

HORIZON UTILITIES CORPORATION'S STREET LIGHT RATE CLASS ANALYSIS (REF. EB-2014-0002) PERFORMED FOR WEIRFOULDS LLP

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August 08th, 2014



Engagement

WeirFoulds LLP (“WeirFoulds”), on behalf of the City of Hamilton (“City” or “Hamilton”), has engaged the services of WattsWorth Analysis Inc. (“WattsWorth”) to perform an analysis of Horizon Utilities Corporation’s (“HUC”) Custom Incentive Rate-setting (“Custom IR”) filing with the Ontario Energy Board (“OEB”), EB-2014-0002. Specifically, WattsWorth has been engaged to provide an analysis of the pre-filed evidence of HUC as it pertains to the street lighting rate class, and to assess the reasonableness of HUC’s proposed increases for that class.

Sources of information that led to the findings in this report are:

- HUC’s OEB 2015 – 2019 Custom IR application (EB-2014-0002)
- HUC’s previous Cost of Service and Rate filings (2007 and later) accessible on the OEB’s website
- Cost of Service applications for a number of other Local Distribution Companies in Ontario (for comparative purposes)
- 2012 Yearbook of Electricity Distributors (for comparative purposes)
- HUC streetlight invoicing as it applies to the City of Hamilton
- Ontario Energy Board (OEB) Report of the Board (EB-2012-0383) entitled “Review of the Board’s Cost Allocation Policy for Unmetered Loads”
- OEB’s Report of the Board (EB-2010-0219) entitled “Review of Electricity Distribution Cost Allocation Policy”

The report has been prepared in compliance with Rule 13A of the OEB’s “Rules of Practice and Procedure”. Attached hereto is Appendix A, is a signed copy of Form A, for each of the authors of this report.

Appendix B, attached, gives a brief description of WattsWorth Analysis Inc. and identifies the key employees who contributed to this report.

Executive Summary

An analysis of the materials and publications listed in the Engagement section has led to a number of findings regarding the streetlight rates that HUC has proposed for the years 2015 through 2019 in its Custom IR.

This Executive Summary identifies the most significant findings, by topic. Each topic is broken down further in subsequent sections where details and supporting evidence is provided under the following headings:

1. Hamilton's Streetlight Rate Class Increases. This section provides analysis of HUC's proposed increases in its streetlight rates;
2. HUC's Revenue Requirement in General. This section provides analysis of the increase in HUC's general Revenue Requirement;
3. Causes of Streetlight Rate Increase. This section provides analysis of the primary causes of the increase in streetlight rates;
4. The Rates for HUC's Streetlight Rate Class Compared with the Rates for the Streetlight Classes of Comparable Utilities. This section provides a comparison of the HUC's streetlight rates with the rates for the streetlight classes of comparable utilities.

After reviewing and analyzing all available materials, the most significant findings are:

1. That HUC streetlight rates have increased significantly from 2005 on, and will continue to increase significantly from 2015 to 2019;
2. That the rate of the increase in HUC's general Revenue Requirement, from 2011 to 2019, exceeds the rate of increase that the OEB has suggested is appropriate;
3. That the causes of the increase in streetlight rates are:
 - a) The change in the ratio of Devices to Connections, a change which appears to be premature in light of earlier OEB findings;
 - b) The change in Revenue to Cost ratio of the streetlight class, which again appears to be premature;
 - c) Material shifts in costs from other classes, and in particular, the Large Use 1 and 2 classes;
4. That HUC's rates for the streetlight class exceed the rates charged for the streetlight class by comparable utilities.

The balance of this report provides insights and evidence to support these key findings.

1. Hamilton’s Streetlight Rate Class Increase

From 2005 to the present, HUC’s streetlight rate class has experienced a number of fixed and variable rate increases. Further, according to HUC’s Custom IR, this rate class will continue to experience increases in rates. This section quantifies and analyzes these increases from a number of perspectives.

Figure 1 was assembled using the 2005 - 2014 existing rates as well as the 2015 – 2019 proposed rates, fixing both demand and number of devices constant over time.^{1,2} As such, Figure 1 is intended to illustrate the overall trend and relative magnitude of distribution-based rate increases that Hamilton has experienced since 2005 as well as a projection of those same charges it can expect to incur based on HUC’s Custom IR.

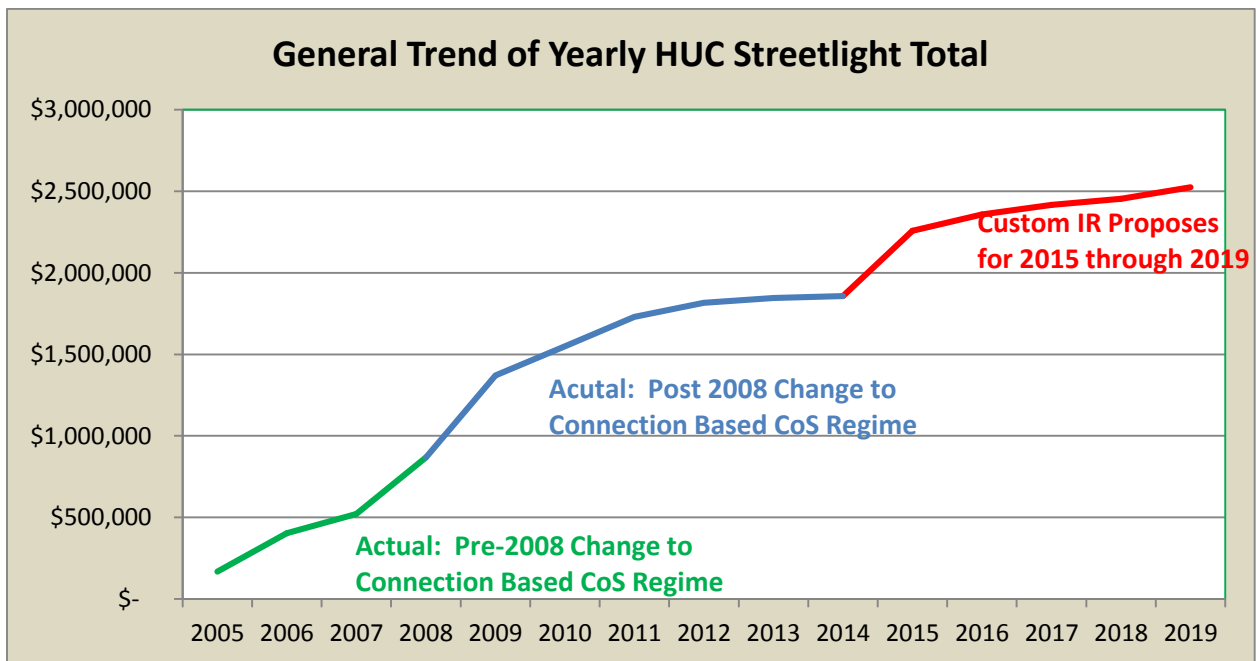


Figure 1: Distribution based billing amounts for Hamilton’s HUC streetlight accounts

According to Figure 1, Hamilton’s distribution-based billing amount from the streetlight class that is projected for 2019, based on HUC’s Custom IR, is approximately 15 times higher than it was in 2005 – an increase of >1400%.

¹<http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Applications+Before+the+Board/Electricity+Distribution+Rates>

² EB-2014-0002, Exhibit 1, Tab 1, Appendix 1-1

Figure 2 summarizes the distribution-related streetlight rate increases proposed in HUC's 2015-2019 Custom IR as compared to their current rates.^{3,4} HUC is proposing a 39.3% increase in fixed and variable rates as compared to today's rates over a 5 year period (2014-2019). Almost $\frac{2}{3}$ rds (62%) of this increase will occur in the first year of this timeframe and extend to all 5 years.

Year	Monthly Service Charge (Fixed - Per Light)	Dist Volumetric Rate (Variable - Per kW)	% Increase Over Previous Year
2014 (Current)	\$2.39	\$6.36	
2015	\$2.97	\$7.92	24.5%
2016	\$3.11	\$8.29	4.7%
2017	\$3.19	\$8.48	2.4%
2018	\$3.23	\$8.61	1.5%
2019	\$3.33	\$8.86	2.9%

Figure 2: Summary of rate increases for HUC's streetlight rate class, current to 2019

³ EB-2014-0002, Exhibit 1, Tab 1, Appendix 1-1

⁴<http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Applications+Before+the+Board/Electricity+Distribution+Rates>

2. Horizon’s Revenue Requirements in General

It appears that increases in HUC’s general Revenue Requirement are a major contributor to the overall increases proposed for the streetlight rate class. This section examines HUC’s general Revenue Requirement in a number of contexts.

In November 2013, the OEB released a report (ref. EB-2010-0379) entitled “Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario’s Electricity Distributors”. This report formed a significant portion of the OEB’s new/restated expectations for LDC performance. It was an output of the OEB’s “Renewed Regulatory Framework for Electricity” initiative.

Figure 3 is an excerpt from this report.⁵ It essentially prescribes a benchmark price index that indicates the effects of inflationary increases (non-labour as well as labour) that are reasonable for LDCs from 2003 through 2012, as per the OEB.

Table 2: Two Factor Input Price Index

Weights	Inputs and Assumptions		Resultant Values - Annual Growth of the 2-factor IPI
	Non-Labour 70%	Labour 30%	
Year	GDP-IPI (FDD) March, 2013	AWE-All Employees- Ontario April, 2013	
2003	1.6%	2.43%	1.8%
2004	1.7%	2.78%	2.0%
2005	2.2%	3.60%	2.6%
2006	2.3%	1.59%	2.1%
2007	2.3%	3.77%	2.7%
2008	2.5%	2.32%	2.5%
2009	1.4%	1.31%	1.3%
2010	1.3%	3.82%	2.1%
2011	2.2%	1.41%	2.0%
2012	1.6%	1.47%	1.6%
Average	1.9%	2.45%	2.1%

Figure 3: LDC price index expectations sourced from OEB report # EB-2010-0379

Note that, according to Figure 3, inflationary increases from 2003 onward are averaged at 2.1% with the highest and lowest annual level being reached in 2007 at 2.7% and 1.3% respectively. Making the assumption that all years following 2012 through 2019 (which are not shown in Figure 3 due to the timing of the OEB’s report in EB-2010-0379) will realize inflation rates equal to the

⁵ Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario’s Electricity Distributors, Section 2.1, page 10

average (2.1%), Figure 4 plots HUC’s actual total Revenue Requirements (straight line assumption for 2012-2014) vs. what HUC’s Revenue Requirements would have been had they tracked closely with the OEB’s suggested price index trend.

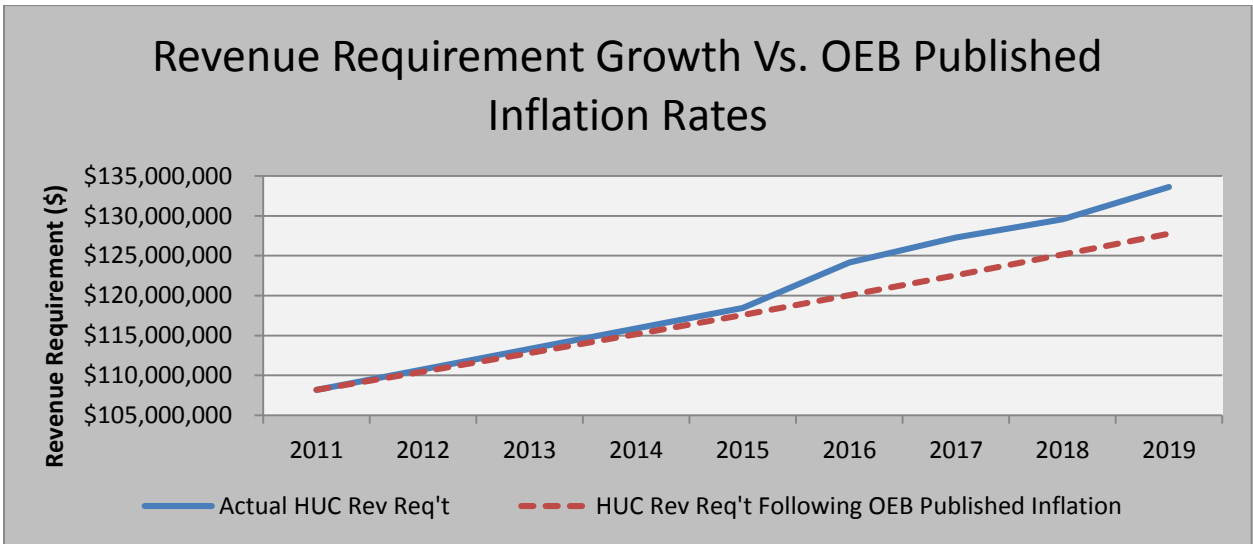


Figure 4: HUC’s streetlight Revenue Requirement vs. OEB inflationary-increased Revenue Requirements

In HUC’s 2011 Cost of Service rate filing, HUC’s Revenue Requirement was \$108,196,927. According to HUC’s Custom IR their 2019 Revenue Requirement will be \$133,635,798. This represents a year over year increase of 2.7% per year. This is almost 27% greater than that of the OEB’s documented price index of 2.1% year-over-year average. Also note that, by 2019, this will result in a difference of >\$5.8M in HUC’s Revenue Requirement, which represents a >4.5% difference in the two scenarios.

Figure 5 indicates the proposed Revenue Requirement for the streetlight rate class for years 2015 through 2019 as well as its forecast for consumption (kWh).

	Consumption (kWh)	% of HUC Total Consumption	Revenue Requirement	% of HUC Total Revenue Req't
2015	39,694,810	0.84%	\$3,433,447	2.90%
2016	39,602,538	0.84%	\$3,586,432	2.89%
2017	39,651,553	0.84%	\$3,630,428	2.85%
2018	39,629,670	0.84%	\$3,687,336	2.85%
2019	39,610,413	0.84%	\$3,796,229	2.84%

Figure 5: Proposed Revenue Requirement and consumption (kWh) for HUC’s streetlight rate class

On average, streetlights are forecast to consume 0.84% of HUC’s total kWh’s, but attracts ~2.87% of HUC’s total Revenue Requirement.

3. Causes of Streetlight Rate Increases

There are three primary causes of the increase in the streetlight rates:

- I. The change in the ratio of Devices to Connections
- II. The change in the Revenue to Cost ratio of the streetlight class
- III. Shifts in costs from other classes, and in particular, the large use class

I. Change in Ratio of Devices to Connections

Although a formal definition for the terms “devices” and “connections” has not been established by the OEB, since 2008 the ratio of devices to connections has been one of the most important inputs into the cost allocation model and, therefore, one of the most important factors influencing the costs, and therefore the rates, for the streetlight class.

As shown in Figure 17 of Section 4, HUC has proposed a streetlight to connection ratio of 1.3 to 1 in its Custom IR as compared to an average ratio of 5.6 to 1 calculated for a sample of HUC’s peers. In all of its previous rate filings, HUC has a ratio of 2 to 1, which is still considerably lower than the peer average sample.

Figure 6 and Figure 7 show snapshots from HUC’s 2011 Cost of Service filing (EB-2010-0131) as well as its Custom IR.^{6,7}

	A	B	C	J	K	L	N
14							
15	Total Proposed Distribution Revenue (\$)		103,241,788				
16							
17				7	8	9	11
18		ID	Total	Street Light	Sentinel	Unmetered Scattered Load	Back-up/Standby Power
19							
20	Billing Data						
21							
22							
23							
24							
25							
26							
27	kWh - weather normalized amount from load forecast		5,308,541,365	40,006,298	502,459	12,541,586	-
28							
29	Proposed Distribution Rev	CREV	\$103,241,788	\$2,267,615	\$35,614	\$692,638	\$507,406
30	Bad Debt	BDHA	\$1,285,080	\$0	\$0	\$0	\$0
31	Late Payment 3 Year Historical Average	LPHA	\$894,324	109.06	80.04	6,336.44	\$0
32							
33	Weighting Factor - Services			1.0	1.0	1.0	1.0
34	Weighting Factor - Billings			1.0	0.1	1.0	1.0
35	Number of Bills	CNB	1,528,288	48	996	23,336	60
36	Number of Connections (Unmetered)	CCON	29,938	26,194	501	3,228	
37							
38	Total Number of Customer from Approved EDR, Sheet 7-1, Col H excluding connections	CCA	234,881				
39	Bulk Customer Base	CCB	-				
40	Primary Customer Base	CCP	234,881				
41	Line Transformer Customer Base	CCLT	234,048				
42	Secondary Customer Base	CCS	219,092				
43							
44	Weighted - Services	CWCS	268,949	26,194	501	3,228	-
45	Weighted Meter -Capital	CWMC	42,997,040	-	-	-	60,000

Figure 6: Snapshot of HUC’s 2011 Cost of Service model showing a stated number of connections of 26,194

⁶ [Horizon 2011 Cost Allocation Model 20110406](#), Tab I6 Customer Data

⁷ [EB-2014-0002 Horizon 7-2 Cost Allocation 2015 20140416](#), TabI6.2 Customer Data

Sheet I6.2 Customer Data Worksheet - 2015 Cost Allocation

	ID	Total	7 Street Light	8 Sentinel	9 Unmetered Scattered Load	11 Back- up/Standby Power
Billing Data						
14	Bad Debt 3 Year Historical Average	BDHA	\$1,486,970	\$0	\$0	\$0
15	Late Payment 3 Year Historical Average	LPHA	\$894,324	\$109	\$80	\$6,336
17	Number of Bills	CNB	1,550,455	52,384	4,812	36,470
18	Number of Devices		39,863	401		
19	Number of Connections (Unmetered)	CCON	43,300			3,039
21	Total Number of Customers	CCA	243,310		248	1,857
22	Bulk Customer Base	CCB	-			
23	Primary Customer Base	CCP	241,201			
24	Line Transformer Customer Base	CCLT	240,935			
25	Secondary Customer Base	CCS	239,915			
27	Weighted - Services	CWCS	248,836	-	-	-
28	Weighted Meter -Capital	CWMC	45,391,594	-	-	90,000
29	Weighted Meter Reading	CWMR	3,065,682	-	-	5,000
30	Weighted Bills	CWNB	1,640,294	81	2,406	18,235
Bad Debt Data						
38	Historic Year:	2011	1,536,562			
39	Historic Year:	2012	1,549,348			
40	Historic Year:	2013	1,375,000			
41	Three-year average		1,486,970			

Figure 7: Snapshot of HUC's 2015 Cost of Service model showing a stated number of connections of 39,863

The move from a 2 to 1 streetlight to connection ratio to a 1.3 to 1 ratio has resulted in the stated number of connections changing from 26,194 in 2011 to 39,863 in 2015. Due to the sensitivity the streetlight rate class has with respect to the number of connections, this change will have a significant impact on Revenue Requirement for 2015 through 2019, and thus will drive rate increases.

The impact of moving from a 2 to 1 ratio to a 1.3 to 1 ratio will increase the 2015 Revenue Requirement for HUC's streetlight class from ~\$2.4M to ~\$3.4M, a 45% increase.

The OEB's Report of the Board: Review of the Board's Cost Allocation Policy for Unmetered Loads (EB-2012-0383), issued on Dec 19, 2013 states that:

"The Board remains concerned with the allocation of costs to daisy-chain configured systems. The disparity in the cost allocation result between a street lighting customer configuration with multiple devices per connection and a street lighting customer with a device to connection ratio close to 1:1 appears to be disproportionate when compared to actual costs to serve the street lighting rate class. The board believes that further investigation is necessary before making a determination. The Board will issue a letter shortly to begin a consultation process for this single issue."⁸

In light of this statement, HUC's use of a lower ratio of connections to devices, and its significant impact on the costs of the streetlight class, would appear to be premature.

⁸ Executive Summary, page 6

II. The Change in the Revenue to Cost ratio of the Streetlight Class

The OEB's Report of the Board: Review of the Board's Cost Allocation Policy for Unmetered Loads (EB-2012-0383), issued on Dec 19, 2013 states that:

"The Board's policy remains that distributors should endeavor to move their revenue to cost ratios closer to one or 100% if this is supported by new data. That being said, the Board does not believe that there is sufficient evidence at this time to narrow the revenue to cost ratio range for the street lighting class."⁹

The OEB's Report of the Board: Review of Electricity Distribution Cost Allocation (EB-2010-0219), issued on March 31, 2011 states that:

"...a separate consultation will be initiated involving the Street Lighting class. As such, the revenue-to-cost ratio for the Street Lighting class will remain at 0.7 to 1.2 pending the outcome of that consultation."¹⁰

To our knowledge, neither the need for "sufficient existence" nor the "separate consultation" have been finally addressed by the OEB.

HUC's Custom IR proposes that the Revenue to Cost ratio for streetlights move from 74.41% to 83.34%; despite the fact that the streetlight class is already within the prescribed Revenue to Cost ratio range.

If the 2015 Revenue to Cost ratio was maintained for 2019, the total revenue that Horizon will require to collect from the streetlight class will go from approximately \$3.2M to \$2.9M, a 10% difference.

HUC's change in the revenue to cost ratio for the streetlight class would appear to be premature, in light of the OEB's findings set out above.

⁹ Executive Summary, page 6

¹⁰ Section 2.9.4, page 35

III. Shifts in Costs from Other Classes, and in Particular, the Large Use Class

The increase in the rates for the streetlight class is in part a result of significant shifts in costs for the large use class. This section analyzes that shift. It also compares the rates for streetlight class with the rates for the residential class.

Appendix 7-1 of HUC's rate filing states that "Horizon Utilities 2015-2019 Cost Allocation and Rate Design Study", Section 3.1.6 states;

In order to accommodate the direct allocation of assets and expenses to Horizon's Large Use (2) class, new allocators were required. Modeled after the PNCP1, PNCP4, and PNCP12 allocators, new allocators PNCP1exLU2, PNCP4exLU2, PNCP12exLU2 were created. Also, new allocator CENexLU2 and CCPexLU2 were created based on CEN and CCP respectively. All new allocators were created on sheet "E2 Allocators". In each of these cases, the Large Use (2) class was assigned an allocation of 0.00% leaving the other rate classes to absorb the costs. One additional allocator was created, NFAexDA, which is an allocator of Net Fixed Assets, excluding directly allocated assets.¹¹

In this case, it appears clear that other rate classes, including the streetlight rate class, are absorbing HUC's costs that have been reallocated away from the Large Use classes.

¹¹ Section 3.1.6, page 10

In the 2015-2019 Custom IR, the Large Use rate class has split into two categories: Large Use 1 (5-14.99MW) and Large Use 2 (>15MW). The Large Use class in the 2011 Cost of Service model had a Revenue Requirement of approximately \$8.2M, while the 2015-2019 Custom IR has a combined Large Use 1 and Large Use 2 Revenue Requirement of approximately \$2.4M.¹² While the Large Use class saw a decrease in Revenue Requirement from 2011 to 2015, Horizon’s overall Revenue Requirement from 2011 to 2015 increased from approximately \$108M to \$118M. This signifies that other rate classes, including the streetlight rate class, are absorbing HUC’s costs that have been reallocated away from the Large Use classes.

Figure 14 compares the Revenue Requirement contribution per rate class as a percentage between 2011 and 2015. Note that the Large Use class in 2015 is required to contribute to Horizon’s overall Revenue Contribution by 5.6% less than 2011.

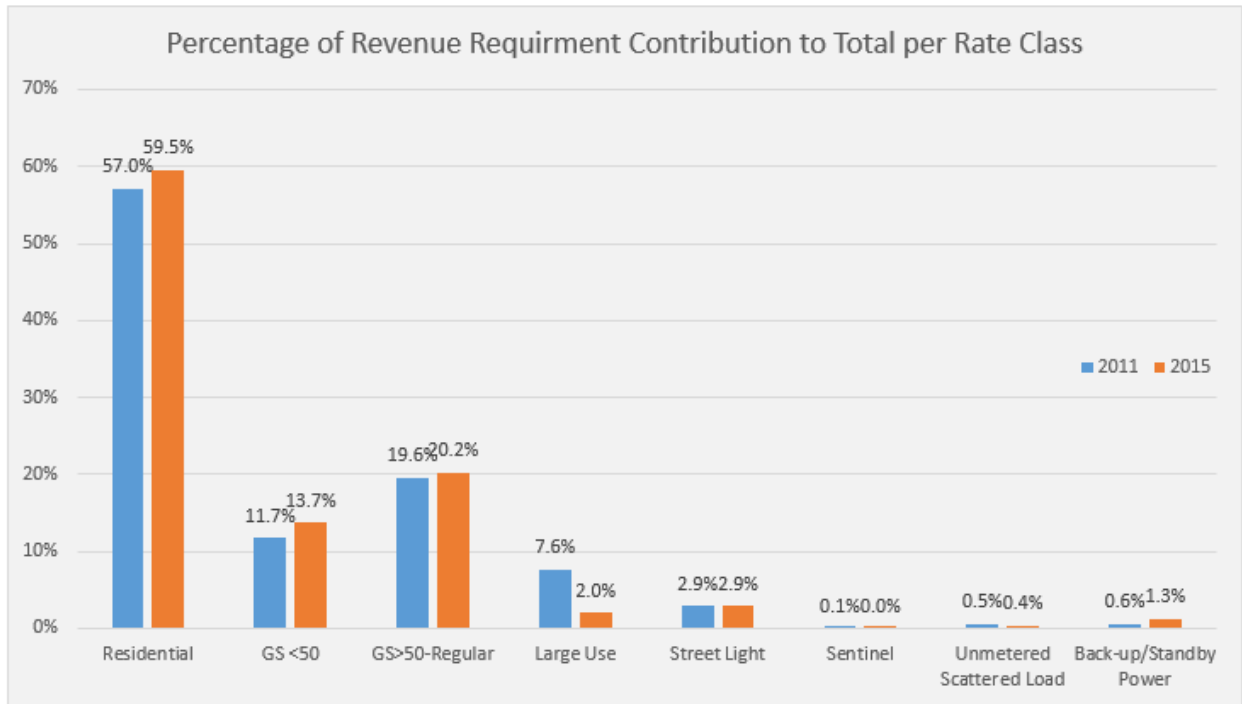


Figure 14: Each rate class’ contribution toward HUC’s total Revenue Requirement comparison between 2011 and 2015

¹² [Horizon 2011 Cost Allocation Model 20110406](#), Tab O1 Revenue to cost|RR

Figure 15 displays the eighteen Universal System of Account (USoA) costs that Large Use 1 is responsible for that Large Use 2 is not responsible for.¹³ These 18 accounts for Horizon encompasses 32% of their overall total expenses, which means that Large Use 2 class is not responsible for 32% of Horizon’s overall expenses.

USoA Account #	Accounts	O1 Grouping	Large Use (1)	Large Use (2)
5005	Operation Supervision and Engineering	di	\$ 98,079	\$ -
5010	Load Dispatching	di	\$ 46,430	\$ -
5016	Distribution Station Equipment - Operation Labour	di	\$ 6,665	\$ -
5017	Distribution Station Equipment - Operation Supplies and Expenses	di	\$ 4,745	\$ -
5020	Overhead Distribution Lines and Feeders - Operation Labour	di	\$ 4,572	\$ -
5025	Overhead Distribution Lines & Feeders - Operation Supplies and Expenses	di	\$ 12,005	\$ -
5040	Underground Distribution Lines and Feeders - Operation Labour	di	\$ 7,856	\$ -
5045	Underground Distribution Lines & Feeders - Operation Supplies & Expenses	di	\$ 24,673	\$ -
5085	Miscellaneous Distribution Expense	di	\$ 325,606	\$ -
5105	Maintenance Supervision and Engineering	di	\$ 768	\$ -
5114	Maintenance of Distribution Station Equipment	di	\$ 18,075	\$ -
5120	Maintenance of Poles, Towers and Fixtures	di	\$ 877	\$ -
5125	Maintenance of Overhead Conductors and Devices	di	\$ 16,956	\$ -
5135	Overhead Distribution Lines and Feeders - Right of Way	di	\$ 18,964	\$ -
5145	Maintenance of Underground Conduit	di	\$ 4,048	\$ -
5150	Maintenance of Underground Conductors and Devices	di	\$ 11,525	\$ -
5710	Amortization of Limited Term Electric Plant	dep	\$ 16,516	\$ -
5715	Amortization of Intangibles and Other Electric Plant	dep	\$ 76,639	\$ -

Figure 15: USoA account costs that Large Use 1 is responsible for but Large Use 2 is not responsible for

Figure 11 graphs the 2015-2019 yearly % increases for the streetlight rate class and overlays that of the residential rate class. The results yield a significant difference in 2015, followed by convergence in years 2016-2019.

¹³ [EB-2014-0002 Horizon 7-2 Cost Allocation 2015_20140416](#), Tab O4 Summary by Class & Accounts

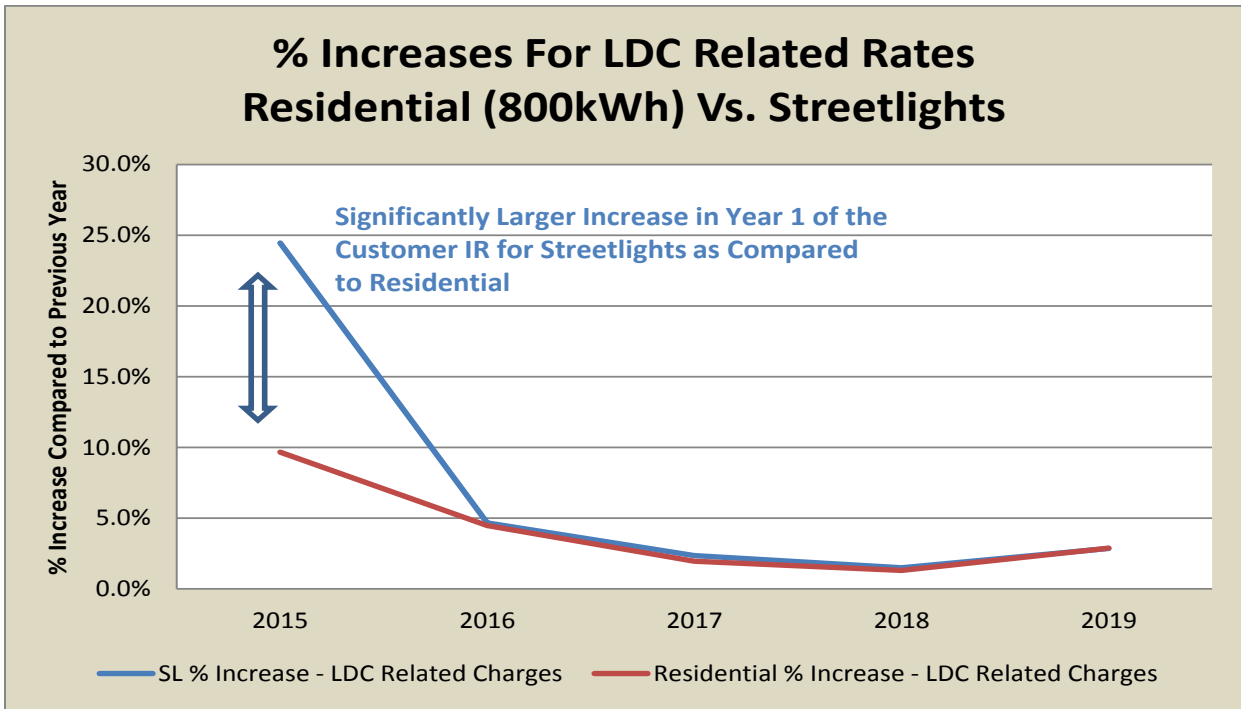


Figure 11: 2015-2019 year over year increases for HUC’s streetlight and residential rate classes

It appears that the difference between the 2015 increases (24.5% vs. 9.8%) is largely due to the secondary increase that the streetlight rate class experiences as HUC moves its Revenue to Cost ratio from 74.4% to 83.8% in that year, and that year only. Since the residential rate class is projected to be 103.2% in 2015, this same increase is not applied, hence the difference.

A second comparison between the residential and streetlight rate class was performed. Distribution-related charges make up only a portion of an overall customer invoice. The relative magnitude of these LDC specific charges as an overall percentage of a typical bill is shown in Figure 12 for both rate classes.

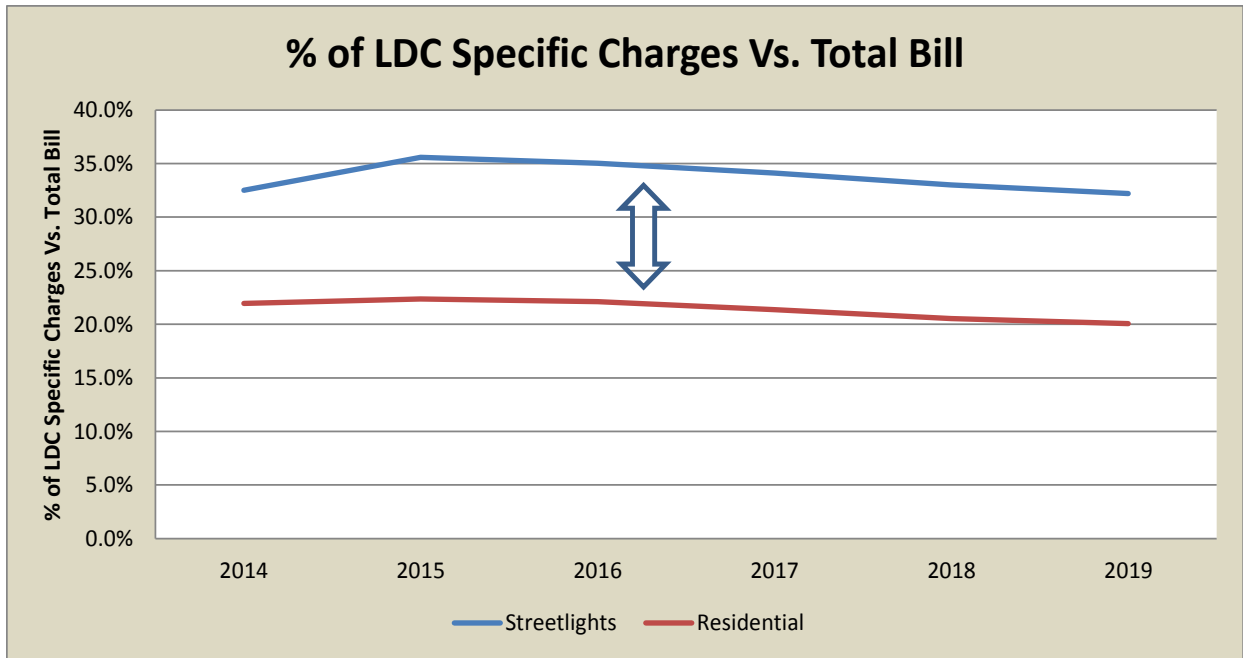


Figure 12: Percentage of total bill; streetlight rate class vs. residential

Based on Figure 12, HUC's specific charges account for a significantly larger percentage of its streetlight bills as compared to residential. Specifically, the spread is >10%.

Figure 13 compares the streetlight and residential rate classes in terms of the percentages of total consumption (kWh) and Revenue Requirement they attract. The residential rate class represents ~34.1% of HUC's total LDC consumption and attracts 1.7 times this percentage in total Revenue Requirement (i.e. 59.1% is 1.7 x's 34.1%). By contrast, the streetlight rate class represents ~0.84% of HUC's total consumption but attracts 3.4 times this percentage in total Revenue Requirement (i.e. 2.87% is 3.4 x's 0.84%). The streetlight rate class appears to attract greater cost allocation (relatively) when its contribution to total LDC consumption is compared to that of the residential rate class.

Stated in other terms, the streetlight rate class attracts \$0.086 of Revenue Requirement per kWh of streetlight electricity consumption. By contrast, the residential rate class attracts roughly half this magnitude of Revenue Requirement, \$0.044, per kWh of residential electricity consumption.

Streetlights				
	Consumption (kWh)	% of HUC Total Consumption	Revenue Requirement	% of HUC Total Revenue Req't
2015	39,694,810	0.84%	\$3,433,447	2.90%
2016	39,602,538	0.84%	\$3,586,432	2.89%
2017	39,651,553	0.84%	\$3,630,428	2.85%
2018	39,629,670	0.84%	\$3,687,336	2.85%
2019	39,610,413	0.84%	\$3,796,229	2.84%

Residential				
	Consumption (kWh)	% of HUC Total Consumption	Revenue Requirement	% of HUC Total Revenue Req't
2015	1,617,715,605	34.33%	\$70,466,605	59.50%
2016	1,615,569,770	34.26%	\$73,556,314	59.25%
2017	1,608,117,860	34.17%	\$75,390,124	59.22%
2018	1,604,991,612	34.12%	\$75,876,331	58.55%
2019	1,600,739,130	34.06%	\$79,069,634	59.17%

Figure 13: Streetlight and residential rate class comparisons related to consumption and Revenue Requirement

In summary, while there are many factors that may contribute to the rate increases summarized herein, after examination of the Cost of Service models that HUC has submitted as a part of their Custom IR application, it appears that the majority of the rate increases can be categorized into three main factors which are:

1. An adjustment in the streetlight Device to Connection ratio from 2 to 1, to 1.3 to 1, despite the OEB's comments that moving "close to a 1:1 appears to be disproportionate when compared to actual costs to serve the street lighting rate class."
2. An adjustment (increase) applied to the streetlight rate class in order to move its Revenue to Cost ratio closer to unity, despite the OEB's comments that the Revenue to Cost ratio range does not need to be narrowed.
3. An adjustment (increase) applied to all rate classes, including the streetlight rate class, to cover HUC's total shortfall, most notably due to the Large Use 1 and 2 class, to its projected Revenue Requirement.

4. Horizon's Streetlight Rates Compared to Streetlight Rates of other LDCs

Figure 16 breaks HUC's Revenue Requirement down into its cost component categories and removes net income. For each streetlight cost category it indicates the percentage it represents of HUC's total cost for the given category. Eight additional LDCs' similar figures are displayed for comparison purposes. The Eight LDCs selected for Figure 16 were done so based on their size and the fact that the most recent OEB-published rate setting information was available.¹⁴

Furthermore, out of the eight chosen LDCs, Hydro Ottawa is the most similar in comparison with HUC based on these certain statistics:¹⁵

- Size of municipal population
- Number of large users
- Total KWh Purchased

	PowerStream	Enersource	Hydro Ottawa	Toronto Hydro	Hydro One	Veridian	H1 Brampton	London	Average	HUC
Distribution Costs (di)	2.022%	1.735%	0.962%	2.694%	0.802%	1.545%	4.601%	2.679%	2.130%	3.412%
Customer Related Costs (cu)	1.211%	0.531%	0.005%	0.950%	0.358%	0.054%	0.903%	0.000%	0.502%	0.575%
General and Administration (ad)	1.689%	1.168%	0.559%	2.423%	0.704%	0.840%	2.743%	2.001%	1.516%	2.444%
Depreciation and Amortization (dep)	1.602%	1.213%	0.803%	3.516%	0.913%	1.359%	2.862%	2.705%	1.872%	3.327%
PILs (INPUT)	1.850%	1.253%	0.804%	3.802%	0.944%	1.398%	2.903%	2.837%	1.974%	3.519%
Interest	1.850%	1.253%	0.804%	3.802%	0.944%	1.398%	2.903%	2.837%	1.974%	3.519%
Total Expenses	1.691%	1.195%	0.686%	2.884%	0.787%	1.059%	2.821%	2.310%	1.679%	2.788%
Device-Connection Ratio	2.9	4.6	15.0	1.8	N/A	6.9	N/A	2.1	5.6	1.3
Rev Req't per kWh	\$ 0.047	\$ 0.085	\$ 0.029	\$ 0.160	\$ 0.077	\$ 0.028	\$ 0.060	\$ 0.069	\$ 0.069	\$ 0.086
Streetlight Load Contribution to Total (kWh)	0.712%	0.255%	0.532%	0.450%	0.338%	0.840%	0.789%	0.725%	0.580%	0.842%
SL Rev Contribution : SL Load Contribution	2.38	4.68	1.29	6.41	2.33	1.26	3.57	3.19	2.89	3.31

Figure 16: Cost and consumption percentage of totals for multiple Ontario LDCs. HUC data is based on 2015 from Custom IR.

On average, the percentage of the LDC total cost that the streetlight rate class cost makes up is 1.68% for the eight non-HUC LDC's included in Figure 16. By comparison, at 2.79%, HUC's streetlight rate class attracts in excess of 66% more in terms of percentage of the total LDC cost.

¹⁴ EB-2012-0161, EB-2012-0033, EB-2013-0115, EB-2013-0147, EB-2013-0174, EB-2011-0054, EB-2010-0142, EB-2009-0096, EB-2014-0002; 2013 CA Model DRO_20130111.xls, Enersource_APPL_Rolled Up Cost Allocation Model RUN 2 May 18 revision_20120522, Burlington Hydro_AttM-EB-2013-0115 Cost Allocation Model-20140506, KWHI_EB-2013-0147_Cost Allocation Model_xlsm_2013040, Settlement_Veridian 2014_Cost_Allocation_Model_V3 1_xlsm_20140304, HydroOttawa_APPL_Update_Vol2_20111104, THESL_L1_T05_S02_2012 - SUITE CAS LIVE MODEL_20111104, HONI_APPL_Model_20090926, EB-2014-0002 Horizon_7-2 Cost Allocation 2015_20140416; Tab I6.1 Revenue & Tab I6.2 Customer Data & Tab O1 Revenue to cost|RR

¹⁵ 2012 Yearbook of Electricity Distributors, <http://www.horizonutilities.com/ourCompany/sustainability/Documents/2014/OEBYearbookElectricityDistributors2012PDF.pdf>, pages 55-68

Overlaying the electricity consumption aspect (kWh), HUC’s streetlight ratio of % Total Expenses : % Total Consumption (2.79% / 0.84%) yields 3.31. By comparison, the same ratio averaged for the other eight LDCs in Figure 16 yields 2.89. This provides a numerical reference to compare the difference in how HUC compares to the group of eight LDCs with respect to the streetlight rate class’s effect on both total cost and total consumption. Specifically, 3.31 (HUC) vs. 2.89 (group) means that HUC’s streetlight rate class is attracting a higher share of its total LDC cost on a “per kWh consumed” basis as compared to the average of the group of eight LDCs.

Stated in other terms, the streetlight rate class attracts \$0.086 of Revenue Requirement per kWh of streetlight electricity consumption. By contrast, the streetlight rate class for the other eight LDCs attracts an average of less than approximately 20% (\$0.069) of Revenue Requirement per kWh of streetlight electricity consumption.

Figure 17 provides more comparison between HUC and the same group of eight LDCs (chosen for the same reason as described above).¹⁶ This figure compares the revenue collected by the LDCs on a “per device” basis (or per light) based on projected rates. In HUC’s case, 2015 proposed rates were used.

	PowerStream	Enersource	Hydro Ottawa	Toronto Hydro	Hydro One	Veridian	H1 Brampton	London	Average	HUC
SL Rev / # of Devices	\$ 30.10	\$ 31.07	\$ 15.94	\$ 80.58	N/A	\$ 16.24	N/A	\$ 35.38	\$ 34.89	\$ 48.77
Devices	84,084	49,986	55,546	163,159	N/A	29,943	N/A	35,004	69,620	52,384
Connections	29,196	10,882	3,703	90,644	5,832	4,335	19,310	16,416	22,540	39,863
Ratio	2.88	4.59	15.00	1.80	N/A	6.91	N/A	2.13	5.55	1.31

Figure 17: Streetlight revenue per light for multiple Ontario LDCs

The average streetlight revenue collected per device for the group of eight LDCs is \$34.89. Therefore, at \$48.77 of revenue collected per device, HUC is 39.8% higher.

Also noteworthy, HUC’s Device to Connection ratio is 1.3 to 1 as compared to the group average of 5.6 to 1. Therefore HUC’s Device to Connection ratio is >320% more dense than the average of the group of five LDCs.

¹⁶ See footnote 13.

Conclusion

The summary of the report's findings is as follows:

1. That Horizon streetlight rates have increased materially from 2015 through 2019;
2. That the rate of the increase in Horizon's general Revenue Requirement, from 2011 to 2019, exceeds the rate of increase that the OEB suggested was appropriate;
3. That the causes of the increase in streetlight rates are:
 - a) The change in the ratio of Devices to Connections, a change which is premature
 - b) The change in Revenue to Cost ratio of the streetlight class, a change which is premature
 - c) Shifts in costs from other classes, and in particular, the Large Use 1 and 2 classes;
4. That Horizon's rates for the streetlight class exceed the rates charged for the streetlight class by comparable utilities.

Appendix A

FORM A

Proceeding: EB-2014-0002

ACKNOWLEDGMENT OF EXPERT'S DUTY

1. My name is Jimmy Ding (name). I live at Petrolia (city), in the Province (province/state) of Ontario.
2. I have been engaged by or on behalf of City of Hamilton (name of party/parties) to provide evidence in relation to the above-noted proceeding before the Ontario Energy Board.
3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
 - (a) to provide opinion evidence that is fair, objective and non-partisan;
 - (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and
 - (c) to provide such additional assistance as the Board may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date August 07 2014



Signature


FORM A

Proceeding: EB-2014-0002

ACKNOWLEDGMENT OF EXPERT'S DUTY

1. My name is Steve Ray (name). I live at Teumseh (city), in the Province (province/state) of Ontario.
2. I have been engaged by or on behalf of City of Hamilton (name of party/parties) to provide evidence in relation to the above-noted proceeding before the Ontario Energy Board.
3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
 - (a) to provide opinion evidence that is fair, objective and non-partisan;
 - (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and
 - (c) to provide such additional assistance as the Board may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date August 07 2014


Signature Jimmy Ding
for Steve Ray

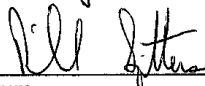
FORM A

Proceeding: EB-2014-0002

ACKNOWLEDGMENT OF EXPERT'S DUTY

1. My name is Richard Spitters (name). I live at Southwold (city), in the province (province/state) of Ontario.
2. I have been engaged by or on behalf of City of Hamilton (name of party/parties) to provide evidence in relation to the above-noted proceeding before the Ontario Energy Board.
3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
 - (a) to provide opinion evidence that is fair, objective and non-partisan;
 - (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and
 - (c) to provide such additional assistance as the Board may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date August 7, 2014


Signature

Appendix B

About WattsWorth Analysis Inc.

Since its formation in October 2003, WattsWorth Analysis Inc. has provided independent analytical services for energy consumers and generators in the province of Ontario. WattsWorth has focused on developing and delivering high quality services that enable clients to effectively manage risk and understand the energy sector.

WattsWorth's expertise includes electricity and natural gas rates, procurement, and risk reduction strategies for both the public and private sector, IESO and retail settlement verification services and strategies for large energy consumers, energy conservation and demand management plans with a focus on Global Adjustment, Green Energy Act solutions, renewable energy analysis, and many other customized consulting services.

WattsWorth consultants who contributed to this report are:

1. Steve Ray, P.Eng – VP of Business Development and Consulting

Steve joined the Energy Sector in 2008 and has brought a wealth of knowledge and accomplishments from his previous positions with Chrysler Corporation. Steve most recently served as the Operations Manager for Windsor Assembly Plant, Chrysler's largest assembly plant. Steve was integral in helping Chrysler achieve great improvements in Safety, Quality, Delivery and Cost with the achievement of winning the JD Powers award in 2007. Perhaps more importantly, Steve achieved corporate Black Belt Certification (for technical problem solving) and was successful in completing several projects for the organization that resulted in tremendous energy and cost savings for the Windsor operations.

At WattsWorth, Steve has provided years of consulting and engineering services for a variety of key energy related initiatives and clients. This includes electricity generation, consumption, demand, conservation, transmission, distribution, and the energy markets in general. In addition to this experience, Steve leads the WattsWorth team with a sharp focus on providing value to customers who procure, consume, and generate electricity by formulating strategies based on market rules and conditions. Furthermore, Steve has been intimately involved in a utility's rate setting process since 2009.

Steve is registered with the Professional Engineers of Ontario and holds his Professional Engineer License since 1998. He completed his Bachelor of Applied Science in Mechanical Engineering from the University of Windsor in 1996.

Steve is also a certified corporate "Black Belt" in technical problem solving. In addition, in 2011 Steve earned his LEED Green Associate accreditation.

2. Jimmy Ding, HBA – Energy Market Analyst

Jimmy was recruited to WattsWorth after having earned his Honours Business Administration degree from the Richard Ivey School of Business, at the University of Western Ontario.

Jimmy's considerable academic successes have translated seamlessly into continued success with WattsWorth. His extensive skills in VBA programming and analytics have significantly improved WattsWorth's already strong tools and processes, allowing for more rapid analysis and turnaround time, and greater opportunity to expand the WattsWorth services to new customers.

A strong advocate for integrating analytics into daily operations, Jimmy consistently develops models based on regression, simulation, and optimization. His proficiency in the research process, showing the ability to mine, manage, analyze, and present data in an impactful and significant manner, has proven invaluable to WattsWorth's customer base by way of increased process efficiency and reduced turnaround time for customer deliverables. Jimmy has a deep understanding of the market forces in Ontario that affect the cost of electricity and has used this skill effectively to benefit many clients.

Jimmy has experience consulting with more than twenty municipalities regarding their streetlights and is actively involved in the application of streetlight rates.

3. Richard Spitters, CEM, MBA – Manager, Ontario Markets

Richard earned an Honours Bachelor of Science Degree in Electrical Engineering from Queen's University (1989) and an MBA from Athabasca University (2006).

Richard's project management and operations experience includes serving in the roles of Project Manager for utility water meter and hydro meter installation and replacement projects, Service Manager for industrial waste water and clean water system installation and commissioning projects and Operations Manager for an electric and gas meter reading company. He has also previously owned and operated an electricity meter sales and service company.

Since joining WattsWorth Analysis Inc. in 2009, Richard's efforts have been primarily focused on electricity data analysis and creation of custom reports, strategies, and estimates for municipalities and other Class A consumers that incorporate all commodity, Global Adjustment and tariff costs. Richard has led the tendering process for the WattsWorth Buying Group, in seeking suppliers of electricity and associated contracts, under both Distributor Consolidated Billing (DCB) and Contract for Differences (CFD) scenarios. Richard is an expert in account analysis and development of electricity procurement strategies, budgets and reporting programs for municipalities and large Commercial/Industrial users.

Richard Spitters has experience in analyzing the application and cost impacts of electricity rates from Local Distribution Companies in Ontario and the IESO for rate classes that include residential, streetlights, general service and demand customers.

Richard is a past member of the IESO Enhanced Day Ahead Commitment working group.

Visit www.wattsworth.com for more details regarding WattsWorth's experience and offerings.