transformer Replacement

2010 Budget Amount: $200,000 2010 Actual Expenditure: $79,463

Acct # 1830 - $10,721 Acct # 1835 - $2,849 Acct # 1840 - $824 Acct # 1845 - $8,863

Acct # 1850 - $49,904 Acct # 1855 - $6,302

Following BHI's transformer oil sampling and testing program, BHI implemented a transformer replacement program to replace PCB transformers containing specified levels of PCB's in accordance with Federal Government of Canada Regulations. All transformers meeting the following conditions must be replaced by the end of 2009:

- all transformers with PCB content greater than 500 ppm;

- all padmount transformers with PCB content greater than 50 ppm and less than 500 ppm within 100m of sensitive areas as defined by the Regulations; and
- all transformers with PCB content greater than 50 ppm within 100m of sensitive areas as defined by Regulations.

The Federal Government of Canada has allowed an extension up to 2014 for the replacement of transformers that do not fall within the above criteria for transformer replacement by the end of 2009.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The actual scope of the remaining work was less than anticipated, resulting in the under-spend of this budget item.

4. Project Name: Rebuild Crossings

2010 Budget Amount: $185,000 2010 Actual Expenditure: $132,938

Acct # 1830 - $89,293 Acct # 1835 - $30,601 Acct # 1850 - $6,965 Acct # 1855 - $6,078

BHI has a 4kV overhead pole line adjacent to Plains Road West at the Grindstone Creek bridge crossing. It was inspected and found to be in very poor condition. The location of the poles followed the slopes into the creek valley which made access impossible with BHI equipment. The solution was to rebuild the crossing using a single long span with concrete poles c/w pole foundations and high tension conductors, due to the long span (250 metres).

Starting and In-service Dates

Jan. to Dec. 2010

Variance

Design and construction efficiencies were obtained to reduce the actual expenditures below the original budget.

SYSTEM SERVICE

1. **Project Name: Motorized ABS Program**

2010 Budget Amount: $400,000 2010 Actual Expenditure $274,249

Acct # 1830 - $145,842 Acct # 1835 - $128,407

BHI has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This budget item was underspent to provide funds for the unanticipated expenditures noted above.

GENERAL PLANT

1. **Project Name: 1340 Brant St. & Substation Properties**

2010 Budget Amount: $175,000 2010 Actual Expenditure $225,968

Acct # 1808 - $34,915 Acct # 1908 - $191,053

This budgetary item was required to upgrade and replace structures and equipment at BHI's main office at 1340 Brant Street. Expenditures are organized in a 10 year program and are to include the replacement of aging HVAC roof top units including the conversion from electric to gas as identified in the building audit in 2007. Other major cost expenditures include the replacement of the 1961 Air Handler unit on the furnace and upgrade the propane Kohler generator to gas.

The expenditure also covered the costs of maintenance and repairs required at BHI's 32 Distribution Station ("DS") Buildings. Maintenance and repairs include items such as door, wall and plaster repairs to secure and protect electrical equipment located within. Funds from this budget were also allocated for the installation of exhaust and roof vents at 15 Distribution Stations.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The urgent and essential building repairs were completed. The remaining budget items were postponed to reallocate funds for the unanticipated expenditures noted above.

Projects below the Materiality Threshold

System Access

1. **Project Name: Burlington Performing Arts Centre**

2010 Budget Amount: $0 2010 Actual Expenditure: $12,201

Acct # 1830 – $12,201

This was the final completion of the 2008/9 project. The Burlington Performing Arts Centre is a high profile City project of significant importance to the City. The design incorporated innovative padmounted underground switching load centres to replace the existing overhead automation device and numerous service and feeder supply points

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This relatively minor expenditure was required to finalize this project.

2. Project Name: MTO. QEW HWY & Fairview Street - Overpass Reconstruction

2010 Budget Amount: $0 2010 Actual Expenditure: $35,326

Acct # 1830 - $21,139 Acct # 1835 - $9,968 Acct # 1845 - $4,219

The Ministry of Transportation proposed to widen the eastbound 407 on-ramp at Fairview Street which required BHI to relocate its facilities supporting the 2 – 27.6kV overhead feeders across the on-ramp. This widening required the crossing span to be lengthened and supported at a higher elevation.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This work was non-discretionary for Burlington Hydro and the expenditure was required to satisfy the MTO schedule.

3. Project Name: Spare Transformers

2010 Budget Amount: $0 2010 Actual Expenditure: $94,249

Acct # 1850 - $94,249

An inventory of spare transformers is maintained at a reasonable level to replace legacy transformers that may not be easily replaced with current standard units.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The expenditure was considered necessary to minimize risk and provide for unanticipated transformer failures.

4 . Project Name: Spare Meters & Miscellaneous Equipment

2010 Budget Amount: $0 2010 Actual Expenditure: ($14,872)

Acct # 1860 – ($14,872)

This item captures the status of the spare meter inventory. At the end of 2010 the inventory was slightly below the prescribed level that had been established as normal.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This cost reallocation was considered necessary to minimize risk and renew the meter inventory to a reasonable level.

System Renewal

1. Project Name: Control Room Upgrades

2010 Budget Amount: $100,000 2010 Actual Expenditure: $4,055

Acct # 1980 - $4,055

The BHI control room is the central operational communication location for the real time status or condition of the distribution system via the construction crews and communication equipment. To achieve this, the control room operators require an up to date Supervisory Control and Data Acquisition (SCADA) system, display monitors, control consoles and computers to monitor and oversee the activities and system status, on a 24/7 basis. An ergonomic review presented recommendations to upgrade this critical work area to minimize the physical challenges for the operators.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This budget item was underspent to provide funds for the unanticipated expenditures noted above.

2. Project Name: Vacuum Breaker Conversions – (Asbestos Removal)

2010 Budget Amount: $105,000 2010 Actual Expenditure: $58,645

Acct # 1820 - $58,645

The conversion to new technology vacuum circuit breakers improves station reliability and eliminates the potential hazard from asbestos arc chutes. A previous inspection program had identified several station breakers having asbestos in the arc chutes which was recommended for removal.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

Only one substation was converted resulting in the underspent budget item.

3. Project Name: Butyl Insulated Cable Replacement Program

2010 Budget Amount: $50,000 2010 Actual Expenditure: $12,112

Acct # 1835 - $394 Acct # 1840 - $4,597 Acct # 1845 - $7,121

This proactive BHI program targets old 5kV underground primary cables having butyl rubber conductor insulation which inherently becomes brittle over time and ultimately fails. The butyl rubber cables are often present in areas supplied radially and require the construction of temporary overhead lines to maintain supply when a radial cable fails. The cost for reactive action relative to proactive action is considerably higher due to the added temporary overhead construction.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This budget item was underspent to provide funds for the unanticipated expenditures noted above.

4. Project Name: Primary Metering Tank Replacement

2010 Budget Amount: $25,000 2010 Actual Expenditure: $38,800

Acct # 1830 - $18,269 Acct # 1835 - $20,531

The oil filled primary metering unit at one of Burlington Hydro's customer owned substations was scheduled for replacement with a pole mounted dry type unit due to the poor condition of the unit. This work was scheduled in junction with the customer's expansion work which required the relocation of their substation compound and primary switchgear which housed the old primary metering unit.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This original project had been completed earlier to satisfy the customer's schedule; however, there was a requirement for a primary metering unit for Phase 1 of the Region of Halton's Sewage Treatment Plant. A lightning strike at Sound Design also created the need for an additional unit. These unanticipated projects created the over spend of this budget item.

5 . **Project Name: Re-commission Substations**

2010 Budget Amount: $140,000 2010 Actual Expenditure: $156,313

Acct # 1820 - $156,313

Re-commissioning of various transformer substations is an integral part of BHI's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment. The following substations were re-commissioned in 2010.

In service dates:

- Elgin MS – June 2010
- Hampton MS – June 2010
- Partridge MS – June 2010
- Port Nelson MS – November 2010
- Tyandaga MS – November 2010

<u>Variance</u>

The overspent variance on this budget item was not materially significant, recognizing the critical importance of the substation equipment.

System Service

1. **Project Name: Upgrade Relays to Solid State**

2010 Budget Amount: $80,000 2010 Actual Expenditure: $56,271

Acct # 1980 - $56,271

The upgrades of solid state relays were necessary to replace aging electro mechanical relay systems. Solid state relays improve the performance, reliability and available fault and operation data records with less labour intensive maintenance activities.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This budget item was underspent to provide funds for the unanticipated expenditures noted above.

2. Project Name: Upgrade RTUs

2010 Budget Amount: $60,000 2010 Actual Expenditure: $30,245

Acct # 1980 - $30,245

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the BHI control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

This budget item was underspent to provide funds for the unanticipated expenditures noted above.

3. Project Name: Transducers

2010 Budget Amount: $5,000 2010 Actual Expenditure: $2,252

Acct # 1980 - $2,252

New transducers replace defective units which provide analog read outs through SCADA system. The transducer lowers the relay current and voltage levels to milliamps and millivolts for SCADA communications through the RTU.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The underspent variance on this budget item was not materially significant.

4. Project Name: Sherwood Forest Park 27.6kV Feeder Tie

2010 Budget Amount: $55,000 2010 Actual Expenditure: $54,250

Acct # 1830 - $21,510 Acct # 1835 - $32,740

The Sherwood Forest Park 27.6kV feeder tie was an operational requirement to provide the distribution system flexibility in switching system load between feeders in such a way to leverage feeder capacity recently made available from Bronte TS. The scope of work involved additional 27.6kV overhead construction.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

Actual expenditures were within the budget amount.

General Plant

1 . Project Name: Stations Tools, Shop and Garage Equipment

2010 Budget Amount: $50,500 2010 Actual Expenditure: $21,559

Acct # 1940 - $21,559

This expenditure was required for specialized tools used by operations staff for the performance of Capital and Operating work on BHI's distribution system.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The continuous attention to specific requirements resulted in the under-spending of this budget item.

2. Project Name: Metering Measurement and Testing Equipment

2010 Budget Amount: $13,000 2010 Actual Expenditure: $3,995

Acct # 1945 - $3,995

This expenditure is for specialized tools used by Meter Department staff, for the performance of Capital and Operating work on BHI's Metering system.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The continuous attention to specific requirements resulted in the under-spending of this budget item.

3. Project Name: New and/or Replacement Vehicles (>4500kg)

2010 Budget Amount: $150,000 2010 Actual Expenditure: $42,572

Acct # 1930 - $42,572

The purchase of a large vehicle is tendered in 3 parts - chassis/boom/body. Due to the long lead times for vehicle ordering and deliveries the timing of purchase and delivery of vehicles and their respective components does not necessarily match a calendar year. This expenditure is consistent with this budget strategy.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The apparent under-spend of this 2010 budget item is not a true reflection of the total costs for vehicle replacements. Due to the long lead times for vehicle ordering and deliveries the timing of purchase and delivery of vehicles and their respective components does not match the calendar years in 2008, 2009 and 2010 resulting in under and over expenditures in the respective years. A review of these 3 years indicates total actual expenditures were slightly under budget.

4. Project name: New and/or Replacement Vehicles (<4500kg)

2010 Budget Amount: $35,000 2010 Actual Expenditure: $38,406

Acct # 1930 - $38,406

Small vehicles for supervisors and foreman were purchased and are usually maintained within the fleet for 8 years. Vehicles are recycled to various departments to manage the mileage on the vehicles and therefore extend the life of the vehicle.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

Overall expenditures slightly exceeded the original estimate but were not materially significant.

5. Project Name: Misc. Office Equipment

2010 Budget Amount: $8,000 2010 Actual Expenditure: $24,379

Acct # 1915 - $24,379

This budgetary item includes costs associated with the purchase of new printers, faxes, photo copiers and ergonomically designed office furniture, for the various departments. It also included the completion of the Automated External Defibrillators (AEDs) program.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The actual scope of this budget item was increased slightly to include new ergonomically designed office furniture and accessories, hence the small over spend. Note that actual expenditures for the next budget item (Ergonomics) were zero.

6. **Project Name: Ergonomics**

2010 Budget Amount: $40,000 Actual Expenditure: $0

To support BHI's strategic position, which in turn supports an MOL Provincial initiative, an internal Ergonomics Change Team was trained to identify/assess risks associated with musculoskeletal disorders (MSD's). Assessments were completed; recommended interventions included a combination of reconfiguring existing equipment, updating IT, enhancing work postures/work organization, and to a large extent updating work station components to meet current ergonomic standards (office environment). For the trades it was intended to acquire ergonomically designed tools as they become available/improving seating/ladder racks..

Variance

This budget item was not spent to reallocate funds for the unanticipated expenditures noted above.

7. **Project Name: Telephone Upgrade PBX, Voice Mail, VOIP, ACD Systems**

2010 Budget Amount: $50,000 2010 Actual Expenditure: $27,776

Acct # 1915 - $27,776

The telephone upgrade was planned in response from the vendor (Bell Canada) notifying BHI that the current equipment will no longer be supported after June 2010.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The actual scope of the upgrade work was less than anticipated, resulting in the under-spend of this budget item.

8. Project Name: Computer Equipment – Hardware/Personal Computers

2010 Budget Amount: $60,000 2010 Actual Expenditure: $30,294

Acct # 1920 - $30,294

It is necessary for BHI to replace and update communication equipment and personal computers, to equip staff with current technological tools and to maintain the high level of network security.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The continuous and close attention to specific computer equipment requirements resulted in the under-spending of this budget item.

9. Project Name: Computer Room Network Security System Upgrade

2010 Budget Amount: $20,000 2010 Actual Expenditure: $23,197

Acct # 1920 - $23,197

As part of its ongoing due diligence in cyber security, BHI upgraded its corporate firewall, and added an appliance allowing web based access to the corporate network via an encrypted Virtual Private Network (VPN) connection.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The overspent variance on this budget item was considered acceptable recognizing the critical importance of the cyber security equipment.

10. Project Name: Daffron Custom Programming

2010 Budget Amount: $20,000 2010 Actual Expenditure: $12,816

Acct # 1925 - $12,816

Regulatory changes, in 2010, had a direct impact on BHI's customer information system. In order to implement these changes in the required time, BHI (in conjunction with other Ontario LDCs to share the costs) engaged the assistance of its software vendor (Daffron) to incorporate these changes.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The regulatory changes were not significant allowing costs to be minimized.

11. Project Name: Windows 7 Operating System Site Licence

2010 Budget Amount: $25,000 2010 Actual Expenditure: $19,579

Acct # 1925 - $19,579

To keep up to date with current business PC software, BHI updated its Microsoft site licenses to the new Windows 7 Operating System.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

Actual expenditures were comfortably within budget.

12. Project Name: GIS Interfaces (OMS, Ortho Mapping, etc.)

2010 Budget Amount: $125,000 2010 Actual Expenditure: $169,669

Acct # 1925 - $169,669

To maximize the benefits of the new “open architecture” GIS mapping system BHI developed interface applications (via a 3rd party vendor) to share data with other BHI systems (eg. CIS, SCADA, etc.). The ability to share rather than duplicate data reduces the possibility of error and increases efficiency.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The actual scope exceeded the original plan; the additional expenditure was required to continue to advance this critical project.

13. Project Name: Daffron iXP Dashboard

2010 Budget Amount: $15,000 2010 Actual Expenditure: $35,470

Acct # 1925 - $35,470

BHI senior management identified a need for increased accessibility to its existing information systems, for effective decision making. In the past, the I.S. department has looked at a number of Dashboard products. These products could require considerable customization to be updated with BHI’s ERP system (Daffron) data. In 2009, BHI’s software vendor (Daffron) announced the availability of its own Dashboard product. It was expected that this system would be a more cost effective solution not requiring customization.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

A re-evaluation of the required functionality of this project was carried out and a more comprehensive scope was prepared. A complete solution, to match the revised scope, was offered by an alternative vendor. This resulted in additional expenditures but a solution matching the complete needs.

14. Project Name: Miscellaneous (Tablets, Software)

2010 Budget Amount: $0 2010 Actual Expenditure: $33,217

Acct # 1920 - $21,495 Acct # 1925 - $1,722

The BHI board and senior management employed the use of tablets and associated software.

Starting and In-service Dates

Jan. to Dec. 2010

Variance

The expenditures on this budget item were considered reasonable to improve communications, minimize administrative activities and reduce the environmental impact.

Capital Project Descriptions 2011

Introduction

This overall summary provides explanations of variances for each of the budget items within the 2011 capital budget. It summarizes the 2011 Capital Expenditure Budget (excluding Smart Meters), funded by Burlington Hydro, and therefore the actual Burlington Hydro Cost of Asset Additions.

2011 Cost of Asset Additions
$8,862,613*

*This expenditure includes $455,191 that is accrued to subdivision developers for BHI's portion of the underground servicing costs in accordance with the Distribution System Code.

This demonstrates and confirms Burlington Hydro's commitment to tight fiscal controls on its annual capital expenditures.

Projects above the Materiality Threshold

SYSTEM ACCESS

1. **Project Name: General Service – Underground**

2011 Budget Amount: $1,045,000 2011 Actual Expenditure: $1,498,305

Acct # 1840 - $4,842 Acct # 1835 - $13,543 Acct # 1840 - $274,531 Acct # 1845 – $657,769 Acct # 1850 - $58,260 Acct # 1855 – $489,357

This general service account captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, connection pedestal installations under the category of General Service – Underground. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services

- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials required for maintenance work

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The over-expenditure reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers. Approximately 37% of the actual expenditures were provided by contributed capital from third parties.

2. Project Name: Subdivisions Assumed

2011 Budget Amount: $1,400,000 2011 Actual Expenditure: $665,947

Acct # 1840 - $239,116 Acct # 1845 - $112,107 Acct # 1855 - $314724

BHI is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline BHI's offer to connect and hires their own electrical consultant and BHI approved contractor:

- project design review
- project inspection
- project administration
- material approval
- vendor selection
- determination of financial securities to be submitted
- perform perimeter adjustments required to connect new development to existing distribution system
- install termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary
- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before BHI assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to BHI. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The budget amount for subdivisions is always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the City of Burlington's zoning by-laws etc. However, 100% of the actual expenditures were provided by contributed capital from developers.

3. Project Name: City Projects

2011 Budget Amount: $800,000 2011 Actual Expenditure: $41,116

Acct # 1830 - $24,972 Acct # 1835 - $9,616 Acct # 1840 - $1,635 Acct # 1850 - $4,893

This budget item provides funds to address the City of Burlington's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The City of Burlington planned a street widening project at Harvester road east and west of Walkers Line requiring the relocation of BHI's primary pole line to accommodate the new curb offset. The project includes approximately 18 poles carrying 27.6kV and 13.8kV circuits with primary switches and secondary dips plus 7 stub poles.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The City of Burlington did not proceed with this major relocation, in 2011, however the following other projects were identified.

- Harvester Rd. and Walkers Line
- Harvester Rd. at Gateway
- 360 Northshore Blvd – Falcon Creek

These projects had to be accommodated to satisfy the city's schedule.

4. Project Name: Region Projects

2011 Budget Amount: $210,000 2011 Actual Expenditure: $122,009

Acct # 1830 - $60,106 Acct # 1835 - $45,467 Acct # 1840 - $1,627 Acct # 1845 - $1,605 Acct # 1850 - $2,455 Acct # 1855 - $1,108 Acct # 1860 – $9,640

This budget item allows for the relocation of distribution assets necessitated by the Region of Halton's road reconstruction, streetscape rehab projects and bicycle path installations at various locations. A specific project at Dundas St. and Walkers Line was identified but not confirmed.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The Region of Halton did not proceed with the major relocation, in 2011. However, two relocation projects were required in 2011.

- 1125 Lakeshore Road – Wastewater Treatment Plant Ph. 2
- Heathfield Road – Washburn Reservoir

5. Project Name: General Service - Overhead

2011 Budget Amount: $755,000 2011 Actual Expenditure: $2,427,652

Acct # 1830 - $1,473,653 Acct # 1835 - $725,120 Acct # 1840 - $7,357 Acct # 1850 - $41,055 Acct # 1855 - $172,718 Acct # 1860 - $7,755

This budgetary item captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services
- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

<u>Starting and In-service Dates</u>

Jan. to Dec. 2011

<u>Variance</u>

The over-expenditure reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers. Approximately 14% of the actual expenditures were provided by contributed capital from third parties.

6. Project Name: Transformers Installed

2011 Budget Amount: $1,000,000 2011 Actual Expenditure: $1,043,047

Acct # 1850 - $1,043,047

This budget item provides for the supply and installation of distribution transformers for service upgrades, new services and transformer replacements.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The budget amount is always very speculative and dependent on a number of large variables relating to upgrades and new construction activity.

7. **Project Name: Subdivision Assumed Transformers**

2011 Budget Amount: $600,000 2011 Actual Expenditure: $145,613

Acct # 1850 - $145,613

This budget item provides for the supply and installation of distribution transformers installed by developers within new subdivisions. The budget and equipment originates within the Subdivisions Assumed project noted above.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The budget amount for subdivisions is always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the City of Burlington's zoning by-laws etc.

8. **Project Name: Spare Transformers**

2011 Budget Amount: $0 2011 Actual Expenditure: ($702,027)

Acct # 1850 – ($702,027)

This item was not originally included in the 2011 Capital Budget.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

An inventory of spare transformers is maintained at a reasonable level to replace legacy transformers that may not be easily replaced with current standard units. BHI reviewed its requirements for spare transformers and re-allocated this asset value from capital to inventory.

9. Project Name: Meters Installed – Residential, Commercial and Wholesale

2011 Budget Amount: $200,000 2011 Actual Expenditure: ($88,158)

Acct # 1860 – ($88,158)

This project captures the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground applications; and includes primary metering units for large industrial customers.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The actual expenditures also include the results of a review of its requirements for spare meters that re-allocated some meter assets from capital to inventory, resulting in the negative value.

10. Project Name: Smart Meters (Installed by BHI staff)

2011 Budget Amount: $0 2011 Actual Expenditure: $310,133

Acct # 1860 - $310,133

This project captures the labour and material costs for Smart Meters installed by BHI staff.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The actual expenditures are non-discretionary; the over-expenditure was due to the large volume of residential and commercial meters.

11. Project Name: Contributions and Grants

2011 Actual Contribution: ($1,447,615)

Acct # 1995 – ($*1,447,615*)

The Distribution System Code and BHI's Conditions of Service provide the basis for determining the capital contributions to be paid by customers, developers, third parties and government authorities. These funds are applied towards the associated costs for the installation and/or modification of hydro infrastructure and connection assets as required.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The Actual Expenditure is a summary of all of the capital contributions received from third parties such as developers and municipal agencies as noted in the above these budget items. They are not expenditures by Burlington Hydro. The budgets are always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the municipal road projects etc.

SYSTEM RENEWAL

1 . Project Name: New 10 MVA Station Transformer

2011 Budget Amount: $400,000 2011 Actual Expenditure: $352,524

Acct # 1820 - $352,254

This project is the first year of a program to provide for the replacement of substation power transformers based on their age and condition. The particular units are over 40 years old and are critical to the long term reliability of the distribution system.

Starting and In-service Dates

April to Oct. 2011

Variance

The tendering process resulted in an actual expenditure that was comfortably under budget.

2 . Project Name: Cable Rebuild (North Brant Hills)

2011 Budget Amount: $500,000 2011 Actual Expenditure: $404,426

Acct # 1840 - $281,253 Acct # 1845 – $122,210 Acct # 1850 - $962

As part of its Asset Management Strategy BHI identifies underground subdivisions where primary cable faults have increased and reliability performance has deteriorated to unacceptable levels. This budget item was a continuation of a 2010 project and focused on the North Brant Hills neighbourhood where performance improvements were necessary.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

Actual expenditures were comfortably within budget.

3 . Project Name: Pole Replacement Program

2011 Budget Amount: $550,000 2011 Actual Expenditure: $738,621

Acct # 1830 - $461,295 Acct # 1835 - $95,223 Acct # 1840 - $2,817 Acct # 1845 - $1,594

Acct # 1850 - $74,272 Acct # 1855 - $103,420

BHI's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced annually to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during BHI preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

<u>Starting and In-service Dates</u>

Jan. to Dec. 2011

<u>Variance</u>

This budget item was overspent to catch up on a back log of poles that had been identified for replacement. The integrity of these poles was considered critical to the security and reliability of the overhead distribution system.

4 . Project Name: PCB Free Compliance - Transformer Replacement

2011 Budget Amount: $200,000 2011 Actual Expenditure: $160,881

Acct # 1830 - $47,302 Acct # 1835 - $17,382 Acct # 1840 - $733

Acct # 1850 - $84,497 Acct # 1855 - $10,967

Following BHI's transformer oil sampling and testing program, BHI implemented a transformer replacement program to replace PCB transformers containing specified levels of PCB's in accordance with Federal Government of Canada Regulations. All transformers meeting the following conditions must be replaced by the end of 2009:

- all transformers with PCB content greater than 500 ppm;
- all padmount transformers with PCB content greater than 50 ppm and less than 500 ppm within 100m of sensitive areas as defined by the Regulations; and
- all transformers with PCB content greater than 50 ppm within 100m of sensitive areas as defined by Regulations.

The Federal Government of Canada has allowed an extension up to 2014 for the replacement of transformers that do not fall within the above criteria for transformer replacement by the end of 2009.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The actual scope of the remaining work was less than anticipated, resulting in the under-spend of this budget item.

5 . Project Name: Rebuild Crossings

2011 Budget Amount: $200,000 Actual Expenditure $0

This budget item was to identify and rebuild older overhead crossings deemed to be weak in structural strength not meeting the current CSA standards.

Starting and In-service Dates

Summer 2011

Variance

Investigation of these crossings did not identify concerns that required immediate attention, in 2011.

SYSTEM SERVICE

1 . Project Name: Motorized ABS Program

2011 Budget Amount: $250,000 2011 Actual Expenditure $385,055

Acct # 1830 - $187,911 Acct # 1835 - $197,144

BHI has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2011

<u>Variance</u>

This budget item was overspent, in 2011, to maintain the progress on BHI's distribution automation following under-expenditures in 2009 and 2010.

2 . Project Name: Tremaine TS Feeder Egress

2011 Budget Amount: $2,000,000 2011 Actual Expenditure $397,882

Acct # 1830 - $278,289 Acct # 1835 - $84,736 Acct # 1840 - $17,244 Acct # 1845 - $16,613 Acct # 1850 - $1,001

This budget item provides for the initial construction of the overhead and underground distribution infrastructure necessary to deliver capacity to the NE Burlington area from the new Tremaine transformer station being constructed by Hydro One and scheduled for completion in January 2013.

Starting and In-service Dates

April to Sept. 2011

Variance

Detailed engineering work progressed but there were delays in the construction schedule.

3 . Project Name: Transformer Station (N/E Burlington)

2011 Budget Amount: $693,000 2011 Actual Expenditure: $943,057

Acct # 1990 - $943,057

This project is a multi-year allocation requiring BHI to make a capital contribution to Hydro One, towards the construction of the new transformer station. BHI will have rights to 6 feeder breaker positions, necessary to supply the growing communities and commercial customers in this quadrant of Burlington.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The actual expenditure was the amount set within the terms of the final Capital Cost Recovery Agreement with Hydro One. The budget amount had been estimated prior to the finalization of the agreement.

GENERAL PLANT

1 . Project Name: 1340 Brant St. & Substation Properties

2011Budget Amount: $250,000 2011 Actual Expenditure: $225,998

Acct # 1808 - $27,185 Acct # 1908 - $198,813

This budgetary item was required to upgrade and replace structures and equipment at BHI's main office at 1340 Brant Street plus a feasibility study to provide guidance on the priorities and the creation of an interior building survey documenting the existing facilities. Projects included a continuation of the HVAC system upgrades, security equipment and office renovations. It also covered the installation of security monitoring equipment, at Orchard MS, to reduce copper theft and vandalism.

<u>Starting and In-service Dates</u>

2nd and 3rd Quarters 2011

<u>Variance</u>

Actual expenditures were comfortably within budget.

2 . Project Name: GIS Implementation

2011 Budget Amount: $150,000 2011 Actual Expenditure: $450,905

Acct # 1925 - $450,905

This is the continuation of the multi-year project to transition from the previous Geographic Information System (GIS) by converting data and installing the new system with enhanced features and functionality.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2011

<u>Variance</u>

It was found that the conversion required extensive data confirmation and offered realistic opportunities to expand the scope of the project. It would introduce advanced features that would integrate with the other operational applications. This was consistent with Burlington Hydro's long term vision for its control room functions and effectiveness. The additional expenditures gave the expected value to the utility.

Projects below the Materiality Threshold

System Access

1. **Project Name: MTO. QEW HWY & Fairview Street - Overpass Reconstruction**

2011 Budget Amount: $0 2011 Actual Expenditure: $17,305

Acct # 1835 - $934 Acct # 1845 - $16,370

The Ministry of Transportation proposed to widen the eastbound 407 on-ramp at Fairview Street which required BHI to relocate its facilities supporting the 2 – 27.6kV overhead feeders across the on-ramp. This widening required the crossing span to be lengthened and supported at a higher elevation. This was a continuation of a 2010 project.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2011

<u>Variance</u>

This work was non-discretionary for Burlington Hydro and the expenditure was required to satisfy the MTO schedule.

System Renewal

1. **Project Name: Re-commission Substations**

2011 Budget Amount: $150,000 2011 Actual Expenditure: $142,458

Acct # 1820 - $142,458

Re-commissioning of various transformer substations is an integral part of BHI's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment.

The following substations were re-commissioned in 2011.

- Fairview MS – May 2011
- Woodward MS – May 2011
- Bridgeview MS – Oct. 2011
- Marley MS – Oct 2011

Variance

Actual expenditures were comfortably within budget.

2 . Project Name: Metalclad Equipment Refurbish/Paint

2011 Budget Amount: $30,000 2011 Actual Expenditure: $30,212

Acct # 1820 - $30,212

From the substation inspection reports a list of priority projects was prepared and completed. The useful life of this substation equipment is extended by removing the rust and applying rust inhibitor and paint.

Starting and In-service Dates

May to Nov. 2011

Variance

Actual expenditures were close to budget.

3 . Project Name: Vacuum Breaker Conversions – (Asbestos Removal)

2011 Budget Amount: $130,000 2011 Actual Expenditure: $120,145

Acct # 1820 - $120,145

The conversion to new technology vacuum circuit breakers improves station reliability and eliminates the potential hazard from asbestos arc chutes. A previous inspection program had identified several station breakers having asbestos in the arc chutes which was recommended for removal.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

Actual expenditures were comfortably within budget.

4 . Project Name: Butyl Insulated Cable Replacement Program

2011 Budget Amount: $50,000 2011 Actual Expenditure: $42,047

Acct # 1830 - $2,170 Acct # 1840 - $5,219 Acct # 1845 - $34,578 Acct # 1855 - $80

This proactive BHI program targets old 5kV underground primary cables having butyl rubber conductor insulation which inherently becomes brittle over time and ultimately fails. The butyl rubber cables are often present in areas supplied radially and require the construction of temporary overhead lines to maintain supply when a radial cable fails. The cost for reactive action relative to proactive action is considerably higher due to the added temporary overhead construction.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The close attention to the requirements at specific locations resulted in the under-spending of this budget item.

5 . Project Name: Primary Metering Tank Replacement

2011 Budget Amount: $50,000 2011 Actual Expenditure: $74,169

Acct # 1830 - $9,801 Acct # 1835 - $9,501 Acct # 1845 - $2,496 Acct # 1860 - $52,372

This budget item provides for the cost to remove 2 old Oil filled Primary Metering Units with dry type PME cluster mount units. This is an annual program to remove and replace these units over time.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

One of these projects required extensive pole line construction to provide a system neutral for the 4 wire load.

6 . Project Name: Replace G50 Meters

2011 Budget Amount: $55,000 2011Actual Expenditure: $38,077

Acct # 1860 - $38,077

This budget item provided for the replacement of existing G-50 meter customers that were manually read due to no or unreliable phone lines and fall outside of Smart Meter program.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

Actual expenditures were comfortably within budget.

System Service

1. **Project Name: Upgrade RTUs**

2011 Budget Amount: $60,000 2011 Actual Expenditure: $40,169

Acct # 1980 - $40,169

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the BHI control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The targeted upgrades resulted in actual expenditures that were well within the budget.

2. **Project Name: Transducers**

2011 Budget Amount: $5,000 2011 Actual Expenditure: $5,190

Acct # 1980 - $5,190

New transducers replace defective units which provide analog read outs through SCADA system. The transducer lowers the relay current and voltage levels to milliamps and millivolts for SCADA communications through the RTU.

Starting and In-service Dates

Feb. to Nov. 2011

Variance

The overspent variance on this budget item was very minor.

General Plant

1. **Project Name: Stations Tools, Shop and Garage Equipment**

2011 Budget Amount: $50,500 2011 Actual Expenditure: $15,735

Acct # 1940 - $15,735

This expenditure was required for specialized tools used by operations staff for the performance of Capital and Operating work on BHI's distribution system.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The continuous attention to specific requirements resulted in the under-spending of this budget item.

2. **Project Name: Metering Measurement and Testing Equipment**

2011 Budget Amount: $0 2011 Actual Expenditure: $2,722

Acct # 1945 - $2,722

This expenditure is for specialized equipment used by Meter Department staff, for the performance of Capital and Operating work on BHI's Metering system.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

This item was not specifically budgeted for but was considered essential and well within the above tool budget.

3 . Project name: New and/or Replacement Vehicles (<4500kg)

2011 Budget Amount: $80,000 2011 Actual Expenditure: $64,228

Acct # 1930 - $64,228

Small vehicles for supervisors and foreman were purchased and are usually maintained within the fleet for 8 years. Vehicles are recycled to various departments to manage the mileage on the vehicles and therefore extend the life of the vehicle.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The close attention to specific requirements resulted in the under-spending of this budget item.

4 . Project Name: Misc. Office Equipment

2011 Budget Amount: $121,535 2011 Actual Expenditure: $71,790

Acct # 1915 - $71,790

This budget item provides for the purchase of a replacement photocopier and the replacement / upgrade of remaining work stations and associated accessories / equipment to bring to current ergonomic standards.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The close attention to specific requirements resulted in the under-spending of this budget item.

5 . Project Name: Telephone Upgrade PBX, Voice Mail, VOIP, ACD Systems

2011 Budget Amount: $0 2011 Actual Expenditure: $37,529

Acct # 1925 - $37,529

The telephone upgrade was planned in response from the vendor (Bell Canada) notifying BHI that the current equipment will no longer be supported.

Starting and In-service Dates

May to Nov. 2011

Variance

This item was a continuation of the 2010 upgrades plus the addition of call recording software to improve customer service, which increased the total costs above the original budget.

6 . Project Name: Computer Equipment – Hardware/Personal Computers

2011 Budget Amount: $40,000 2011 Actual Expenditure: $42,470

Acct # 1920 - $42,470 Acct # 1930 - $42,470

It is necessary for BHI to replace and update communication equipment and personal computers, to equip staff with current technological tools and to maintain the high level of network security.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

The overspent variance on this budget item was minor.

7 . Project Name: Daffron Custom Programming

2011 Budget Amount: $20,000 2011 Actual Expenditure: $18,742

Acct # 1925 - $18,742

In order to implement regulatory changes require in its customer information and billing systems BHI (in conjunction with other Ontario LDCs to share the costs) engaged the assistance of its software vendor (Daffron) to incorporate these changes.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

Actual expenditures were comfortably within budget.

8 . Project Name: Daffron iXP Dashboard

2011 Budget Amount: $25,000 2011 Actual Expenditure: $24,254

Acct # 1925 - $24,254

This project continues the development and enhancements to the executive dashboard application originally launched in 2010.

Starting and In-service Dates

Jan. to Dec. 2011

Variance

Actual expenditures were comfortably within budget.

<u>Capital Project Descriptions 2012</u>

<u>Introduction</u>

This overall summary provides explanations of variances for each of the budget items within the 2012 capital budget. It summarizes the 2012 Capital Expenditure Budget (excluding Smart Meters), funded by Burlington Hydro, and therefore the actual Burlington Hydro Cost of Asset Additions.

2012 Cost of Asset Additions
$15,079,028*

*This expenditure includes $1,290,568 that is accrued to subdivision developers for BHI's portion of the underground servicing costs in accordance with the Distribution System Code. This expenditure excludes smart meter related capital expenditures.

This demonstrates and confirms Burlington Hydro's commitment to tight fiscal controls on its annual capital expenditures.

<u>Projects above the Materiality Threshold</u>

<u>SYSTEM ACCESS</u>

1. **Project Name: General Service – Underground**

2012 Budget Amount: $1,100,000 2012 Actual Expenditure: $1,520,576

Acct # 1830 - $95,847 Acct # 1835 - $72,387 Acct # 1840 - $580,890 Acct # 1845 – $385,450 Acct # 1850 - $86,289 Acct # 1855 – $299,121 Acct # 1860 - $592

This general service account captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, connection pedestal installations under the category of General Service – Underground. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services
- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials required for maintenance work

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The over-expenditure reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers.

2. Project Name: Subdivisions Assumed

2012 Budget Amount: $1,400,000 2012 Actual Expenditure: $2,137,623

Acct # 1840 - $968,413 Acct # 1845 - $476,743 Acct # 1855 - $692,467

BHI is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline BHI's offer to connect and hires their own electrical consultant and BHI approved contractor:

- project design review
- project inspection
- project administration
- material approval
- vendor selection
- determination of financial securities to be submitted
- perform perimeter adjustments required to connect new development to existing distribution system
- install termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary
- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before BHI assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to BHI. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The budget amount for subdivisions is always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the City of Burlington's zoning by-laws etc. However, 100% of the actual expenditures were provided by contributed capital from developers.

3. Project Name: City Projects

2012 Budget Amount: $900,000 2012 Actual Expenditure: $962,011

Acct # 1820 - $3,280 Acct # 1830 - $484,205 Acct # 1835 - $273,835 Acct # 1840 - $18,991 Acct # 1845 - $88,434 Acct # 1850 - $75,105 Acct # 1855 - $18,161

This budget item provided funds to address the City of Burlington's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The City of Burlington initiated the following series of projects, requiring relocations by BHI:

- King Road Grade Separation
- Harvester/Walkers Line
- Torrence/Harris

Starting and In-service Dates

Jan. to Dec. 2012

Variance

These projects had to be accommodated to satisfy the city's schedule with the total expenditures fairly close to the original speculative budget.

4. **Project Name: General Service - Overhead**

2012 Budget Amount: $1,300,000 2012 Actual Expenditure: $1,965,315

Acct # 1830 - $1,160,235 Acct # 1835 - $428,182 Acct # 1840 - $6,862 Acct # 1845 - $18,094 Acct # 1850 - $36,108 Acct # 1855 - $304,188 Acct # 1860 - $11,646

This budgetary item captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services
- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The over-expenditure reflects the uncertainty in predicting this budget item while meeting Burlington Hydro's obligations to provide service to new customers.

5. **Project Name: Transformers Installed**

2012 Budget Amount: $800,000 2012 Actual Expenditure: $1,222,639

Acct # 1830 - $20,187 Acct # 1835 - $32,631 Acct # 1840 - $48,546 Acct # 1845 - $6,704 Acct # 1850 - $1,100,886 Acct # 1855 - $13,685

This budget item provides for the supply and installation of distribution transformers for service upgrades, new services and transformer replacements.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The budget amount is always very speculative and dependent on a number of large variables relating to upgrades and new construction activity. These proved to be significantly under-estimated in 2012.

6. **Project Name: Subdivision Assumed Transformers**

2012 Budget Amount: $600,000 2012 Actual Expenditure: $500,248

Acct # 1850 - $500,248

Ownership of these transformers has been assumed and recorded as this separate project. The equipment originates within the Subdivisions Assumed project noted above.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The budget amount for subdivisions is always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the City of Burlington's zoning by-laws etc.

7. Project Name: Meters Installed – Residential, Commercial and Wholesale

2012 Budget Amount: $400,000 2012 Actual Expenditure: $335,834

Acct # 1860 – $335,834

This project captured the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground applications; and includes primary metering units for large industrial customers.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual expenditures were comfortably under budget.

8. Project Name: Contributions and Grants

2012 Actual Contribution: ($3,238,245)

Acct # 1995 – ($3,238,245)

The Distribution System Code and BHI's Conditions of Service provide the basis for determining the capital contributions to be paid by customers, developers, third parties and government authorities. These funds are applied towards the associated costs for the installation and/or modification of hydro infrastructure and connection assets as required.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The Actual Expenditure is a summary of all of the capital contributions received from third parties such as developers and municipal agencies as noted in the above these budget items.

They are not expenditures by Burlington Hydro. The budgets are always very speculative and dependent on a number of large variables that are functions of the economy, the housing market, the municipal road projects etc.

SYSTEM RENEWAL

1. **Project Name: Station Transformer Replacement Program (15MVA)**

2012 Budget Amount: $500,000 2012 Actual Expenditure: $401,108

Acct # 1820 - $401,108

This project is the second year of a program to provide for the replacement of substation power transformers based on their age and condition. The particular units are over 40 years old and are critical to the long term reliability of the distribution system.

Starting and In-service Dates

April to Oct. 2012

Variance

The tendering process resulted in an actual expenditure that was comfortably under budget.

2. **Project Name: Cable Rebuild (Faversham/Cavendish)**

2012 Budget Amount: $350,000 2012 Actual Expenditure: $26,727

Acct # 1840 - $13,316 Acct # 1845 – $13,411

As part of its Asset Management Strategy BHI identifies underground subdivisions where primary cable faults have increased and reliability performance has deteriorated to unacceptable levels. This budget item was focused on the Faversham/Cavendish neighbourhood where performance improvements were necessary.

Starting and In-service Dates

April to Oct. 2012

Variance

The expenditures covered only the rebuild design, construction is now planned for 2014.

3 . Project Name: Pole Replacement Program

2012 Budget Amount: $200,000 2012 Actual Expenditure: $164,706

Acct # 1830 - $112,281 Acct # 1835 - $ 47,890 Acct # 1840 - $1,253 Acct # 1850 - $3,282

BHI's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced annually to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during BHI preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

Starting and In-service Dates

Jan. to Dec. 2012

Variance

This budget item was under-spent following a significant catch-up and over-spend in 2011.

4 . Project Name: PCB Free Compliance - Transformer Replacement

2012 Budget Amount: $200,000 2012 Actual Expenditure: $34,652

Acct # 1830 - $9,322 Acct # 1835 - $3,920 Acct # 1850 - $20,590 Acct # 1855 - $820

Following BHI's transformer oil sampling and testing program, BHI implemented a transformer replacement program to replace PCB transformers containing specified levels of PCB's in accordance with Federal Government of Canada Regulations. All transformers meeting the following conditions had to be replaced by the end of 2009:

- all transformers with PCB content greater than 500 ppm;
- all padmount transformers with PCB content greater than 50 ppm and less than 500 ppm within 100m of sensitive areas as defined by the Regulations; and
- all transformers with PCB content greater than 50 ppm within 100m of sensitive areas as defined by Regulations.

The Federal Government of Canada has allowed an extension up to 2014 for the replacement of transformers that did not fall within the above criteria for transformer replacement by the end of 2009.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual scope of the remaining work was less than anticipated, resulting in the under-spend of this budget item.

SYSTEM SERVICE

1. **Project Name: Motorized ABS/Recloser Program**

2012 Budget Amount: $400,000 2012 Actual Expenditure $728,132

Acct # 1830 - $68,014 Acct # 1835 - $480,013 Acct # 1845 - $180,105

BHI has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

This budget item was overspent, in 2012, to maintain the progress on BHI's distribution automation; it also includes an upgrade to the automatic transfer protection scheme and the addition of primary underground switching at a downtown Burlington substation.

2. Project Name: NE Burlington TS Egress

2012 Budget Amount: $2,000,000 2012 Actual Expenditure $1,235,729

Acct # 1830 - $640,324 Acct # 1835 - $295,505 Acct # 1840 - $126,725 Acct # 1845 - $140,556 Acct # 1850 - $32,619315

This budget item includes the construction of the overhead and underground distribution infrastructure necessary to deliver capacity to the NE Burlington area from the new Tremaine Transformer Station constructed by Hydro One and scheduled for completion in January 2013.

Starting and In-service Dates

April to Sept. 2012

Variance

Some of the pole line construction and a major Hwy. 407 crossing were deferred until 2013 resulting in the under-spent budget.

3. Project Name: Transformer Station (N/E Burlington) – Capital Contribution

2012 Budget Amount: $5,790,000 2012 Actual Expenditure: $5,855,000

Acct # 1990 - $5,855,000

This project is a multi-year allocation requiring BHI to make a capital contribution to Hydro One, towards the construction of the new transformer station. BHI will have rights to 6 feeder breaker positions, necessary to supply the growing communities and commercial customers in this quadrant of Burlington.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual expenditure was the amount set within the terms of the final Capital Cost Recovery Agreement with Hydro One.

GENERAL PLANT

1. **Project Name: 1340 Brant St. & Substation Properties**

2012 Budget Amount: $510,000 2012 Actual Expenditure: $251,765

Acct # 1808 - $5,450 Acct # 1908 - $246,315

This budgetary item was required to upgrade and replace structures and equipment at BHI's main office at 1340 Brant Street and at substation properties. Projects included:

- a continuation of the HVAC system upgrades
- security fencing
- risk mitigation from washrooms and showers
- office renovations
- Fire panel replacement
- Uninterruptible Power Supply (UPS) for telephone system
- Noise abatement (IT area)
- Substation roof repairs

Starting and In-service Dates

May to Oct. 2012

Variance

The actual scope of the rebuild work was reduced in 2012, resulting in the under-spend of this budget item.

Projects below the Materiality Threshold

System Access

1. **Project Name: Tremaine TS Meters**

2012 Budget Amount: $0 2012 Actual Expenditure: $45,834

Acct # 1860 - $45,834

This item was not specifically budgeted, in 2012 but was required as part of the Tremaine TS Capital Cost Recovery Agreement with Hydro One.

Starting and In-service Dates

Jan. to Dec. 2012

System Renewal

1. **Project Name: Re-commission Substations**

2012 Budget Amount: $160,000 2012 Actual Expenditure: $158,246

Acct # 1820 - $158,246

Re-commissioning of various transformer substations is an integral part of BHI's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment. The following substations were re-commissioned in 2012.

In service dates:

- Reservoir MS March 2012
- Lowville MS April 2012
- Spruce MS May 2012
- Elizabeth Gdns. MS May 2012
- Fairleigh MS October 2012
- Walkers MS October 2012

Variance

Actual expenditures were comfortably within budget.

2. Project Name: Metalclad Equipment Refurbish/Paint

2012 Budget Amount: $60,000 2012 Actual Expenditure: $22,845

Acct # 1820 - $22,845

From the substation inspection reports a list of priority projects was prepared and completed. The useful life of this substation equipment is extended by removing the rust and applying rust inhibitor and paint.

Starting and In-service Dates

May to Nov. 2012

Variance

The actual scope of the refurbishment work was reduced in 2012, resulting in the under-spend of this budget item.

3. Project Name: Battery Banks & Chargers

2012 Budget Amount: $10,000 2012 Actual Expenditure: $4,799

Acct # 1820 - $4,799

Battery banks and chargers are replaced due to the aging and reduced performance of the existing, less reliable equipment. The new chargers provide stable battery charge and supply all solid state equipment such as the relays and RTUs (Remote Terminal Unit).

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual scope of the replacement work was reduced in 2012, resulting in the under-spend of this budget item.

4. Project Name: Primary Metering Tank Replacement

2012 Budget Amount: $50,000 2012 Actual Expenditure: $33,210

Acct # 1860 - $33,210

This budget item provided for the removal of 2 older Oil filled Primary Metering Units and the replacement with dry type PME cluster mount units.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

One installation was completed at NSR Leaseholds (North Service Road), a second unit was purchased for a Region of Halton Water Treatment plant but installation has been delayed by the customer, resulting in the under-spend.

System Service

1. Project Name: Upgrade Relays to Solid State

2012 Budget Amount: $80,000 2012 Actual Expenditure: $4,404

Acct # 1820 - $4,404

The upgrades of solid state relays were necessary to replace aging electro mechanical relay systems. Solid state relays improve the performance, reliability and available fault and operation data records with less labour intensive maintenance activities.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual scope of the upgrade work was re-evaluated and reduced in 2012, resulting in the under-spend of this budget item.

2. **Project Name: Upgrade RTUs**

2012 Budget Amount: $60,000 2012 Actual Expenditure: $64,163

Acct # 1980 - $64,163

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the BHI control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual expenditures were fairly close to the original budget amount.

General Plant

1. **Project Name: Operations Tools, Underground, Stations & Meter**

2012 Budget Amount: $57,500 2012 Actual Expenditure: $19,171

Acct # 1940 - $16,652 Acct # 1945 - $2,519

This expenditure was required for specialized tools used by operations staff for the performance of Capital and Operating work on BHI's distribution system.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The continuous attention to specific requirements resulted in the under-spending of this budget item.

2. **Project name: New and/or Replacement Vehicles (<4500kg)**

2012 Budget Amount: $80,000 2012 Actual Expenditure: $64,539

Acct # 1930 - $64,539

Small vehicles for supervisors and foreman were purchased and are usually maintained within the fleet for 8 years. Vehicles are recycled to various departments to manage the mileage on the vehicles and therefore extend the life of the vehicle. Two Pick-Up trucks for supervisors and foreman were required in 2012.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The close attention to specific requirements resulted in the under-spending of this budget item.

3. Project Name: Misc. Office Equipment

2012 Budget Amount: $98,500 2012 Actual Expenditure: $81,205

Acct # 1915 - $81,205

This budget item provides for the purchase of replacement office equipment to bring to current ergonomic standards.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The majority of this expenditure item provided for a touch video wall to enhance the GIS application in the Control Room. Overall expenditures were well within the budgeted amount.

4. Project Name: Personal Computers

2012 Budget Amount: $40,000 2012 Actual Expenditure: $37,170

Acct # 1920 - $37,170

It is necessary for BHI to replace and update communication equipment and personal computers, to equip staff with current technological tools and to maintain the high level of network security. This budget item also provided funds for Phase 1 of BHI's Field Force Automation project. Panasonic Tough Books were installed in 6 line trucks to provide outside staff with access to the mapping system, daily instruction orders and input to timesheets.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The close attention to specific requirements resulted in the under-spending of this budget item.

5. Project Name: Computer Room Network Communications Equipment

2012 Budget Amount: $20,000 2012 Actual Expenditure: $8,350

Acct # 1920 - $8,350

This budget item provided the Network Administrator with current communications equipment primarily to address cyber security and network growth.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual scope of this work was re-evaluated and reduced in 2012, resulting in the under-spend of this budget item.

6. Project Name: Backup Server, Mapping System & Oracle Database

2012 Budget Amount: $25,000 2012 Actual Expenditure: $27,877

Acct # 1920 - $13,115 Acct # 1925 - $14,762

To minimize risk a requirement for a back-up server to the main GIS server had been identified. This equipment runs in parallel to the main server to in the event of a system failure. This budget item also provided funds for the Oracle database required for the GIS back-up server.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual expenditures were fairly close to the original budget amount.

7. Project Name: Daffron Custom Programming (General/IFRS)

2012 Budget Amount: $20,000 2012 Actual Expenditure: $25,392

Acct # 1925 - $25,392

This budget item provides for programming costs by BHI's software vendor (Daffron) to address OEB regulated functionality in customer information and billing systems.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual expenditures were fairly close to the original budget amount.

8. Project Name: Custom Programming (Field Force Automation)

2012 Budget Amount: $50,000 2012 Actual Expenditure: $54,275

Acct # 1925 - $54,275

This budget item provided custom programming for Operations staff in the implementation of the Field Force Automation project.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual expenditures were fairly close to the original budget amount.

9. **Project Name: Mapping System Post Install Modifications**

2012 Budget Amount: $50,000 2012 Actual Expenditure: $123,173

Acct # 1925 - $123,173

Following the implementation of the new GIS system there were requirements for updates and data clearing that had to be addressed.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual scope for the modifications exceeded the original plan; the additional expenditure was required to continue to advance this critical project.

10. **Project Name: Complete MAIS (Mobile Asset Inspection System)**

2012 Budget Amount: $25,000 2012 Actual Expenditure: $33,379

Acct # 1925 - $33,379

This software application was introduced in 2011 as part of the GIS implementation and was evolved to include increased functionality for the Engineering and Operations staff.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

The actual scope of this system was re-evaluated, resulting in the over-expenditure required to continue to advance this critical project.

11. Project Name: Spatialnet User Licence

2012 Budget Amount: $0 2012 Actual Expenditure: $16,200

Acct # 1925 - $16,200

This budget item provided funds for an additional users licence required, within the Engineering Department, to allows edits and input into the GIS system.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

This item was not specifically budgeted but was a requirement to maintain productivity input to the new GIS system.

12. Project Name: Replicator Software

2012 Budget Amount: $0 2012 Actual Expenditure: $33,680

Acct # 1925 - $33,680

This software was required to enhance the GIS application and its integration with the SCADA system, in the Control Room

Starting and In-service Dates

Jan. to Dec. 2012

Variance

This item was not specifically budgeted but was required to advance the integration of the GIS and SCADA system.

13. Project Name: Pin Mapping

2012 Budget Amount: $0 2012 Actual Expenditure: $117,296

Acct # 1925 - $117,296

This item provides an electronic update for a previously manual function in the Control Room. It enhances the communication of the distribution system status and provides increased visibility to other Engineering and Operations staff.

Starting and In-service Dates

Jan. to Dec. 2012

Variance

This item was not specifically budgeted but was required to update the manual functions in the Control Room.

Capital Project Descriptions 2013

Introduction

This overall summary provides a high level description of each budgetary item within the 2013 Capital Budget. The 2013 Bridge Year projection totals $7,965,075.

Projects above the Materiality Threshold

Capital Expenditures within this section are above Burlington Hydro's materiality threshold and therefore contain detailed information on a project specific basis.

SYSTEM ACCESS

1. **Project Name: General Service – Underground**

2013 Budget Amount: $1,350,500 2013 Bridge Year Projection: $1,338,527

Acct # 1835 - $19,954 Acct # 1840 - $242,210 Acct # 1845 – $773,263 Acct # 1855 – $303,100

This general service account captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, connection pedestal installations under the category of General Service – Underground. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services
- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials required for maintenance work

Estimates for capital costs are based on recent historical expenditures on the underground system and an expectation of similar future activities and new customer growth. New load connected through these projects will be of the order of 1.5MW.

Starting and In-service Dates

Jan. to Dec. 2013

2. **Project Name: Downtown/Lakeshore Elizabeth**

2013 Budget Amount: $328,000 2013 Bridge Year Projection: $339,561

Acct # 1840 - $226,773 Acct # 1845 – $112,788

This project involves the relocation of the existing 4kV distribution system in conflict with the proposed high rise condo/hotel development (3 bldgs) at 3048 Lakeshore Road in conjunction with the installation of the 27.6kV infrastructure to service the same site. This is the first year of a multi-year project where progress will be determined by the schedule of the site development.

The total load will be determined when building design details become available. Preliminary estimates indicate the load to be of the order of 2.5MW.

Starting Date

April to Oct. 2013

3. **Project Name: Subdivisions Assumed**

2013 Budget Amount: $1,400,000 2013 Bridge Year Projection: $1,400,000

Acct # 1845 - $1,400,000

BHI is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline BHI's offer to connect and hires their own electrical consultant and BHI approved contractor:

- project design review

- project inspection
- project administration
- material approval
- vendor selection
- determination of financial securities to be submitted
- perform perimeter adjustments required to connect new development to existing distribution system
- install termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary
- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before BHI assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to BHI. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

Estimates for subdivision costs are based on recent historical expenditures and an expectation of similar future activities and new residential subdivision growth. The timing of the subdivision assumptions is also dependent on the developers' schedules. An annual addition of new residential subdivision load would be of the order of 1MW.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2013

4. Project Name: Subdivision Buybacks

2013 Budget Amount: $1,200,000 2013 Bridge Year Projection: $1,200,000

Acct # 1995 - $1,200,000

In accordance with Appendix B of the Distribution System Code these funds are required finance BHI's obligations to finance its portion of the cost of new subdivisions.

Starting and In-service Dates

Jan. to Dec. 2013

5. **Project Name: City Projects**

2013 Budget Amount: $664,700 2013 Bridge Year Projection: $0

Acct # 1830 - $0 Acct # 1835 - $0 Acct # 1840 - $0 Acct # 1855 - $0 Acct # 1845 - $0

This budget item provided funds to address the City of Burlington's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The City of Burlington initiated the following series of projects, requiring relocations by BHI:

- Road widening at the intersection of Walkers Line and Harvester Road
- Miscellaneous projects within the city to be prioritized and confirmed

These projects are non-discretionary; BHI is obligated to work closely with the municipality to eliminate any conflicts and potential hazards within the improved road and highway designs.

Starting and In-service Dates

Jan. to Dec. 2013

6. **Project Name: General Service - Overhead**

2013 Budget Amount: $1,345,000 2013 Bridge Year Projection: $1,423,355

Acct # 1830 - $1,006,519 Acct # 1835 - $309,711 Acct # 1855 - $107,125

This budgetary item captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services

- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and BHI customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

Estimates for capital costs are based on recent historical expenditures on the overhead system and an expectation of similar future activities and new customer growth. New load connected through these projects will be of the order of 0.5MW.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2013

7. Project Name: Transformers Installed

2013 Budget Amount: $742,600 2013 Bridge Year Projection: $702,662

Acct # 1850 - $702,662

This budget item provides for the supply and installation of distribution transformers for service upgrades, new services and transformer replacements.

These pad-mounted and overhead transformers supply the loads resulting from new residential (excluding new subdivisions), commercial or industrial services, and temporary services, throughout the distribution system. They represent load additions of the order of 2MW and the replacement of existing transformation, as required.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2013

8. Project Name: Subdivision Assumed Transformers

2013 Budget Amount: $600,000 2013 Bridge Year Projection: $600,000

Acct # 1995 - $600,000

Ownership of these transformers has been assumed and recorded as this separate project. The equipment originates within the Subdivisions Assumed project noted above.

These single phase pad-mounted transformers are contained within new subdivisions and typically represent new loads of the order of 1MW.

Starting and In-service Dates

Jan. to Dec. 2013

9. Project Name: Meters Installed – Residential, Commercial and Wholesale

2013 Budget Amount: $300,000 2013 Bridge Year Projection: $271,398

Acct # 1860 – $271,398

This project captures the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground applications; and includes primary metering units for large industrial customers.

Estimates for metering capital costs are based on recent historical expenditures and an expectation of similar future activities and new customer growth.

Starting and In-service Dates

Jan. to Dec. 2013

10. Project Name: Condominium Sub-Metering

2013 Budget Amount: $200,000 2013 Bridge Year Projection: $198,913

Acct # 1860 - $*198,913*

This budget item provides for costs to convert existing bulk-metered customers to individual sub-metering as part of Burlington Hydro's conservation initiatives.

Starting and In-service Dates

Jan. to Dec. 2013

11. Project Name: Contributions and Grants

2013 Bridge Year Projection: ($3,217,443)

Acct # 1995 – ($3,217,443)

The Distribution System Code and BHI's Conditions of Service provide the basis for determining the capital contributions to be paid by customers, developers, third parties and government authorities. These funds are applied towards the associated costs for the installation and/or modification of hydro infrastructure and connection assets as required.

Starting and In-service Dates

Jan. to Dec. 2013

SYSTEM RENEWAL

1. Project Name: PCB Free Compliance - Transformer Replacement

2013 Budget Amount: $171,000 2013 Bridge Year Projection: $195,136

Acct # 1850 - $*195,136*

Following BHI's transformer oil sampling and testing program, BHI implemented a transformer replacement program to replace PCB transformers containing specified levels of PCB's in accordance with Federal Government of Canada Regulations. All transformers meeting the following conditions had to be replaced by the end of 2009:

- all transformers with PCB content greater than 500 ppm;
- all padmount transformers with PCB content greater than 50 ppm and less than 500 ppm within 100m of sensitive areas as defined by the Regulations; and
- all transformers with PCB content greater than 50 ppm within 100m of sensitive areas as defined by Regulations.

The Federal Government of Canada has allowed an extension up to 2014 for the replacement of transformers that did not fall within the above criteria for transformer replacement by the end of 2009.

This project is non-discretionary to satisfy the federal regulations and is essential for the environmental protection of customers.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2013

SYSTEM SERVICE

1. **Project Name**: **NE Burlington TS Egress**

2013 Budget Amount: $1,741,600 2013 Bridge Year Projection: $3,341,399

Acct # 1830 - $2,126,680 Acct # 1835 - $316,341 Acct # 1840 - $537,323 Acct # 1845 - $338,677 Acct # 1850 - $15,558 Acct # 1855 - $6,820

This budget item includes the construction of the overhead and underground distribution infrastructure necessary to deliver capacity to the NE Burlington area from the new Tremaine Transformer Station constructed by Hydro One.

These projects are essential to the implementation of the long term regional planning and to supply load from Hydro One's new Transformer Station. Initial loads will provide relief to the existing Transformer Stations that have exceeded their limited time ratings during high load conditions. These new feeders will reduce the system losses and the distance exposure for large numbers of customers in NE Burlington.

Starting and In-service Dates

April to Sept. 2013

2. Project Name: Motorized ABS/Recloser Program

2013 Budget Amount: $185,100 2013 Bridge Year Projection: $409,548

Acct # 1835 - $*409,548*

BHI has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

These additions to will improve the overall performance of the distribution system but priorities will be placed on particular feeders where the equipment will have the most impact on numbers of customers and the critical nature of these loads.

Starting and In-service Dates

Jan. to Dec. 2013

3. Project Name: Transformer Station (Bronte) – Capital Contribution

2013 Budget Amount: $0 2013 Bridge Year Projection: $628,000

Acct # 1610 - $628,000

This payment, to Hydro One, is required to cover the true-up costs resulting from previous expenditures for additional switchgear, on behalf of BHI, at the Bronte Transformer Station.

Starting and In-service Dates

Oct. 2013

4. Project Name: Transformer Station (Tremaine TS, N/E Burlington) – Capital Contribution

2013 Budget Amount: $2,895,000   2013 Bridge Year Projection: ($2,105,000)

Acct # 1990 – ($*2,105,000)*

This amount results from Hydro One refund following the true-up to satisfy the Capital Cost Recovery Agreement, with Hydro One, for the new Tremaine TS.

Starting and In-service Dates

Aug. 2013

GENERAL PLANT

3. Project Name: New and/or Replacement Vehicles (>4500kg)

2013 Budget Amount: $300,000 2013 Bridge Year Projection: $46,000

Acct # 1930 - $46,000

This budget item allocates funds for the scheduled replacement of a 1998 Single Bucket truck.

Starting and In-service Dates

Jan. to Dec. 2009

Projects below the Materiality Threshold

System Access

1. Project Name: Measurement Canada Inspection of Sub-Metering

2013 Budget Amount: $10,000 2013 Bridge Year Projection: $8,696

Acct # 1860 - $8,696

This budget item provides for the verification by Measurement Canada of Existing sub-metered sites per SS-E-04 at four locations.

Starting and In-service Dates

July/Aug. 2013

2. **Project Name: Wholesale Metering installation at Tremaine TS**

2013 Budget Amount: $100,000 2013 Bridge Year Projection: $96,957

Acct # 1860 - $96,957

This budget item provides for the complete Wholesale Metering installation at Tremaine TS.

Starting and In-service Dates

Jan. 2013

System Renewal

1. **Project Name: Metalclad Equipment Refurbish/Paint**

2013 Budget Amount: $40,000 2013 Bridge Year Projection: $34,614

Acct # 1820 - $34,614

From the substation inspection reports a list of priority projects was prepared and completed. The useful life of this substation equipment is extended by removing the rust and applying rust inhibitor and paint.

Starting and In-service Dates

May to Nov. 2013

2. Project Name: Re-commission Substations

2013 Budget Amount: $120,300 2013 Bridge Year Projection: $115,624

Acct # 1820 - $115,624

Re-commissioning of various transformer substations is an integral part of BHI's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment. The following substations are scheduled to be re-commissioned in 2013.

- Appleby MS – Spring
- Brant MS – Spring
- Harvester MS - Spring
- Interchange MS – Spring
- Maple MS– Fall
- Martha MS - Fall

3. Project Name: Battery Banks & Chargers

2013 Budget Amount: $9,800 2013 Bridge Year Projection: $7,692

Acct # 1820 - $7,692

Battery banks and chargers are replaced due to the aging and reduced performance of the existing, less reliable equipment. The new chargers provide stable battery charge and supply all solid state equipment such as the relays and RTUs (Remote Terminal Units).

Starting and In-service Dates

Jan. to Dec. 2013

4. **Project Name: Replacement of Substation Circuit Breakers**

2013 Budget Amount: $59,100 2013 Bridge Year Projection: $56,281

Acct # 1820 -$56,281

The conversion to new technology vacuum breakers improves station reliability and eliminates the potential hazard from asbestos arc chutes. A previous inspection program had identified several stations having asbestos in the arc chutes.

Starting and In-service Dates

May to Nov. 2013

5. **Project Name: Pole Replacement Program**

2013 Budget Amount: $79,300 2013 Bridge Year Projection: $167,554

Acct # 1830 - $119,089 Acct # 1835 - $35,768 Acct # 1855 - $12,697

BHI's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced annually to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during BHI preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

Starting and In-service Dates

Jan. to Dec. 2013

6. **Project Name: Primary Metering Tank Replacement**

2013 Budget Amount: $17,900 2013 Bridge Year Projection: $58,779

Acct # 1860 - $58,779

This budget item provides for the removal of an older Oil filled Primary Metering Unit and the replacement with dry type PME cluster mount units.

Starting and In-service Dates

Sept/Oct. 2013

System Service

1. **Project Name: Upgrade Relays to Solid State**

2013 Budget Amount: $38,700 2013 Bridge Year Projection: $36,196

Acct # 1980 - $36,196

The upgrades of solid state relays are necessary to replace aging electro mechanical relay systems. Solid state relays improve the performance, reliability and available fault and operation data records with less labour intensive maintenance activities.

Starting and In-service Dates

Jan. to Dec. 2013

2. **Project Name: Upgrade RTUs**

2013 Budget Amount: $49,000 2013 Bridge Year Projection: $48,780

Acct # 1980 - $48,780

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the BHI control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

Starting and In-service Dates

Jan. to Dec. 2013

3. **Project Name: Transducers**

2013 Budget Amount: $4,900 2013 Bridge Year Projection: $3,846

Acct # 1980 -$3,846

New transducers replace defective units which provide analog read outs through SCADA system. The transducer lowers the relay current and voltage levels to milliamps and millivolts for SCADA communications through the RTU.

Starting and In-service Dates

Feb. to Nov. 2013

General Plant

1. **Project Name: 1340 Brant St. & Substation Properties**

2013 Budget Amount: $40,000 2013 Bridge Year Projection: $40,000

Acct # 1908 - $40,000

This budgetary item is required to upgrade and replace minor structures and equipment at BHI's main office at 1340 Brant Street and at substation properties. Projects included:

- a continuation of the HVAC system upgrades
- security fencing
- risk mitigation from washrooms and showers
- office renovations
- Fire panel replacement
- Uninterruptible Power Supply (UPS) for telephone system

- Noise abatement (IT area)
- Substation roof repairs

Starting and In-service Dates

May to Oct. 2013

2. Project Name: Operations Tools, Shop and Garage Equipment

2013 Budget Amount: $12,000 2013 Bridge Year Projection: $21,000

Acct # 1940 - $21,000

This budget item provides for the specialized tools used by operations staff for the performance of Capital and Operating work on BHI's distribution system.

Starting and In-service Dates

Jan. to Dec. 2013

3. Project Name: Misc. Office Equipment

2013 Budget Amount: $54,000 2013 Bridge Year Projection: $54,000

Acct # 1915 - $54,000

This budget item provides for miscellaneous office equipment and the replacement / upgrade of work stations and associated accessories / equipment to bring to current ergonomic standards.

Starting and In-service Dates

Jan. to Dec. 2013

4. Project Name: Personal Computers

2013 Budget Amount: $50,000 2013 Bridge Year Projection: $73,000

Acct # 1920 - $73,000

It is necessary for BHI to replace and update communication equipment, personal computers and aging servers, to equip staff with current technological tools and to maintain the high level of network security. It also provides for funds for a continuation of the roll out of Toughbook PCs to field service trucks to allow outside staff access to the mapping system, daily instruction orders and input to timesheets. New personal computers were required for the Engineering Technicians to accommodate the requirements of the new GIS.

Starting and In-service Dates

Jan. to Dec. 2013

5. **Project Name: Additional Circuitry in Computer Room**

2013 Budget Amount: $5,000 2013 Bridge Year Projection: $5,000

Acct # 1920 - $5,000

This budget item provides for the installation of additional electrical circuitry in the Computer Room to support the increasing number of servers and equipment.

Starting and In-service Dates

Jan. to Dec. 2013

6. **Project Name: Daffron Custom Programming (General/IFRS)**

2013 Budget Amount: $20,000 2013 Bridge Year Projection: $20,000

Acct # 1920 - $20,000

This budget item provides for programming costs by BHI's software vendor (Daffron) to address OEB regulated functionality in customer information and billing systems.

Starting and In-service Dates

Jan. to Dec. 2013

7. Project Name: GIS/MAIS/Locates Pin Mapping Modifications

2013 Budget Amount: $50,000 2013 Bridge Year Projection: $100,000

Acct # 1920 - $100,000

Following the implementation of the new GIS system there are updates and data clearing items that are required to be addressed. This budget item will continue to improve the mapping and asset management GIS systems.

Starting and In-service Dates

Jan. to Dec. 2013

8. Project Name: Daffron iXP Implementation

2013 Budget Amount: $100,000 2013 Bridge Year Projection: $100,000

Acct # 1920 - $100,000

This budget item provides for the installation and configuration of the Daffron web based (non-CIS) ERP system. This first phase updates the Financial, Materials, and Work Management systems and includes new functionality.

Starting and In-service Dates

Jan. to Dec. 2013

9. Project Name: Field Force Automation Enhancements

2013 Budget Amount: $20,000 2013 Bridge Year Projection: $20,000

Acct # 1920 - $20,000

This budget item provides for funds for programming costs to improve the Field Force Automation software solution originally launched in 2012.

Starting and In-service Dates

Jan. to Dec. 2013

10. Project Name: Upgrade Network to 1 Gigabyte

2013 Budget Amount: $100,000 2013 Bridge Year Projection: $100,000

Acct # 1920 - $100,000

With the ever increasing number of servers and workstations, combined with software applications with greater complexity, network response time has diminished, negatively impacting staff productivity. This budget item will upgrade the internal corporate network speed from 10 megabyte to 1 gigabyte capability.

Starting and In-service Dates

Jan. to Dec. 2013

11. Project Name: SpidaCalc Licence

2013 Budget Amount: $0 2013 Bridge Year Projection: $14,000

Acct # 1920 - $14,000

The Engineering Department identified a requirement for this line design software in preparation for the latest update to the overhead CSA Standard. This product is the current industry standard.

Starting and In-service Dates

Jan. 2013

12. Project Name: Ortho Imaging

2013 Budget Amount: $0 2013 Bridge Year Projection: $11,000

Acct # 1920 - $11,000

This Landbase file was required for to enhance the functionality of the new GIS.

<u>Starting and In-service Dates</u>

May 2013

Capital Expenditures & Project Descriptions 2014

Introduction

This overall summary, for 2014, follows the format of items of the proposed Burlington Hydro capital expenditures. The 2014 Test Year budget totals $7,730,045.

Projects above the Materiality Threshold

SYSTEM ACCESS

1. **Project Name: General Service – Underground**

2014 Budget Amount: $1,104,892

Acct # 1840 - $159,522 Acct # 1845 – $693,897 Acct # 1855 – $251,473

General Information

This general service account captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, connection pedestal installations under the category of General Service – Underground. The budget amount is based on historical values and is challenging to forecast as a whole due to the unplanned yet expected projects that arise as a part of a utilities operation. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services
- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and Burlington Hydro customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers

- materials required for maintenance work

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect and by circumstances beyond BHI's control. The criteria may also be evaluated on the basis of safety issues created by third parties or responsibilities to coordinate with Municipal authorities, other utilities and customers.

Category-specific requirements

These projects are identified within the System Access category. BHI is required to be responsive to the wide variety of potential situations accounted for within this item. Where possible customer input is expected and required to provide service to residential, commercial or industrial customers and scheduling of design and construction is critical to new connections. Unplanned or emergency response may also be captured within these projects where distribution plant is damaged or replaced.

2. **Project Name: Subdivisions Assumed**

2014 Budget Amount: $1,400,000

Acct # 1995 - $1,400,000

General Information

Burlington Hydro is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline Burlington Hydro's offer to connect and hires their own electrical consultant and utility contractor approved by Burlington Hydro:

- project design review
- project inspection

- project administration
- material approval
- vendor selection
- determination of financial securities to be submitted
- perform perimeter adjustments required to connect new development to existing distribution system
- install termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary
- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before Burlington Hydro assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to Burlington Hydro. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect. Experience has shown that subdivision developers, in Burlington, consistently engage an electrical engineering consultant and their own approved contractor to design and construct their underground subdivisions. BHI ensures that the quality of construction and material approvals meet their standards and therefore provides the new customers with a high quality underground distribution system within their respective neighbourhoods. This is a satisfactory arrangement and these funds represent the value of the capital contributions received, by BHI, when the subdivisions are assumed.

Category-specific requirements

These projects are identified within the System Access category. The construction schedules are driven by the market for new residential homes and the detailed designs are developed by the developer's consultant with approvals by BHI. Costs are tightly controlled by the developers purchasing and tendering processes as the majority of the expenditures are made by the developer.

3. **Project Name: Subdivision Buybacks**

2014 Budget Amount: $1,200,000

Acct #1995 - $1,200,000

General Information

In accordance with Appendix B of the Distribution System Code the value of these funds are calculated by the prescribed economic evaluation methodology and are required finance BHI's obligations to finance its portion of the cost of new subdivisions.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect. The evaluation criteria are as described in the Subdivisions Assumed project, above.

Category-specific requirements

These projects are identified within the System Access category. As noted the expenditures are calculated in accordance with Appendix B of the DSC and are an outcome of the subdivision, design, approval, construction, connection and assumption process.

4. **Project Name: Downtown/Lakeshore Elizabeth/Lakeshore to Martha MS**

2014 Budget Amount: $740,406

Acct # 1830 - $77,289 Acct # 1835 - $23,125 Acct # 1840 - $155,753 Acct # 1845 – $470,674 Acct # 1850 - $5,000 Acct # 1855 - $8,565

General Information

This project is a continuation of a 2013 project involving the relocation of the existing 4kV distribution system in conflict with the proposed high rise condo/hotel development (3 bldgs) at 3048 Lakeshore Road in conjunction with the installation of the 27.6kV infrastructure to service the same site. It is required to service new development within the City of Burlington's Intensification Strategy which, in turn, has its origins in the Technical Paper -- "Proposed Size and Location of Urban Growth Centres in the Greater Golden Horseshoe" prepared by the Ontario Growth Secretariat Ministry of Public Infrastructure Renewal in Spring 2008. This paper identifies Downtown Burlington as an Urban Growth Centre with a minimum gross density target of 200 residents and jobs combined per hectare, by 2031 or earlier.

Starting and In-service Dates

April to Oct. 2014

Evaluation Criteria

The primary driver for this project is new customer connections and some obligations to relocate existing plant. The schedule will be driven by the rate of property development and will require close cooperation with the City of Burlington and the respective developers. This project is a critical element of the economic development within the City of Burlington to satisfy its Intensification Strategy prompted by the Ontario government's vision for Downtown Burlington.

Category-specific requirements

The project is identified within the System Access category. BHI has the system and feeder capacity for this project. The final design of the project will require input and detailed consultation with property developers on the service layouts, transformer and switchgear locations. Cost sharing will be a priority and the final expenditures will be subject to the economic evaluation process required by the Distribution System Code.

5. **Project Name: City Projects**

2014 Budget Amount: $667,704

Acct # 1830 - $107,332 Acct # 1835 - $127,235 Acct # 1840 - $124,566 Acct # 1855 - $43,932 Acct # 1845 - $264,639

General Information

This budget item provides funds to address the various City of Burlington's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The budgetary amount is quite speculative as the City of Burlington does not have firm commitments for specific projects, at this time.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations under the *Public Service Works on Highways Act*. The act prescribes a formula for the apportionment of costs that allows for the road authority to contribute 50% of the "cost of labour" towards the relocation costs. A high degree of coordination, with City of Burlington, is required to plan, design and relocate the hydro facilities to match the construction schedules for road improvements and road widenings.

Category-specific requirements

The projects are planned and funded within municipal budgets but historically they are often difficult to schedule as they rely on multiple schedules for funding, engineering, approvals and construction schedules outside of BHI's control. Each project is unique and may involve BHI facilities being taken out of service prior to the end of their service life. Such equipment may be inspected and approved for re-use in accordance with Ont. Reg. 22/04.

6. **Project Name: Region Projects**

2014 Budget Amount: $68,922

Acct # 1830 - $41,851 Acct # 1835 - $2,401 Acct # 1840 - $17,500 Acct # 1855 - $6,019 Acct # 1850 - $1,151

General Information

This budget item provides funds to address the Region of Halton's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The budgetary amount is quite speculative as the Region of Halton does not have firm commitments for specific projects, at this time.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations under the *Public Service Works on Highways Act*. The act prescribes a formula for the apportionment of costs that allows for the road authority to contribute 50% of the "cost of labour" towards the relocation costs. A high degree of coordination, with the Region of Halton, is required to plan, design and relocate the hydro facilities to match the construction schedules for road improvements and road widenings.

Category-specific requirements

The projects are planned and funded within the Region's budgets but historically they are often difficult to schedule as they rely on multiple schedules for funding, engineering, approvals and construction schedules outside of BHI's control. Each project is unique and may involve BHI facilities being taken out of service prior to the end of their service life. Such equipment may be inspected and approved for re-use in accordance with Ont. Reg. 22/04.

7. **Project Name: General Service - Overhead**
2014 Budget Amount: $1,259,668

Acct # 1830 - $843,518 Acct # 1835 - $279,437 Acct # 1855 - $136,713

General Information

This budget item captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. The budget is based on historical values and is challenging to forecast as a whole due to the unplanned yet expected projects that arise as a part of a utilities operation. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services
- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and Burlington Hydro customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect and by circumstances beyond BHI's control. The criteria may also be evaluated on the basis of safety issues created by third parties or responsibilities to coordinate with Municipal authorities, other utilities and customers.

Category-specific requirements

BHI is required to be responsive to the wide variety of potential situations accounted for within this item. Where possible customer input is expected and required to provide service to residential, commercial or industrial customers and scheduling of design and construction is critical to new connections. Unplanned or emergency response may also be captured within these projects where distribution plant is damaged or replaced.

8. **Project Name: Transformers Installed**
2014 Budget Amount: $614,742

Acct # 1850 - $614,742

General Information

This budget item provides for the supply and installation of all distribution transformers for service upgrades, new services and transformer replacements.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect. It includes some capital costs for transformer replacements when required due to failure or upgrades for increased capacity.

Category-specific requirements

These projects are identified primarily within the System Access category with some expenditures for Service Renewal when replacement units are required. Unplanned or emergency response may also be captured within these projects where transformers are damaged or replaced.

9. **Project Name: Subdivision Assumed Transformers**

2014 Budget Amount: $600,000

Acct # 1995 - $600,000

General Information

Ownership of these transformers has been assumed and recorded as this separate project. There are accounted for separately within this budget item but are justified as part of the Subdivisions Assumed project noted above.

Starting and In-service Dates

Jan. to Dec. 2014

10. **Project Name: Meters Installed – Residential, Commercial and Wholesale**

2014 Budget Amount: $240,309

Acct # 1860 – $240,309

General Information

This account captures the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground applications; and includes primary metering units for large industrial customers.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect.

Category-specific requirements

These projects require close cooperation with BHI engineering and in particular new General Service customers to coordinate equipment delivery and installation schedules.

11. **Project Name: Condominium Sub-Metering**

2014 Budget Amount: $347,826

Acct # 1860 - $347,826

General Information

This budget item provides for costs to install individual meters in new condominium projects and to convert existing bulk-metered customers to individual sub-metering as part of Burlington Hydro's conservation initiatives.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

BHI requires individual metering new condominium projects and supports conversions from existing bulk-metered customers when requested. Individual meters are universally recognized as an aid to conservation strategies by encouraging accountability for the efficient use of electricity.

Category-specific requirements

These projects contribute to the overall efficiency of the supply of electrical energy. The projects require close cooperation with condominium developers, customers and condominium boards to schedule and facilitate these projects in the best interests of the customers.

12 . **Project Name: Contributions and Grants**

2014 Budget Amount: ($3,579,205)

Acct # 1995 – ($3,579,205)

General Information

The Distribution System Code and BHI's Conditions of Service provide the basis for determining the capital contributions to be paid by customers, developers, third parties and government authorities. These funds are applied towards the associated costs for the installation and/or modification of hydro infrastructure and connection assets as required.

Starting and In-service Dates

Jan. to Dec. 2014

SYSTEM RENEWAL

1. **Project Name: New 15 MVA Station Transformer**

2014 Budget Amount: $386,478

Acct # 1820 - $386,478

General Information

BHI currently expects to operate the majority of its substations indefinitely, as conversion to a higher voltage is considered to be cost prohibitive. The transformers, switchgear and buildings are well maintained, but many of them are over 30 years old and generally supply power to the older neighbourhoods. 20 of the substations are equipped with a single power transformer and 12 have double transformation. Approximately 20 of the transformers are over 40 years old and therefore present the highest risk particularly when the current insurance coverage applies to a depreciated value only and falls to zero for units over 50 years old. In 2011 an annual replacement program was initiated; one power transformer was replaced in 2011 and a second in 2012. The annual replacement program was postponed, for 2013, but will be reinstated in 2014.

Starting and In-service Dates

April to Oct. 2014

Evaluation Criteria

The primary driver for this project is the risk of failure. Substation power transformers are critical to the long term reliability of the distribution system, a failure could immediately impact the supply to up to thousands of customers. (Each station typically serves between 1000 and 2000 customers) While BHI's distribution system is designed and operated to provide back-up arrangements in such a situation it becomes vulnerable in the event of a second contingency. Repairs to failed transformers and/or replacement units have very long delivery schedules and good utility practice would include a timely response to a failure. BHI experienced such a failure in 2009 which reinforced the results of its asset management and risk management initiatives which identified the aging fleet of substation power transformers as a serious concern.

Category-specific requirements

All substations are inspected monthly with the results documented as part of BHI maintenance and asset management practices. All substations are shut down and re-commissioned every 5 years during which time all equipment is thoroughly tested and overhauled. Comprehensive inspection and testing data is collected and reviewed for signs of deterioration and potential failure. Particular attention is given to the power transformers and the process of Dissolved Gas Analysis is used to determine the condition of the insulating oil and to monitor any deterioration of the transformer's insulation properties. This data is critical to identifying trends and potential failures as the transformers age.

This often leads to increased testing and vigilance on some units and the reassurance that spare units with both 4.16kV and 13.8kV secondary windings could be available at short notice. As indicated above the impact of a failure on thousands of Residential and General Service customers is a significant driver for a planned approach to these replacements.

Once a new transformer has been commissioned and its performance proven the attention to routine maintenance can be reduced resulting in decreased O & M costs.

2. **Project Name: Underground Rebuilds (Faversham/Cavendish)**

2014 Budget Amount: $345,520

Acct # 1830 - $10,500 Acct # 1835 - $2,400 Acct # 1840 - $201,129 Acct # 1845 – $104,663 Acct # 1855 - $6,000 Acct # 1850 - $20,828

General Information

A large percentage of BHI's residential distribution system has been constructed underground, particularly in the newer neighbourhoods, north of the QEW. This has been standard utility practice for over 30 years. These systems contain direct buried high voltage cables that have a finite length of life depending on the below-grade environment, the rate of deterioration of the cable insulation and the failure rate of underground splices. BHI closely monitors the failure of these cables on an individual feeder and geographic basis. The age and performance history of these older underground systems indicates that these rebuild projects will be continuous feature of BHI's annual capital expenditures to maintain the quality of service expected by its customers. As part of its annual System Performance Report BHI identifies the underground subdivisions where primary cable faults have increased and reliability performance has deteriorated to unacceptable levels. This budget item is focused on the Faversham/Cavendish neighbourhood where performance improvements are necessary.

Starting and In-service Dates

April to Oct. 2014

Evaluation Criteria

The primary driver for this project is the substandard performance of the original underground system over the last few years. In monitoring its primary cable faults BHI then prioritizes its major capital expenditures, for underground rebuilds, to provide the best value to the most customers within the limitations of its funding constraints. In 2010, 2011 and 2012 there were numerous primary cable faults in this service area and a complete rebuild of the underground cable system was deemed to be the optimum solution. The use of directional boring technology has proved to be the least disruptive construction technique for customers and has become the industry standard for these projects.

Category-specific requirements

This particular area serves approximately 400 Residential customers. BHI is careful to monitor and prioritize its underground rebuild projects over a number of years. Experience has shown that the rate of primary cable faults is often inconsistent, demonstrating poor performance in one year with subsequent improvements in later years. Therefore, close attention is required to ensure that the maximum service life is achieved from the existing cables before replacement cables become necessary to restore the expected performance level. Once completed the expensive incidence of fault finding and repairs in this neighbourhood is eliminated resulting in decreased O & M costs.

3. Project Name: Pole Replacement Program

2014 Budget Amount: $246,957

Acct # 1830 - $162,604 Acct # 1835 - $14,730 Acct # 1840 - $22,997 Acct # 1845 - $2,591

Acct # 1855 - $44,035

General Information

Burlington Hydro's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during Burlington Hydro preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

This program is critical to the long term condition and security of BHI's overhead distribution system. Records of the age of poles are an important indicator for these assets but experience has shown that condition is an equally important criteria and pole testing greatly assists in determining the failure risks and prioritizing expenditures. Pole failures can impact customer reliability, particularly under severe weather conditions and public safety is always a prime consideration.

Category-specific requirements

The project is identified within the System Renewal category and the expenditures have a direct relationship with the Asset Management process. Poles are a primary foundation of the overhead distribution system and their importance cannot be minimized. A significant annual investment in these assets is required when a large percentage of the original installations were completed over 40 years ago. The pole testing program adds another level of data to prioritize the replacements and ensure that the best value is obtained for the costs incurred. Prudent selection of replacements ultimately decreases O & M costs by reducing emergency work and maintaining standards of safety and reliability.

4. Project Name: PCB Free Compliance - Transformer Replacement

2014 Budget Amount: $172,704

Acct # 1850 - $172,704

General Information

Following Burlington Hydro's transformer oil sampling and testing program, Burlington Hydro implemented a transformer replacement program to replace PCB contaminated transformers containing specified levels of PCB's in accordance with Federal Government of Canada Regulations. All transformers meeting the following conditions must be replaced by the end of 2009:

- all transformers with PCB content greater than 500 ppm;
- all padmount transformers with PCB content greater than 50 ppm and less than 500 ppm within 100m of sensitive areas as defined by the Regulations; and
- all transformers with PCB content greater than 50 ppm within 100m of sensitive areas as defined by Regulations.

The Federal Government of Canada has allowed an extension up to 2014 for the replacement of transformers that do not fall within the above criteria for transformer replacement by the end of 2009.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to comply with Federal Government of Canada Regulations. This has been a continuous commitment over many years to minimize and ultimately eliminate the public safety and environmental risks of PCB contaminated transformers.

Category-specific requirements

The project is identified within the System Renewal category where there is a legal responsibility for compliance and also a risk minimization strategy where significant environmental clean-up costs can be avoided.

SYSTEM SERVICE

1. **Project Name: Motorized ABS/Recloser Program**

2014 Budget Amount: $262,834

Acct # 1830 - $145,669 Acct # 1835 - $54,340 Acct # 1845 - $60,246 Acct # 1855 - $2,579

General Information

Burlington Hydro has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

The primary driver for this project is to maintain and enhance the operational efficiency of the distribution system. With a well-established control room and SCADA system the operators have continuous data on the status of the distribution system. When abnormal/emergency situations arise the use of remote motorized switches takes the system to a new level of functionality and enhanced restoration capability.

Category-specific requirements

This type of Distribution Automation has become a standard in the North American electrical distribution industry and BHI is a recognized leader in its application. Its GridSmartCity initiative is well known in the community and this level of sophistication is also consistent with the provincial government's Smart Grid vision and matches the response expectations of customers.

2. **Project Name**: **NE Burlington TS Egress**

2014 Budget Amount: $151,791

Acct # 1830 - $105,254 Acct # 1835 - $21,876 Acct # 1840 - $12,700 Acct # 1855 - $11,961

General Information

This budget item provides for the continuation of construction of the overhead and underground distribution infrastructure necessary to deliver capacity to the NE Burlington area from the new Tremaine Transformer Station constructed by Hydro One.

These projects are essential to the implementation of the long term regional planning and to supply load from Hydro One's new Transformer Station. These new feeders will reduce the system losses and the distance exposure for large numbers of customers in NE Burlington.

Starting and In-service Dates

April to Sept. 2014

Evaluation Criteria

This project is the finalization of the feeder egress from Tremaine TS that was driven originally by new customer growth and the Regional Planning Process initiated in 2006. These feeders should serve the ultimate electrical needs of the Burlington community and support its economic development plans.

Category-specific requirements

In 2014 the finalization of these multi-year projects will satisfy the objectives of the Regional Planning Process; the feeders will include functionality provided by BHI's distribution automation systems, reduce system losses and provide reduced feeder exposure to customers in NE Burlington.

3. **Project Name: Bronte Feeder Double CCT (replace Oakville Lease CCT)**

2014 Budget Amount: $420,290

Acct # 1830 - $192,464 Acct # 1835 - $227,826

General Information

Burlington Hydro currently leases 2 circuits of 27.6kV line (Approx. 2km), on a Hydro One right of way, from Oakville Hydro with an expiration date of June 2013. Burlington Hydro previously constructed 2 pole lines, from Bronte TS, on this right of way and included provision to add 2 additional circuits when the lease expires. This budget item concludes the original plan for BHI to own these distribution circuits and provides funds to complete the construction.

Starting and In-service Dates

Jan. to Dec. 2014

Evaluation Criteria

This is a line extension project but is driven by the expiration of a 10 year lease arrangement with Oakville Hydro. In 2003 Hydro One was able to provide BHI with much needed capacity from its Bronte TS, in Oakville. At that time Oakville Hydro had underutilized feeders along the right of way due to the decommissioning of the Petro-Canada oil refinery. It was therefore a good business decision to lease these lines to BHI and immediately allow some capacity to be made available to BHI customers. In addition BHI proceeded to construct two new pole lines, along the right of way, from Bronte TS to Burlington. That pole line was designed to ultimately accommodate two more BHI circuits and allow BHI to construct its own facilities upon expiration of the lease.

Category-specific requirements

The project is consistent with the usual utility practice of owning all of its distribution facilities. The timing is driven by the expiration of the 10 year lease arrangement with Oakville Hydro. The design and construction costs have been minimized by the long term planning that was provided for when the previous two pole lines were built.

GENERAL PLANT

1. **Project Name: 1340 Brant St. & Substation Properties**

2014 Budget Amount: $332,000

Acct # 1908 - $332,000

General Information

BHI's head office building was originally constructed in 1961 with an expansion completed in 1989. It was custom designed and therefore has all of the expected features of an electric utility facility i.e. office space, warehouse, vehicle and outside equipment storage. However, many industry characteristics have changed over the years e.g. environmental issues, health and safety requirements, emergency back-up supplies, plus the impact and heavy reliance on computer technology. This has created some risks to the company, many of were not envisioned 50 years ago.

In 2007 BHI engaged the services of a consulting firm specializing in Facility Project Management. Its mandate was to carry out a physical assessment of the building and to consign all findings and reviews in a comprehensive Facility Condition Assessment Report that included a summary table giving a snapshot of required funding to correct current deficiencies in the facility. A timeline and priority number was given for each deficiency.

This budgetary item continues the implementation of the recommendations to upgrade and replace minor structures and equipment at BHI's main office at 1340 Brant Street and at substation properties. It also includes significant funds to supply and install an upgraded system of 4 Roof Top HVAC Units, at 1340 Brant St., as replacement for the main Air Handler in the Mechanical Room. This includes new ductwork, all associated sensors, controls, thermostats, dampers, programming to main computer control system, commissioning, etc. and removal of existing equipment.

Starting and In-service Dates

May to Oct. 2014

Evaluation Criteria

This project is identified with "drivers" that include maintaining the business operations efficiency and the health & safety of employees and customers. Continuous investments are required in a building that is over 50 years old to maintain a reasonable level of comfort for employees while also capitalizing on the opportunity to improve the energy efficiency of the building. Minor repairs at BHI substations are also necessary to maintain the building structures and to ensure that public safety is not compromised.

Category-specific requirements

BHI's head office building includes its complete control and operations facility at one location. The project is identified within the General Plant category and was recommended from the 2007 third party assessment. BHI is currently committed to remaining at this site and therefore has to make annual investments to maintain this older facility at a reasonable level that is consistent with current standards of safety and functionality.

Projects below the Materiality Threshold

System Access

System Renewal

1. Project Name: Re-commission Substations

2014 Budget Amount: $90,299

Acct # 1820 - $90,299

Re-commissioning of various transformer substations is an integral part of BHI's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment. The schedule for re-commissioning will be finalized following completion of the 2013 work.

2. Project Name: Metalclad Equipment Refurbish/Paint

2014 Budget Amount: $34,601

Acct # 1820 - $34,601

From the substation inspection reports a list of priority projects was prepared and completed. The useful life of this substation equipment is extended by removing the rust and applying rust inhibitor and paint.

Starting and In-service Dates

May to Nov. 2014

3. Project Name: Battery Banks & Chargers

2014 Budget Amount: $7,692

Acct # 1820 - $7,692

Battery banks and chargers are replaced due to the aging and reduced performance of the existing, less reliable equipment. The new chargers provide stable battery charge and supply all solid state equipment such as the relays and RTUs (Remote Terminal Units).

Starting and In-service Dates

Jan. to Dec. 2014

4. Project Name: Replacement of Substation Circuit Breakers

2014 Budget Amount: $46,241

Acct # 1820 -$46,241

The conversion to new technology vacuum breakers improves station reliability and eliminates the potential hazard from asbestos arc chutes. A previous inspection program had identified several stations having asbestos in the arc chutes.

Starting and In-service Dates

May to Nov. 2014

5. Project Name: Primary Metering Tank Replacement

2014 Budget Amount: $18,749

Acct # 1860 - $18,749

This budget item provides for the removal of an older Oil filled Primary Metering Unit and the replacement with dry type PME cluster mount units.

Starting and In-service Dates

Jan. to Dec. 2014

System Service

1. Project Name: Easements

2014 Budget Amount: $60,000

Acct # 1830 - $60,000

CN Rail is requiring BHI to consolidate all of its annual encroachment fees into a one-time lump sum payment. This item covers the estimated cost of this payment.

Starting and In-service Dates

Jan. to Dec. 2014

2. **Project Name: Upgrade Relays to Solid State**

2014 Budget Amount: $31,104

Acct # 1980 - $40,205

The upgrades of solid state relays are necessary to replace aging electro mechanical relay systems. Solid state relays improve the performance, reliability and available fault and operation data records with less labour intensive maintenance activities.

Starting and In-service Dates

Jan. to Dec. 2014

3. **Project Name: Upgrade RTUs**

2014 Budget Amount: $38,675

Acct # 1980 - $38,675

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the BHI control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

Starting and In-service Dates

Jan. to Dec. 2014

4. **Project Name: Transducers**

2014 Budget Amount: $3,846

Acct # 1980 - $3,846

New transducers replace defective units which provide analog read outs through SCADA system. The transducer lowers the relay current and voltage levels to milliamps and millivolts for SCADA communications through the RTU.

Starting and In-service Dates

Feb. to Nov. 2014

General Plant

1. **Project Name: Operations Tools, Shop and Garage Equipment**

2014 Budget Amount: $12,000

Acct # 1940 - $12,000

This budget item provides for the specialized tools used by operations staff for the performance of Capital and Operating work on BHI's distribution system.

Starting and In-service Dates

Jan. to Dec. 2014

2. **Project Name: New and/or Replacement Vehicles (<4500kg)**

2014 Budget Amount: $50,000

Acct # 1930 - $50,000

Small vehicles for supervisors and foreman are usually maintained within the fleet for 8 years. Vehicles are recycled to various departments to manage the mileage on the vehicles and therefore extend the life of the vehicle. This budget item provides funds for these replacement vehicles.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2014

3. **Project Name: Misc. Office Equipment**

2014 Budget Amount: $38,000

Acct # 1915 - $38,000

This budget item provides for miscellaneous office equipment and the replacement / upgrade of work stations and associated accessories / equipment to bring to current ergonomic standards.

<u>Starting and In-service Dates</u>

Jan. to Dec. 2014

4. **Project Name: Personal Computers**

2014 Budget Amount: $30,000

Acct # 1920 - $30,000

It is necessary for BHI to replace and update communication equipment, personal computers and aging servers, to equip staff with current technological tools and to maintain the high level of network security.

Starting and In-service Dates

Jan. to Dec. 2014

5. **Project Name: Field Mobile PCs**

2014 Budget Amount: $20,000

Acct # 1920 - $20,000

This budget item provides for funds for a continuation of the roll out of Toughbook PCs to field service trucks to allow outside staff access to the mapping system, daily instruction orders and input to timesheets.

Starting and In-service Dates

Jan. to Dec. 2014

6. **Project Name: Field Force Automation Enhancements**

2014 Budget Amount: $20,000

Acct # 1920 - $20,000

This budget item provides for funds for programming costs to improve the Field Force Automation software solution originally launched in 2012.

Starting and In-service Dates

Jan. to Dec. 2014

7. **Project Name: Daffron Custom Programming (General/IFRS)**

2014 Budget Amount: $20,000

Acct # 1920 - $20,000

This budget item provides for programming costs by BHI's software vendor (Daffron) to address OEB regulated functionality in customer information and billing systems.

Starting and In-service Dates

Jan. to Dec. 2014

8. **Project Name: GIS/MAIS/Locates Pin Mapping Modifications**

2014 Budget Amount: $50,000

Acct # 1920 - $50,000

Following the implementation of the new GIS system there are updates and data clearing items that are required to be addressed. This budget item will continue to improve the mapping and asset management GIS systems.

Starting and In-service Dates

Jan. to Dec. 2014

9. **Project Name: SCADA/GIS/AMI/CIS Integration**

2014 Budget Amount: $100,000

Acct # 1920 - $100,000

With the completion of its GIS and asset management data, along with its new smart metering system, this information has to be shared with other applications for improved customer service and record keeping to eliminate duplication and independent data silos. This budget item provides for the establishment of an enterprise system environment by interfacing the new GIS mapping system with SCADA, Outage Management, and Smart Metering systems.

Starting and In-service Dates

Jan. to Dec. 2014

10. **Project Name: Windows 8 and MS Office 2013 Site Licensing**

2014 Budget Amount: $75,000

Acct # 1920 - $75,000

To keep in step with current business PC software, BHI needs to update its Microsoft site licenses from Windows 7 to Windows 8 and from Office Suite 2010 to Office Suite 2013. This budget item provides for the licences to complete these upgrades.

Starting and In-service Dates

Jan. to Dec. 2014

1

Capital Expenditures &Project Descriptions

2015, 2016, 2017, 2018

Capital Expenditure Summary

This summary allocates the proposed costs of individual projects, for each year, within each of the following prescribed categories:

- System Access
- System Renewal
- System Service
- General Plant

Projects above the Materiality Threshold

SYSTEM ACCESS

1. **General Service – Underground**

	2015	2016	2017	2018
Budget Allocation	**$1,105,035**	**$1,105,035**	**$1,105,035**	**$1,105,035**

General Information

This general service account captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as cables, terminations, duct structures, splicing, pulling foundation, connection pedestal installations under the category of General Service – Underground. The budget amount is based on historical values and is challenging to forecast as a whole due to the unplanned yet expected projects that arise as a part of a utilities operation. Projects contributing to this account are as follows:

- installation of infrastructure for new residential, commercial or industrial services
- unplanned structure relocations at the request of Municipal, Provincial and Federal authorities, third parties and Burlington Hydro customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials required for maintenance work

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect and by circumstances beyond BHI's control. The criteria may also be evaluated on the basis of safety issues created by third parties or responsibilities to coordinate with Municipal authorities, other utilities and customers.

Category-specific requirements

BHI is required to be responsive to the wide variety of potential situations accounted for within this item. Where possible customer input is expected and required to provide service to residential, commercial or industrial customers and scheduling of design and construction is critical to new connections. Unplanned or emergency response may also be captured within these projects where distribution plant is damaged or replaced.

2. Subdivisions Assumed

	2015	2016	2017	2018
Budget Allocation	**$1,400,000**	**$1,400,000**	**$1,400,000**	**$1,400,000**

General Information

Burlington Hydro is responsible for providing the following services for each proposed subdivision and townhouse development submitted when the Developer has chosen to decline Burlington Hydro's offer to connect and hires their own electrical consultant and utility contractor approved by Burlington Hydro:

- project design review
- project inspection
- project administration
- material approval
- vendor selection
- determination of financial securities to be submitted
- perform perimeter adjustments required to connect new development to existing distribution system
- install termination of primary cables at supply points
- provide assistance to developers contractor when required
- provide isolation of existing plant for developers contractor when necessary
- make necessary repairs to plant while the development is under warranty
- final project inspection

Following the completion and energization of the development, a 1 year warranty period is in effect. During this period the Developer owns and is responsible for the distribution assets. At the conclusion of the 1 year warranty period, several conditions must be satisfied before Burlington Hydro assumes ownership and full responsibility for the assets installed by the Developer. Once the development is assumed, the final capital costs are transferred to Burlington Hydro. The Developer follows up by applying for execution of the economic evaluation methodology in accordance with Appendix B of the DSC to determine the Developer's capital contributions.

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect. Experience has shown that subdivision developers, in Burlington, consistently engage an electrical engineering consultant and their own approved contractor to design and construct their underground subdivisions. BHI ensures that the quality of construction and material approvals meet their standards and therefore provides the new customers with a high quality underground distribution system within their respective neighbourhoods. This is a satisfactory arrangement and these funds represent the value of the capital contributions received, by BHI, when the subdivisions are assumed.

Category-specific requirements

The construction schedules are driven by the market for new residential homes and the detailed designs are developed by the developer's consultant with approvals by BHI. Costs are tightly controlled by the developers purchasing and tendering processes as the majority of the expenditures are made by the developer.

3. Subdivision Buybacks

	2015	2016	2017	2018
Budget Allocation	**$1,200,000**	**$1,200,000**	**$1,200,000**	**$1,200,000**

General Information

In accordance with Appendix B of the Distribution System Code the value of these funds are calculated by the prescribed economic evaluation methodology and are required finance BHI's obligations to finance its portion of the cost of new subdivisions.

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect. The evaluation criteria are as described in the Subdivisions Assumed project, above.

Category-specific requirements

These projects are identified within the System Access category. As noted the expenditures are calculated in accordance with Appendix B of the DSC and are an outcome of the subdivision, design, approval, construction, connection and assumption process.

4. Downtown Core Underground Development

	2015	2016	2017	2018
Budget Allocation	**$470,493**	**$0**	**$0**	**$0**

General Information

This project is a continuation of a 2013/4 project involving the relocation of the existing 4kV distribution system in conflict with the proposed high rise condo/hotel development (3 bldgs) at 3048 Lakeshore Road in conjunction with the installation of the 27.6kV infrastructure to service the same site. It is required to service new development within the City of Burlington's Intensification Strategy which, in turn, has its origins in the Technical Paper -- "Proposed Size and Location of Urban Growth Centres in the Greater Golden Horseshoe" prepared by the Ontario Growth Secretariat Ministry of Public Infrastructure Renewal in Spring 2008. This paper identifies Downtown Burlington as an Urban Growth Centre with a minimum gross density target of 200 residents and jobs combined per hectare, by 2031 or earlier.

Evaluation Criteria

The primary driver for this project is new customer connections and some obligations to relocate existing plant. The schedule will be driven by the rate of property development and will require close cooperation with the City of Burlington and the respective developers. This project is a critical element of the economic development within the City of Burlington to satisfy its Intensification Strategy prompted by the Ontario government's vision for Downtown Burlington.

Category-specific requirements

BHI has the system and feeder capacity for this project. The final design of the project will require input and detailed consultation with property developers on the service layouts, transformer and switchgear locations. Cost sharing will be a priority and the final expenditures will be subject to the economic evaluation process required by the Distribution System Code.

5. City Projects

	2015	2016	2017	2018
Budget Allocation	**$232,124**	**$232,124**	**$232,124**	**$928,497**

General Information

This budget item provides funds to address the various City of Burlington's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The budgetary amount is quite speculative as the City of Burlington does not have firm commitments for specific projects, at this time. The large increase, in 2018, is in anticipation of major plant relocations to accommodate the construction of a railway underpass that has been projected by the City of Burlington.

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations under the *Public Service Works on Highways Act*. The act prescribes a formula for the apportionment of costs that allows for the road authority to contribute 50% of the "cost of labour" towards the relocation costs. A high degree of coordination, with City of Burlington, is required to plan, design and relocate the hydro facilities to match the construction schedules for road improvements and road widenings.

Category-specific requirements

They are planned and funded within municipal budgets but historically they are often difficult to schedule as they rely on multiple schedules for funding, engineering, approvals and construction schedules outside of BHI's control. Each project is unique and may involve BHI facilities being taken out of service prior to the end of their service life. Such equipment may be inspected and approved for re-use in accordance with Ont. Reg. 22/04.

6. General Service – Overhead

	2015	2016	2017	2018
Budget Allocation	**$1,180,200**	**$1,180,200**	**$1,180,200**	**$1,180,200**

General Information

This budget item captures all structure, conductor and transformer costs associated with primary, secondary and service assets such as pole, bracket, anchor and hardware installations under the category of General Service – Overhead. The budget is based on historical values and is challenging to forecast as a whole due to the unplanned yet expected projects that arise as a part of a utilities operation. Projects contributing to this account are as follows:

- projects involving conductor, switch, connector, insulator, pole, bracket, anchor and hardware replacements not falling under the pole replacement program
- installation of infrastructure for new residential, commercial or industrial services, and temporary services
- unplanned conductor, switch, insulator, pole, bracket, anchor and hardware relocations at the request of Municipal, Provincial and Federal authorities, third parties, and Burlington Hydro customers
- repairs caused by accidents such as vehicle collisions and contractor inadvertent contact with hydro plant where the party responsible is not known and costs cannot be recovered
- modification of plant to rectify non-compliant clearance conditions in accordance with recognized standards
- enhancements or modifications to plant necessary to rectify low voltage issues with customers
- materials used for maintenance work

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect and by circumstances beyond BHI's control. The criteria may also be evaluated on the basis of safety issues created by third parties or responsibilities to coordinate with Municipal authorities, other utilities and customers.

Category-specific requirements

BHI is required to be responsive to the wide variety of potential situations accounted for within this item. Where possible customer input is expected and required to provide service to residential, commercial or industrial customers and scheduling of design and construction is critical to new connections. Unplanned or emergency response may also be captured within these projects where distribution plant is damaged or replaced.

7. Transformers Installed

	2015	2016	2017	2018
Budget Allocation	**$620,075**	**$620,075**	**$620,075**	**$620,075**

General Information

This budget item provides for the supply and installation of all distribution transformers for service upgrades, new services and transformer replacements.

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect. It includes some capital costs for transformer replacements when required due to failure or upgrades for increased capacity.

Category-specific requirements

These projects are identified primarily within the System Access category with some expenditures for Service Renewal when replacement units are required. Unplanned or emergency response may also be captured within these projects where transformers are damaged or replaced.

8. Subdivision Assumed Transformers

	2015	2016	2017	2018
Budget Allocation	**$600,000**	**$600,000**	**$600,000**	**$600,000**

General Information

Ownership of these transformers has been assumed and recorded as this separate project. There are accounted for separately within this budget item but are justified as part of the Subdivisions Assumed project noted above.

9. Meters Installed – Residential, Commercial and Wholesale

	2015	2016	2017	2018
Budget Allocation	**$240,309**	**$240,309**	**$240,309**	**$240,309**

General Information

This account captures the labour and material costs to install residential and general service secondary metering for full current and remote current meters in overhead and underground.

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations to connect.

Category-specific requirements

These projects require close cooperation with BHI engineering and in particular new General Service customers to coordinate equipment delivery and installation schedules.

10. Condominium Sub-Metering

	2015	2016	2017	2018
Budget Allocation	**$304,348**	**$304,348**	**$304,348**	**$304,348**

General Information

This budget item provides for costs to install individual meters in new condominium projects and to convert existing bulk-metered customers to individual sub-metering as part of Burlington Hydro's conservation initiatives.

Evaluation Criteria

BHI requires individual metering new condominium projects and supports conversions from existing bulk-metered customers when requested. Individual meters are universally recognized as an aid to conservation strategies by encouraging accountability for the efficient use of electricity.

Category-specific requirements

These projects contribute to the overall efficiency of the supply of electrical energy. The projects require close cooperation with condominium developers, customers and condominium boards to schedule and facilitate these projects in the best interests of the customers.

SYSTEM RENEWAL

1. Power Transformers

	2015	2016	2017	2018
Budget Allocation	**$386,478**	**$386,478**	**$386,478**	**$386,478**

General Information

BHI currently expects to operate the majority of its substations indefinitely, as conversion to a higher voltage is considered to be cost prohibitive. The transformers, switchgear and buildings are well maintained, but many of them are over 30 years old and generally supply power to the older neighbourhoods. 20 of the substations are equipped with a single power transformer and 12 have double transformation. Approximately 20 of the transformers are over 40 years old and therefore present the highest risk particularly when the current insurance coverage applies to a depreciated value only and falls to zero for units over 50 years old. In 2011 an annual replacement program was initiated; one power transformer was replaced in 2011 and a second in 2012. The annual replacement program was postponed, for 2013, but will be reinstated beginning in 2014.

Evaluation Criteria

The primary driver for this project is the risk of failure. Substation power transformers are critical to the long term reliability of the distribution system, a failure could immediately impact the supply to thousands of customers. While BHI's distribution system is designed and operated to provide back-up arrangements in such a situation it becomes vulnerable in the event of a second contingency. Repairs to failed transformers and/or replacement units have very long delivery schedules and good utility practice would include a timely response to a failure. BHI experienced such a failure in 2009 which reinforced the results of its asset management and risk management initiatives which identified the aging fleet of substation power transformers as a serious concern.

Category-specific requirements

All substations are inspected monthly with the results documented as part of BHI maintenance and asset management practices. All substations are shut down and re-commissioned every 5 years during which time all equipment is thoroughly tested and overhauled. Comprehensive inspection and testing data is collected and reviewed for signs of deterioration and potential failure. Particular attention is given to the power transformers and the process of Dissolved Gas Analysis is used to determine the condition of the insulating oil and to monitor any deterioration of the transformer's insulation properties. This data is critical to identifying trends and potential failures as the transformers age.

This often leads to increased testing and vigilance on some units and the reassurance that spare units with both 4.16kV and 13.8kV secondary windings could be available at short notice. As indicated above the impact of a failure on thousands of Residential and General Service customers is a significant driver for a planned approach to these replacements.

Once a new transformer has been commissioned and its performance proven the attention to routine maintenance can be reduced resulting in decreased O & M costs.

2. Underground Rebuilds

	2015	2016	2017	2018
Budget Allocation	$362,690	$362,690	$362,690	$362,690

General Information

A large percentage of BHI's residential distribution system has been constructed underground, particularly in the newer neighbourhoods, north of the QEW. This has been standard utility practice for over 30 years. These systems contain direct buried high voltage cables that have a finite length of life depending on the below-grade environment, the rate of deterioration of the cable insulation and the failure rate of underground splices. BHI closely monitors the failure of these cables on an individual feeder and geographic basis. The age and performance history of these older underground systems indicates that these rebuild projects will be continuous feature of BHI's annual capital expenditures to maintain the quality of service expected by its customers. As part of its annual System Performance Report BHI identifies the underground subdivisions where primary cable faults have increased and reliability performance has deteriorated to unacceptable levels. This budget item is focused on the specific neighbourhoods where performance improvements are necessary.

Evaluation Criteria

The primary driver for this project is the substandard performance of the original underground system over the previous few years. In monitoring its primary cable faults BHI then prioritizes its major capital expenditures, for underground rebuilds, to provide the best value to the most customers within the limitations of its funding constraints. In neighbourhoods where there have been numerous primary cable faults a complete rebuild of the underground cable system is deemed to be the optimum solution. The use of directional boring technology has proved to be the least disruptive construction technique for customers and has become the industry standard for these projects.

Category-specific requirements

BHI is careful to monitor and prioritize its underground rebuild projects over a number of years. Experience has shown that the rate of primary cable faults is often inconsistent, demonstrating poor performance in one year with subsequent improvements in later years. Therefore, close attention is required to ensure that the maximum service life is achieved from the existing cables before replacement cables become necessary to restore the expected performance level. Once completed the expensive incidence of fault finding and repairs in this neighbourhood is eliminated resulting in decreased O & M costs.

3. Pole Replacement Program

	2015	2016	2017	2018
Budget Allocation	**$369,054**	**$369,054**	**$369,054**	**$369,054**

General Information

Burlington Hydro's annual asset preventative maintenance program aims to replace hydro poles found to be in poor condition as deemed by a comprehensive pole testing program. This program is outsourced to a specialized pole testing contractor to test approximately 1200 poles systematically throughout the City. The test results provide sufficient data to assess the remaining pole strength and to assist in the decision to replace the pole or to provide pole treatment to extend its useful life. In addition the condition of hydro poles may also be assessed by field staff while performing the following duties:

- site visits by technical staff initiated by customer requests
- inspection of assets by trade and office staff as part of the requirements of the DSC
- during Burlington Hydro preventative maintenance programs such as insulator washing and tree trimming
- customer calls that single out poles that are in poor condition or broken

Evaluation Criteria

This program is critical to the long term condition and security of BHI's overhead distribution system. Records of the age of poles are an important indicator for these assets but experience has shown that condition is an equally important criteria and pole testing greatly assists in determining the failure risks and prioritizing expenditures. Pole failures can impact customer reliability, particularly under severe weather conditions and public safety is always a prime consideration.

Category-specific requirements

The project expenditures have a direct relationship with the Asset Management process. Poles are a primary foundation of the overhead distribution system and their importance cannot be minimized. A significant annual investment in these assets is required when a large percentage of the original installations were completed over 40 years ago. The pole testing program adds another level of data to prioritize the replacements and ensure that the best value is obtained for the costs incurred. Prudent selection of replacements ultimately decreases O & M costs by reducing emergency work and maintaining standards of safety and reliability.

SYSTEM SERVICE

1. Motorized ABS/Recloser Program

	2015	2016	2017	2018
Budget Allocation	**$340,422**	**$340,422**	**$340,422**	**$340,422**

General Information

Burlington Hydro has continued its commitment to distribution automation and has installed recloser switches within its 13.8kV system; these provide remote operating and system monitoring features that enhance the performance of the distribution system. Each installation requires infrastructure improvements to accommodate the new equipment. The technical functionality requires programming to coordinate the operation settings with existing protective equipment to ensure proper coordination is achieved.

Evaluation Criteria

The primary driver for this project is to maintain and enhance the operational efficiency of the distribution system. With a well-established control room and SCADA system the operators have continuous data on the status of the distribution system. When abnormal/emergency situations arise the use of remote motorized switches takes the system to a new level of functionality and enhanced restoration capability.

Category-specific requirements

This type of Distribution Automation has become a standard in the North American electrical distribution industry and BHI is a recognized leader in its application. Its GridSmartCity initiative is well known in the community and this level of sophistication is also consistent with the provincial government's Smart Grid vision and matches the response expectations of customers.

2. NE Burlington TS Egress

	2015	2016	2017	2018
Budget Allocation	**$236,785**	**$552,500**	**$552,500**	**$236,785**

General Information

This budget item provides for the continuation of construction of the overhead and underground distribution infrastructure necessary to deliver capacity to the NE Burlington area from the new Tremaine Transformer Station constructed by Hydro One.

These projects are essential to the implementation of the long term regional planning and to supply load from Hydro One's new Transformer Station. These new feeders will reduce the system losses and the distance exposure for large numbers of customers in NE Burlington.

Evaluation Criteria

This project is the finalization of the feeder egress from Tremaine TS that was driven originally by new customer growth and the Regional Planning Process initiated in 2006. These feeders should serve the ultimate electrical needs of the Burlington community and support its economic development plans.

Category-specific requirements

In 2014 the finalization of these multi-year projects will satisfy the objectives of the Regional Planning Process; the feeders will include functionality provided by BHI's distribution automation systems, reduce system losses and provide reduced feeder exposure to customers in NE Burlington.

GENERAL PLANT

1. 1340 Brant St. & Substation Properties

	2015	2016	2017	2018
Budget Allocation	**$366,000**	**$177,000**	**$131,500**	**$150,000**

General Information

BHI's head office building was originally constructed in 1961 with an expansion completed in 1989. It was custom designed and therefore has all of the expected features of an electric utility facility i.e. office space, warehouse, vehicle and outside equipment storage. However, many industry characteristics have changed over the years e.g. environmental issues, health and safety requirements, emergency back-up supplies, plus the impact and heavy reliance on computer technology. This has created some risks to the company, many of were not envisioned 50 years ago.

In 2007 BHI engaged the services of a consulting firm specializing in Facility Project Management. Its mandate was to carry out a physical assessment of the building and to consign all findings and reviews in a comprehensive Facility Condition Assessment Report that included a summary table giving a snapshot of required funding to correct current deficiencies in the facility. A timeline and priority number was given for each deficiency.

These budgetary items continue the implementation of the recommendations to upgrade and replace minor structures and equipment at BHI's main office at 1340 Brant Street and at substation properties. It also includes significant funds to supply and install an upgraded system of 4 Roof Top HVAC Units, at 1340 Brant St., as replacement for the main Air Handler in the Mechanical Room. This includes new ductwork, all associated sensors, controls, thermostats, dampers, programming to main computer control system, commissioning, etc. and removal of existing equipment.

Evaluation Criteria

This project is identified with "drivers" that include maintaining the business operations efficiency and the health & safety of employees and customers. Continuous investments are required in a building that is over 50 years old to maintain a reasonable level of comfort for employees while also capitalizing on the opportunity to improve the energy efficiency of the building. Minor repairs at BHI substations are also necessary to maintain the building structures and to ensure that public safety is not compromised.

Category-specific requirements

BHI's head office building includes its complete control and operations facility at one location. The project is identified within the General Plant category and was recommended from the 2007 third party assessment. BHI is currently committed to remaining at this site and therefore has to make annual investments to maintain this older facility at a reasonable level that is consistent with current standards of safety and functionality.

2. Rolling Stock: New and/or Replacement Vehicles (>4500kg)

	2015	2016	2017	2018
Budget Allocation	**$300,000**	**$80,000**	**$250,000**	**$100,000**

General Information

BHI maintains and operates an extensive fleet of vehicles and rolling stock. All of which have an established replacement cycle that can be adjusted depending on the particular condition and duty of the individual vehicle. Replacements are reviewed annually and are accommodated within this budget item.

Evaluation Criteria

Consideration is given to a number of drivers when evaluating the requirements for a new or replacement vehicles. The majority are replacements within the established fleet where age, condition, maintenance costs and safety are the primary attributes.

Category-specific requirements

Replacement of these specialized vehicles is a major expenditure requiring individual assessments of the optimum timing based on the above criteria.

3. Computer Hardware and Software

	2015	2016	2017	2018
Budget Allocation	**$270,000**	**$365,000**	**$375,000**	**$125,000**

General Information

This budget item provides for all BHI's IT requirements, this includes annual purchases of new and upgraded hardware and major expenditures for software applications such as the Customer Information System (CIS) and Geographic Information System (GIS). Its IT strategy is summarized as follows:

> *"To leverage I.T. architecture and enterprise applications, implementing improvements to meet or exceed regulatory requirements and corporate objectives, while being respectful of budgetary boundaries."*

Evaluation Criteria

BHI's IT Strategy is consistent with the OEB's performance outcomes i.e.:

- Customer Focus
- Operational Effectiveness
- Public Policy Responsiveness, and
- Financial Performance

Information Technology investments are critical to all of these outcomes and emphasize the importance of continuous upgrades and the response to business changes in technology and industry expectations. Priorities are subject to annual review reflecting the status and needs for operational efficiency, customer benefits and reliability while addressing any immediate requirements for critical issues such as safety and/or cyber security.

Category-specific requirements

While many IT expenditures reflect continuous upgrades to hardware and software applications or capitalization of new technologies, planned investments in major business applications such as a new CIS will be subjected to thorough justifications, evaluations and business case documentation.

Projects below the Materiality Threshold

System Access

1. **Region Projects**

	2015	2016	2017	2018
Budget Allocation	$58,455	$58,455	$58,455	$58,455

General Information

This budget item provides funds to address the Region of Halton's plans for road improvements and road widenings which create conflicts with hydro poles requiring relocation to accommodate the new designs. The budgetary amount is quite speculative as the Region of Halton does not have firm commitments for specific projects, at this time.

Evaluation Criteria

The projects within this item are non-discretionary being driven by obligations under the *Public Service Works on Highways Act*. The act prescribes a formula for the apportionment of costs that allows for the road authority to contribute 50% of the "cost of labour" towards the relocation costs. A high degree of coordination, with the Region of Halton, is required to plan, design and relocate the hydro facilities to match the construction schedules for road improvements and road widenings.

Category-specific requirements

They are planned and funded within the Region's budgets but historically they are often difficult to schedule as they rely on multiple schedules for funding, engineering, approvals and construction schedules outside of BHI's control. Each project is unique and may involve BHI facilities being taken out of service prior to the end of their service life. Such equipment may be inspected and approved for re-use in accordance with Ont. Reg. 22/04.

4. Wholesale Metering (Palermo TS & Bronte TS)

	2015	2016	2017	2018
Budget Allocation	**$0**	**$62,135**	**$0**	**$15,384**

These budget allocations provide for the relocation of the wholesale metering, closer to the TS, for feeders out of the Palermo TS. This will assist in minimizing losses and also providing a less exposed location for this critical equipment. New wholesale meters will also be required for the proposed replacement feeders out of Bronte TS.

5. Cross Phase Analysis

	2015	2016	2017	2018
Budget Allocation	**$0**	**$13,043**	**$13,043**	**$13,043**

All commercial customer locations with interval meters will be visited to perform revenue meter connection inspections and analysis to confirm the absence of revenue losses due to incorrect IT wiring.

System Renewal

1. Re-commission Substations

	2015	2016	2017	2018
Budget Allocation	**$90,300**	**$90,300**	**$90,300**	**$90,300**

Re-commissioning of various transformer substations is an integral part of BHI's inspection program. Re-commissioning entails inspection and repairs or improvements to critical power distribution equipment. An annual schedule for re-commissioning is finalized to address the regular planning cycles while addressing any unforeseen performance issues. These may be the result of testing or critical equipment failures.

2. **Metalclad Equipment Refurbish/Paint**

	2015	2016	2017	2018
Budget Allocation	**$34,600**	**$34,600**	**$34,600**	**$34,600**

From the substation inspection reports a list of priority projects is prepared and completed. The useful life of this substation equipment is extended by removing the rust and applying rust inhibitor and paint.

3. Battery Banks & Chargers

	2015	2016	2017	2018
Budget Allocation	**$3,846**	**$1,538**	**$1,538**	**$1,538**

Battery banks and chargers are replaced due to the aging and reduced performance of the existing, less reliable equipment. The new chargers provide stable battery charge and supply all solid state equipment such as the relays and RTUs (Remote Terminal Units).

4. Replacement of Substation Circuit Breakers

	2015	2016	2017	2018
Budget Allocation	**$46,241**	**$46,241**	**$46,241**	**$46,241**

Circuit breakers deteriorate over the years depending on the volume of operations and ultimately require replacement. The conversion to new technology vacuum breakers improves station reliability and requires on-going expenditures to maintain the performance of BHI's 32 substations.

5. Primary Metering Tank Replacement

	2015	2016	2017	2018
Budget Allocation	**$18,750**	**$18,750**	**$18,750**	**$18,750**

These budget allocations provide for the annual removal of an older Oil filled Primary Metering Unit and the replacement with dry type PME cluster mount units.

System Service

1. Upgrade Relays to Solid State

	2015	2016	2017	2018
Budget Allocation	**$31,104**	**$31,104**	**$31,104**	**$31,104**

The annual upgrades of solid state relays are necessary to replace aging electro mechanical relay systems which are critical to the functionality of the substation protection and control systems. Solid state relays improve the performance, reliability and available fault and operation data records with less labour intensive maintenance activities.

2. Upgrade RTUs

	2015	2016	2017	2018
Budget Allocation	**$38,675**	**$38,675**	**$38,675**	**$38,675**

The upgrade of the station RTUs to the latest technology provides improved reliability in communication and replacement of obsolete hardware from substations to the BHI control room. The conversion to DNP3 protocol also provides increased memory capacity, faster, more efficient performance, less hardware, requiring less maintenance and enables I.P. based communication.

3. Transducers

	2015	2016	2017	2018
Budget Allocation	**$3,846**	**$3,846**	**$3,846**	**$3,846**

New transducers replace defective units which provide analog read outs through SCADA system. The transducer lowers the relay current and voltage levels to milliamps and millivolts for SCADA communications through the RTU.

General Plant

1. Operations Tools, Shop and Garage Equipment

	2015	2016	2017	2018
Budget Allocation	**$12,000**	**$12,000**	**$12,000**	**$29,000**

These budget allocations provide for the specialized tools used by operations staff for the performance of Capital and Operating work on BHI's distribution system.

2. Misc. Office Equipment

	2015	2016	2017	2018
Budget Allocation	**$62,000**	**$39,000**	**$19,500**	**$24,900**

These budget allocations provide for miscellaneous office equipment and the replacement / upgrade of work stations and associated accessories / equipment to bring to current ergonomic standards.

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NON-DISTRIBUTION ACTIVITIES

Burlington Hydro attests that it has not included any capital expenditures for non-distribution activities in its capital spending for any historical, bridge or test year.

CAPITALIZATION POLICY PRE ACCOUNTING CHANGES

Burlington Hydro applies labour, engineering, vehicles and material burdens, which may include administrative and other general overhead costs, to capital. These burdens are described further below.

Labour Burden

The Labour burden is comprised of employee benefits (e.g. medical and health benefits) of all the eligible operations and maintenance staff as well as the salaries, benefits and other employment costs of their supervisors. The administrative cost of operating the Supervisors' department is also added to the Labour Burden. The Labour Burden rate is based on the percentage of the budgeted labour dollars charged to capital, operations, maintenance and billing that is required to absorb the total cost of the employee benefits and Supervisors' Department. This percentage is then applied to the direct and overtime labour dollars charged to capital, operations, maintenance and billable work orders.

Expenses included in Labour Burdens

Direct Labour Benefits:

- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Vacations
- Statutory Holidays
- Safety Meetings
- Training
- Bereavement
- Jury Duty

- Tool Allowance

Supervisor Department

- Salaries
- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Conferences
- Miscellaneous Expenses
- Office Rent
- Professional Fees
- Seminars
- Telephone
- Tools and Clothing
- Vehicle Expenses

Engineering Burdens

The Engineering Burden includes the salaries and employee benefits of all the Engineering Department staff. It also includes all of the administrative and general costs of operating the Engineering Department. Direct labour, material, vehicles, contracted labour and miscellaneous purchases are appropriately charged to capital, operations and maintenance work orders along with the related Overhead burdens. Upon completion of the job, the Engineering burden rate is applied to the total costs. The Engineering rate is based on the percentage of the budgeted capital, operations, maintenance and billing costs for the year that is required to absorb the total cost of the Engineering Department.

Expenses included in Engineering Burdens

Engineering Department

- Salaries

- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Computer Software- Maintenance
- Conferences
- Consultants
- Easements
- Employee Training
- Mileage
- Miscellaneous Expenses
- Office Rent
- Office Equipment Maintenance
- Organization Memberships
- Pole Testing
- Postage and Courier
- Prints and Supplies
- Professional Fees
- Safety Equipment
- Small Tools
- Software Amortization
- Subdivision Administration
- Telephone
- Temporary Staff
- Tools and Clothing
- Training
- Vehicle Expense

Vehicle Burdens

A vehicle burden rate is calculated for each class of vehicle based on the budgeted costs of operating each vehicle and the budgeted hours of usage for each class. An hourly rate is developed based on the total cost divided by the number of hours the vehicle is used. This hourly rate is charged to capital, operations, maintenance and billable work orders based on the number of hours the vehicle is used. Typical expenses included in the Vehicle burden are maintenance, depreciation, insurance, gasoline and supplies. As a portion of the Service Centre is used for parking the larger vehicles, these costs are also allocated to each eligible vehicle.

Expenses included in Vehicle Burdens

Fleet Department

- Labour
- Depreciation
- Equipment Maintenance
- Insurance
- Vehicle Maintenance
- Fuel

Service Centre Expenses

- Equipment Maintenance
- Equipment Operations
- Insurance
- Janitorial
- Maintenance
- Building Operating Expenses
- Radio Licenses
- Utilities
- Yard and Parking Lot Expenses

Material Handling Burdens

The Material Handling Burden consists of the labour and employment benefits of the staff who work in the stock room, the salary and benefits of the Purchasing Manager and fifty percent of the salary and benefits of the Purchasing Assistant, the operating costs of the stock room (e.g. maintenance, property taxes, insurance and utilities). The Material Handling Burden rate is based on the required percentage of the total dollars of material charged out to capital, billing, operations and maintenance for the year to fully absorb the total cost of operating the Stock Room. This rate is then applied by percentage to the total cost of material charged out to capital, operations, maintenance and billable work orders.

Expenses included in Material Handling Burden

Stockroom Department

- Salaries
- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Employee Training
- Equipment Maintenance
- Insurance
- Inventory Quantity Adjustments
- Office Supplies
- Postage and Courier
- Reel Damage
- Safety Equipment
- Scrapped Material
- Telephone
- Tools and Clothing
- Trucks

Purchasing Department

- Purchasing Manager Salary
- Purchasing Assistant Salary (50%)
- (The following expenses for the Purchasing Manager and the Purchasing Assistant are prorated on the same basis as the salary)
- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits

Service Centre Expenses

- Equipment Maintenance
- Equipment Operations
- Insurance
- Janitorial
- Maintenance
- Building Operating Expenses
- Radio Licenses
- Utilities
- Yard and Parking Lot Expenses

CAPITALIZATION POLICY POST ACCOUNTING CHANGES

The Cost of an item of property, plant and equipment (PP&E) is recognized as an asset if and only if:

a) It is probable that future economic benefits will flow to the company; and
b) The cost of the item can be measured reliably

The cost of an item of PP&E includes any costs that are directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating the manner intended by management.
Certain costs are explicitly prohibited from inclusion as costs of an item of PP&E:

a) Costs of opening a new facility;
b) Costs of introducing a new product or service (including advertising and promotion);
c) Costs of conducting business in a new location or with a new class of customer (including costs of staff training)
d) Administration and other general overhead costs; and
e) Day-to-day servicing costs.

IAS 16 does not indicate what constitutes an item of PP&E. Judgment is required when applying the core principle.

Directly attributable

The term “directly attributable” is not defined in IAS 16. The specific facts and circumstances surrounding the cost and the ability to demonstrate that the cost is directly attributable to an item of PP&E is critical to establishing whether the cost should be capitalized. The cost must be attributed to a specific item of PP&E at the time it is incurred. The incurrence of that cost should aid directly in the construction effort making the asset more capable of being used than if the cost had not been incurred.

General and administrative overhead

IFRS does not provide a definition of general and administrative overhead (G&A). The specific facts and circumstances surrounding the nature of the costs and the activity associated with it must be considered to determine if it is directly attributable to an item of PP&E.

G&A costs typically benefit the organization as a whole or areas of the organization more broadly rather than contributing directly to bringing a physical asset to the location and condition necessary for it to be capable of operating in the manner intended by management. The more the nature of a particular cost strays from being directly attributable to an item of PP&E, then the more likely it is that the cost will be determined to be in the nature of G&A

Review of Burden Expenses

Burlington Hydro reviewed all of its expenses embedded in its Labour, Material Handling, Engineering and Vehicle Burden rates. Under the guidance of KPMG, the corporation's IFRS consultant, Burlington Hydro divided the expenses into directly attributable and not directly attributable. Only those expenses that were identified as directly attributable were included in the Capital Burden rates under New CGAAP. Those expenses that were not directly attributable were included in the burden rates to be used for operations, maintenance and billable work orders. The methodology for calculating and applying the burden rates for all non-capital work orders did not change under New CGAAP.

Material Handling Burden Rate

The Material Handling Burden Rate for Capital Work Orders was removed under New CGAAP. A large part of Material Handling included administrative and general overhead costs which were not considered directly attributable. Once these costs were removed it was difficult to develop a supportable co-relation between the remaining costs and the material charged out to capital.

Time Sheets

To accommodate the conversion from C.G.A.A.P. to New CGAAP. all the employees in the Engineering and Supervisory Departments are now required to complete a daily timesheet. Each day the employee distributes their regular and overtime hours to the work orders they worked on in the day. Depending on the job the Work Order may be charged to a Capital, Billable or Maintenance account. This ensures that the labour hours charged to a capital work order are directly attributable.

Direct Labour Burden

The Direct labour Burden is comprised of employee benefits including CPP, EI, medical and health benefits of all the operations and maintenance staff. (See Attachment A for the complete list of expenses included in the Burden). The Direct Labour Burden rate is the percentage of the total budgeted Direct Labour costs divided by the total cost of the Direct Labour Dollars. The Direct Labour Burden rate is then allocated to capital based upon the labour dollars charged to capital.

Supervisory Labour Burden

The Supervisory Labour Burden is comprised of employee benefits including CPP, EI, and medical and health benefits of all the Supervisory Staff. (See Attachment A for the complete list of expenses included in the Burden). The Supervisory Labour Burden rate is the percentage of the budgeted cost of the total Supervisory benefits divided by the total cost of the Supervisory Labour Dollars. The Supervisory Labour Burden rate is then applied to the direct labour dollars charged to a capital work order.

Engineering Labour Burden

The Engineering Labour Burden is comprised of employee benefits including CPP, EI, and medical and health benefits of all the Engineering Staff. The Engineering Labour Burden rate is the percentage of the budgeted cost of the total Engineering benefits divided by the total cost of the Engineering Labour Dollars. The Engineering Labour Burden rate is then applied to the direct labour dollars and overtime labour dollars charged to a capital work order.

Vehicles Burden

A vehicle burden rate is calculated for each class of vehicle based on the budgeted costs of operating each vehicle and the budgeted hours of usage for each class. The hourly rate is based on the total cost, divided by the number of hours used. This hourly rate is allocated to capital based on the time that the vehicle is used on the job-site, thus establishing the fact that the use of the vehicle is directly attributable to an item of PP&E. Typical expenses included in the operating costs are maintenance, depreciation, insurance, gasoline and supplies. (See Attachment B for the complete list of expenses included in the Burden).

Expenses included in Material Handling Burden

Direct Labour Benefits:

- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Vacations
- Statutory Holidays
- Bereavement
- Jury Duty
- Tool Allowance

Expenses Included in Supervisory Labour Burden

Supervisory Labour Benefits

- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums

- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Vacations
- Statutory Holidays
- Bereavement
- Jury Duty
- Tool Allowance
- Professional Fees

Expenses Included in Engineering Labour Burden

Engineering Labour Benefits

- Employment Insurance Premiums (Employer portion)
- Canada Pension Plan Premiums (Employer portion)
- Employer Health Tax Premiums
- OMERS (Employer portion)
- WSIB Premiums
- Health Benefits
- Vacations
- Statutory Holidays
- Employee Training
- Bereavement
- Jury Duty
- Tool Allowance
- Professional Fees

Expenses Included in Vehicle Burdens

Fleet Department

- Labour

- Depreciation
- Equipment Maintenance
- Insurance
- Vehicle Maintenance
- Vehicle Supplies
- Fuel

ASSET RETIREMENT POLICY

It is Burlington Hydro's normal practice to decommission an asset only to replace it with another (substation and poles). The perpetual nature of the assets is an aspect of Burlington Hydro being prepared to provide service on an ongoing basis and results in the fact that new assets are placed into service when old assets are removed from service.

No financial provision is made for the cost of removal or for the removal of the net book value of the asset; rather, all costs related to removal and to replacement are capitalized or expensed as is appropriate at the time of replacement. This practice and the associated financial provisions are consistent with general views of the industry; specifically, that no asset retirement obligations exist because of this perpetual replacement process and that there would be no legal or constructive requirement to remove the very last pole if another pole was not being put up.

Prior to 2013 Burlington Hydro recorded an Asset Retirement Obligation under Canadian GAAP for the removal of PCBs from transformers. The cost of the PCB removal was recorded as a liability. Upon the transition to IFRS, Burlington Hydro will consider whether to recognize additional liabilities for decommissioning or dismantling activities consistent with IFRS' broader provision of legal and constructive obligations related to past events. Management will consider whether the estimated costs related to the replacement of assets meets the criteria for liability recognition and what the appropriate measurement amount is for any liability that might need to be accrued.

With respect to PCBs, management will consider if there are additional decommissioning costs or environmental liabilities that should be recorded as financial liabilities. Burlington Hydro will also consider whether such costs are in the nature of dismantling costs and should appropriately be capitalized into Property, Plant and Equipment, or should be recorded as environmental liabilities and are therefore expensed as incurred.

Burlington Hydro has not transitioned to IFRS and consequently has not identified or quantified any Asset Retirement Obligations.

CAPITALIZATION OF OVERHEAD

Burlington Hydro appropriately capitalizes period expenses as required by its capitalization policy that is provided at Exhibit 2, Tab 5, Schedule 7

Burlington Hydro's regulatory and financial accounting capitalization policy for the 2013 Bridge Year and 2014 Test Year complies with the OEB's letter issued July 17, 2012 that requires all distributors to change their regulatory accounting policies to adopt policies consistent with the requirements of International Financial Reporting Standards effective on January 1, 2013. Burlington Hydro has also changed its regulatory and financial accounting policy for the accounting of overhead costs associated with capital work as clarified by the OEB in its letter dated February 24, 2010. The effect of these regulatory and financial accounting changes is a reduction in capitalized overhead and a corresponding increase in period expenses.

Costing details are presented in OEB Appendix 2-D that is provided at Exhibit 2, Tab 5, Schedule 1, Attachment 1.

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Appendix 2-DB
Overhead Expense

The following table should be completed based on the information requested below. An explanation should be provided for any blank entries. The entries should include overhead costs that are currently capitalized on self-constructed assets under revised CGAAP or ASPE (with the changes in capitalization and depreciation expense policies).

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
Nature of the Overhead Costs	**Dollar Impact on PP&E Historic Year**	**Dollar Impact on PP&E Bridge Year**	**Dollar Impact on PP&E Test Year**	**Dollar Impact - PP&E Variance Test versus Bridge**	**Dollar Impact - PP&E Variance Test versus Historic**	**Directly Attributable? (Y/N)**	**Reasons why the overhead costs are allowed to be capitalized under CGAAP or ASPE (with the changes in policies) given limitations on capitalized overhead**
Stores				$ -	$ -		
Benefits	68,192.20			$ -	-$ 68,192	N	
Labour	221,396.31			$ -	-$ 221,396	N	
Others	2,204.75			$ -	-$ 2,205	N	
Scrap	2,359.75			$ -	-$ 2,360	N	
Building Expenses	47,426.77			$ -	-$ 47,427	N	
				$ -	$ -		
Payroll Burdens				$ -	$ -		
Health Benefits	94,457.61	106,559.64	102,581.56	-$ 3,978	$ 8,124	Y	Directly attributable
Govt. Deductions	148,536.31	175,500.24	155,729.59	-$ 19,771	$ 7,193	Y	Directly attributable
Other	3,985.38	3,791.01	3,394.98	-$ 396	-$ 590	Y	Directly attributable
Safety and training	24,403.09	0.00	0.00	$ -	-$ 24,403	N	
Vacation and Stats Holidays	118,679.18	133,144.11	109,810.87	-$ 23,333	-$ 8,868	Y	Directly attributable
Foreman Health Benefits	52,943.54	44,151.00	53,168.00	$ 9,017	$ 224	Y	Directly attributable
Foremen Office Supplies	7,053.65	0.00	0.00	$ -	-$ 7,054	N	
Foremen Labour	190,264.54	76,320.00	99,268.00	$ 22,948	-$ 90,997	Y	Directly attributable
Foremen Vehicle Cost	8,877.85	0.00	0.00	$ -	-$ 8,878	N	
Foremen Other	824.37	0.00	0.00	$ -	-$ 824	N	
				$ -	$ -		
Engineering				$ -	$ -		
Benefits	136,969.70	179,174.00	89,371.00	-$ 89,803	-$ 47,599	Y	Directly attributable
Consultants	85,584.03	0.00	0.00	$ -	-$ 85,584	N	
Vehicle Cost	3,396.26	0.00	0.00	$ -	-$ 3,396	N	
Labour	508,644.92	326,126.00	176,728.00	-$ 149,398	-$ 331,917	Y	Directly attributable
Membership	15,588.87	0.00	0.00	$ -	-$ 15,589	N	
Office Supplies	56,079.49	0.00	0.00	$ -	-$ 56,079	N	
Other	13,723.53	0.00	0.00	$ -	-$ 13,724	N	
Pole Testing	12,333.85	0.00	0.00	$ -	-$ 12,334	N	
Software Amortization	92,284.99	0.00	0.00	$ -	-$ 92,285	N	
				$ -	$ -		
Fleet				$ -	$ -		
Benefits	1,259.08	5,377.73	8,484.69	$ 3,107	$ 7,226	Y	Directly attributable
Depreciation	111,441.64	37,769.39	42,563.92	$ 4,795	-$ 68,878	Y	Directly attributable
Labour	1,320.41	5,972.45	8,597.07	$ 2,625	$ 7,277	Y	Directly attributable
Leases	0.00	11,352.29	70,125.12	$ 58,773	$ 70,125	Y	Directly attributable
Service Centre Expenses	44,477.85	0.00	0.00	$ -	-$ 44,478	N	
Trucks	139,437.06	159,973.62	173,879.97	$ 13,906	$ 34,443	Y	Directly attributable
Total	$ 2,214,147	$ 1,265,211	$ 1,093,703	-$ 171,509	-$ 1,120,444		

The following table should be completed based on the information requested below. An explanation should be provided for any blank entries. The entries should include overhead costs that were capitalized on self-constructed assets under CGAAP but are no longer capitalized under revised

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
Nature of the Overhead Costs	**Dollar Impact on OM&A Historic Year**	**Dollar Impact on OM&A Bridge Year**	**Dollar Impact on OM&A Test Year**	**Dollar Impact - OM&A Variance Test versus Bridge**	**Dollar Impact - OM&A Variance Test versus Historic**	**Directly Attributable? (Y/N)**	**Reasons why the overhead costs are allowed to be capitalized under CGAAP or ASPE (with the changes in policies) given limitations on capitalized overhead**
Stores				$ -	$ -		
Benefits	9,980.71	71,000.87	70,239.22	-$ 762	$ 60,259		
Labour	32,403.90	231,086.41	229,392.55	-$ 1,694	$ 196,989		
Others	322.69	3,622.80	3,584.91	-$ 38	$ 3,262		
Scrap	345.38	15,106.95	14,798.17	-$ 309	$ 14,453		
Building Expenses	6,941.45	50,739.95	49,188.30	-$ 1,552	$ 42,247		
				$ -	$ -		
Payroll Burdens				$ -	$ -		
Health Benefits	216,747.36	268,033.98	301,342.55	$ 33,309	$ 84,595		
Govt. Deductions	340,839.18	441,508.58	457,377.57	$ 15,869	$ 116,538		
Other	9,145.06	9,535.69	9,973.05	$ 437	$ 828		
Safety and training	55,996.59	75,078.83	90,774.31	$ 15,695	$ 34,778		
Vacation and Stats Holidays	272,327.44	334,903.01	322,579.28	-$ 12,324	$ 50,252		
Foreman Health Benefits	121,487.02	157,600.20	171,106.25	$ 13,506	$ 49,619		
Foremen Office Supplies	16,185.68	19,003.36	19,828.77	$ 825	$ 3,643		
Foremen Labour	436,590.96	476,552.06	555,792.21	$ 79,240	$ 119,201		
Foremen Vehicle Cost	20,371.57	38,110.65	39,696.65	$ 1,586	$ 19,325		
Foremen Other	1,891.66	4,119.04	4,302.10	$ 183	$ 2,410		
				$ -	$ -		
Engineering				$ -	$ -		
Benefits	11,704.11	135,750.33	236,272.75	$ 100,522	$ 224,569		
Consultants	7,313.19	135,676.33	137,963.31	$ 2,287	$ 130,650		
Vehicle Cost	290.21	4,146.99	4,230.81	$ 84	$ 3,941		
Labour	43,463.88	697,360.05	960,755.68	$ 263,396	$ 917,292		
Membership	1,332.07	29,091.23	29,567.04	$ 476	$ 28,235		
Office Supplies	4,792.01	106,682.47	114,426.39	$ 7,744	$ 109,634		
Other	1,172.68	30,245.07	30,782.79	$ 538	$ 29,610		
Pole Testing	1,053.93	29,211.00	29,712.93	$ 502	$ 28,659		
Software Amortization	7,885.78	178,243.57	175,116.63	-$ 3,127	$ 167,231		
				$ -	$ -		
Fleet				$ -	$ -		
Benefits	1,629.29	4,382.50	5,824.07	$ 1,442	$ 4,195		
Depreciation	144,208.82	30,779.58	29,216.78	-$ 1,563	-$ 114,992		
Labour	1,708.66	4,867.16	5,901.21	$ 1,034	$ 4,193		
Leases	0.00	9,251.37	48,135.36	$ 38,884	$ 48,135		
Service Centre Expenses	57,555.67	103,619.73	103,755.05	$ 135	$ 46,199		
Trucks	180,435.72	130,368.02	119,354.85	-$ 11,013	-$ 61,081		
Total	$ 2,006,123	$ 3,825,678	$ 4,370,992	$ 545,314	$ 2,364,869		

Attachment 1 (of 1):

Appendix 2-DB: Overhead Expense (CGAAP or ASPE)

ASSET REMOVAL AND RETIREMENTS

Burlington Hydro does not have any asset retirement obligations planned for 2013 and 2014. The most significant asset removal occurred in 2010 when Burlington Hydro removed its conventional meters from its asset base, the details of which can be found at Exhibit 2, Tab 4 Schedule 1.

RENEWABLE GENERATION AND GREEN ENERGY PLAN

The Green Energy, Green Economy Act (GEA) requires distributors to accommodate a wide variety of renewable generation projects under the Ontario Power Authority's FIT and microFIT programs. In accordance with the OEB's Filing Requirements (EB-2009-0397) Distribution System Plans – Filing under Deemed Conditions of Licence, Burlington Hydro prepared a Green Energy Act Plan ("GEA Plan") as part of its cost of service application.

The GEA Plan and the distribution system investments proposed within it reflect the anticipated demand for renewable generation connection in Burlington Hydro's service territory. Based on the applications to date the investments in both large FIT and Micro Fit are not expected to increase significantly over the next several years.

To date, Burlington Hydro has connected a total of 56 either microFIT or FIT projects.

Table 2-14: Burlington Hydro to date microFIT or FIT projects

Category	Total number of Applications	Total kW
MicroFIT	50	400
FIT	6	1053

While the total MW is not, at present, significant relative to the Burlington Hydro peak demand, there is reason to believe this may change. The cost of solar installations is presently coming down while their performance is going up. For example, it has been reported that the price for solar panels in Ontario has dropped from $2.50 per watt in 2010 to $1.50 per watt to date. It is predicted that due to these reducing costs and improving efficiencies the $ per kWh produced by solar arrays will continue to drop until it matches conventional generation in 10 to 15 years. This outcome will have a significant impact on distribution utilities as they transition to a system with a large distributed generation component. The rate at which renewable generation is installed is dependent on the Feed-in tariff paid by the OPA, and it may take longer than expected, but the end result will still likely be a meaningful amount of distributed generation within Burlington Hydro 's service area, both Fit and microFIT.

Burlington Hydro fully supports renewable generation and continues to work towards a future with a significant degree of distributed generation. To this goal, Burlington Hydro will:

- Provide timely review and approval of renewable generation applications.
- Support local renewable generation through website information and consultations.
- Expand the distribution system to accommodate renewable generation.
- Manage the microFIt and FIT applications such that application priority is appropriate.
- Continue to work on the system requirements to accommodate a significant amount of distributed generation.
- Investigate the connection of FIT generation to the 4.16 kV and 13.8 kV systems.
- Keep informed on the progress of renewable generation technology.

Smart Grid

The Ontario Minister of Energy has issued a directive requiring the establishment of a smart grid. Burlington Hydro as a member of GridSmartCity fully supports the implementation of a smart grid and is at the forefront of investigating and implementing smart grid pilot projects, such as the installation of intelligent switches within the system with the goal of rapid response to outages on critical feeders (aka self-healing grid).

In addition, as part of the business plan Burlington Hydro will continue to investigate the results of other utilities' smart grid projects, consult with relevant parties, keep customers informed via website postings, train Burlington Hydro staff where required, and keep up to date on the latest technology and smart grid progress in general.

As per the OEB requirements, Burlington Hydro will report back to the OEB on their smart grid activities including recommendations and lessons learned.

Summary

Burlington Hydro has produced a Green Energy Act Plan and the principles of, and support for, renewable generation and smart grid activities are clear and inherent in this plan.

Burlington Hydro's GEA Plan includes the following required information:

- Renewable generation applications (> 10 kW) already in the system and Burlington Hydro's ability to connect them.
- Potential renewable generation applications over the next 5 years and Burlington Hydro's infrastructure requirements to accommodate these new connections.
- Any system constraints affecting Burlington Hydro's ability to connect, such as transmission constraints.
- Anticipated capital and OM&A infrastructure expenditures as a result of renewable generation connections, and details of any proposed cost recovery.
- Smart grid activities in detail, also including any cost recovery.
- Details of consultations with relevant parties.

Burlington Hydro's GEA Plan is filed at Appendix C of the Distribution System Plan.

Exhibit 2: Rate Base

Tab 6 (of 8): Costs of Eligible Investments

COST OF ELIGIBLE INVESTMENTS

Burlington Hydro attests that it has not included any costs or included any Investments to Connect Qualifying Generation Facilities in its capital costs nor in its Distribution System Plan.

Exhibit 2: Rate Base

Tab 7 (of 8): Addition of ICM Assets to Rate Base

ADDITION OF ICM ASSETS TO RATE BASE

Burlington Hydro has never applied for a rate adder to recover an investment through the OEB's Incremental Capital Module.

Exhibit 2: Rate Base

Tab 8 (of 8): Service Quality and Reliability Performance

SERVICE QUALITY AND RELIABILITY PERFORMANCE

Burlington Hydro records and reports annually the following Service Reliability Indices:

SAIDI = System Average Interruption Duration Index

= Total Customer-Hours of Interruptions/Total Customers Served

SAIFI = System Average Interruption Frequency Index

= Total Customer Interruptions/Total Customers Served

CAIDI = Customer Average Interruption Duration Index

= Total Customer-Hours of Interruptions/Total Customer Interruptions

In addition, Burlington Hydro also records:

SAARI = System Average Automatic Recloser Index

= Total Customer Automatic Reclosers/Total Customers Served

These indices provide Burlington Hydro with annual measures of its service performance that are used for internal benchmarking purposes when making comparisons with other distribution companies (e.g. to better understand the rankings that will support the OEB's Incentive Rate Making Mechanism and Performance Based Regulation). They are reported in accordance with Section 7.3.2 of the OEB's Electricity Distribution Rate Handbook.

Burlington Hydro has not only met but exceeded the minimum standards for all SQIs each year, as indicated in the following table:

Table 2-15: Detailed SQI as filed in BHI's RRR filings

SQI	OEB Standard	2009 Actuals	2010 Actuals	2011 Actuals	2012 Actuals
New Connection - Low Voltage	90.00%	97.20%	96.30%	94.90%	98.30%
(connection made within 5 working days)					
New Connection – High Voltage	90.00%	N/A	N/A	N/A	N/A
(connection made within 10 working days)					
Appointment Scheduling	90.00%	100.00%	100.00%	100.00%	100.00%
(standards stated in section 7.3 of the DSC)					
Underground Cable Locates	90.00%	N/A	N/A	N/A	N/A
(requests completed within 5 working days)					
Telephone Accessibility	65.00%	72.80%	70.70%	66.80%	77.70%
(answered in person within 30 seconds)					
Telephone Call Abandon Rate	<10%	3.30%	4.20%	8.70%	5.60%
Appointments Met	90.00%	97.60%	99.80%	97.30%	97.90
(appointment date and time met)					
Rescheduling of missed appointments	100.00%	100.00%	100.00%	100.00%	100.00%
Written Reponses to Inquiries	80.00%	100.00%	100.00%	100.00%	100.00%
(responses provided within 10 working days)					
Emergency Response Urban	80.00%	89.50%	84.40%	87.40%	92.50%
(onsite within 60 minutes of call)					
SQI	OEB Standard	2009 Actuals	2010 Actuals	2011 Actuals	2012 Actuals
Emergency Response Rural	85.00%	N/A	N/A	N/A	N/A
(onsite within 60 minutes of call)					
Reconnection Performance Standard	85.00%	N/A	N/A	100.00%	100.00%
(Reconnected in two days)					

The reliability metrics are steady and remain in the range of performance. Results are used to aid in maintenance activity planning as well as asset management planning.

Appendix 2-G
Service Reliability Indicators
2008 - 2012

Index	Includes outages caused by loss of supply					Excludes outages caused by loss of supply				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
SAIDI	1.360	1.080	1.130	1.060	0.900	1.330	1.080	1.130	1.060	0.900
SAIFI	1.700	1.170	1.720	1.000	0.950	1.610	1.170	1.720	0.950	0.950

5 Year Historical Average

SAIDI		1.106		1.100
SAIFI		1.308		1.280

SAIDI = System Average Interruption Duration Index

SAIFI = System Average Interruption Frequency Index