



Comparison of LDC and Sub-Metering Residential Electricity Rates in Ontario

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Sub-metering Council of Ontario**

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EXECUTIVE SUMMARY

The Province's 2017 Long-Term Energy Plan included a directive to the Ontario Energy Board (OEB) to expand oversight of Ontario's sub-metering industry (USMPs). On December 6, 2018, the Ontario Government introduced Bill 66, Restoring Ontario's Competitiveness Act, 2019. The effect of this legislation, if passed, would be to repeal the OEB's authority to govern fees charged by USMPs for sub-metered units in multi-residential buildings. The Sub-metering Council of Ontario (SCO) engaged Power Advisory to prepare a report comparing the cost of electricity to the SCO members' residential customers with what they would be paying if they were individually metered by their Local Distribution Company (LDC).

The analysis was based on a database of SCO customers that reflected about 2,000 buildings containing approximately 170,000 residential sub-metering customers. We then compared what these customers' electricity costs were based on rates charged by their sub-metering providers and what the costs would be if they were served by the LDC.

The approximately 170,000 sub-metering customers covered by this analysis would on average pay \$66.52 per month with sub-metering and \$78.43 with individual metering by the LDC – an average savings of \$11.91/month. 94% of the customers in the database are estimated to be paying less with sub-metering than they would with LDC metering, while 6% would pay more. Approximately \$2/month of these savings is due to energy rates (most LDC-metered residential customers pay Time of Use Regulated Price Plan (RPP) rates, whereas most sub-metering customer pay RPP Tier rates due to limitations in the LDCs' billing systems). If this difference is taken out, the average savings is \$9.66 per month and 89% of sub-metering customers would pay lower delivery and regulatory rates than they would if they were LDC-metered.

This cost difference represents total annual savings of approximately \$20 million per year for sub-metering customers (including those who pay more than they would with LDC metering). Total savings for all sub-metering customers in Ontario, including newer customers of the three SCO members, customers of other USMPs, and non-residential customers, would be significantly higher.

1. INTRODUCTION AND PURPOSE

1.1 Introduction

The Province's 2017 Long-Term Energy Plan included a directive to the Ontario Energy Board (OEB or Board) to expand oversight of Ontario's sub-metering industry. The OEB's expanded oversight includes examining and identifying steps to strengthen consumer protection in relation to activities of unit sub-meter providers (USMPs). As of April 1, 2018, amendments to the *Ontario Energy Board Act, 1998* (OEB Act) took effect, requiring OEB approval of USMP rates and charges. On March 15, 2018, the OEB issued an interim order that allowed USMPs to continue to bill as per their master contracts with building owners and condominiums until it establishes its method for setting the charges for USMPs.¹ On December 6, 2018, the Ontario Government introduced Bill 66, *Restoring Ontario's Competitiveness Act, 2019*, which removes references to unit sub-metering, and adds a reference to USMPs in subsection 78 (9) of the OEB Act, with additional amendments made to the regulation-making authority in clause 88 (1) of the OEB Act. The effect of this legislation, if passed, would be to repeal the OEB's authority to govern fees charged by USMPs for sub-metered units in multi-residential buildings.

In 2018, Power Advisory LLC (Power Advisory) was engaged by the Sub-metering Council of Ontario (SCO)² to develop a report, "Assessment of Appropriate Form of Regulatory Oversight for Unit Sub-Metering in Ontario", to examine potential regulatory models for the sub-metering industry and to recommend the appropriate form of regulatory oversight. This report was submitted to the OEB as part of Proceeding EB-2017-0317. The SCO has now engaged Power Advisory to prepare a second report comparing the cost of electricity to the SCO members' residential customers with what they would be paying if they were individually metered by their Local Distribution Company (LDC). This report presents Power Advisory's methodology and results.

Power Advisory understands that this report may be shared with the Ontario legislature to inform the debate regarding this legislation.

1.2 Organization of Report

This report has three chapters, the first of which is this introduction. The second describes the methodology used in this study, and provides examples of typical monthly bills under sub-metering and LDC metering. The third chapter summarizes the results and offers conclusions.

¹ Decision and Interim Order, EB-2017-0371, March 15, 2018.

² The Sub-metering Council of Ontario includes Enercare Connections, Provident Energy Management, and Wyse Meter.

1.3 Relevant Experience of Power Advisory

Power Advisory is an electricity sector focused management consulting firm. We specialize in electricity market analysis and strategy, power procurement, policy development, regulatory and litigation support, market design, and project development and feasibility assessment, focusing on North American electricity markets. The Ontario electricity market is a major focus of the firm. We advise the full range of electricity sector participants, including generators, transmission and distribution companies, emerging energy-related technology companies, financial institutions, trade associations, generation component manufacturers, the OEB, the Independent Electricity System Operator (IESO), and several ministries of the Ontario Government (including the Ministry of Energy) on matters relating to the electricity sector. Power Advisory has a strong understanding of both Ontario energy policy issues and Ontario's regulatory regime.

In the ten years since our inception, we have been engaged by the OEB to assist in almost twenty different projects focusing on appropriate regulatory structures, approaches and frameworks for Ontario. In 2018, Power Advisory was hired to assist with setting the rates for the Regulated Price Plan, which applies to Ontario's low volume customers. In two separate assignments, we assisted the OEB with the evaluation of alternative regulatory frameworks for Ontario's largest generator, the Crown-owned Ontario Power Generation.

2. METHODOLOGY: HOW ELECTRICITY BILLS WERE ESTIMATED

2.1 Overview

The analysis consisted of several steps:

1. Compile a database of buildings with sub-metering customers.
2. For each building, estimate the monthly bill of a typical sub-metering customer.
3. Estimate what that customer's electricity bill would be if they were an individually-metered customer of the local distribution company (LDC).
4. Compare the results in several ways, including average sub-metering and LDC bills and the distribution of the difference.

The analysis was based on 2018 rates given the ready availability of this data.

2.2 Customer Database

Power Advisory's analysis covered just over 2,000 buildings containing approximately 170,000 residential sub-metering customers, and spread across 38 LDCs. Information on these buildings and customers was provided by the members of the SCO, and (with some minor corrections) matches the customer lists which these companies provided to the OEB in 2018. Not included in Power Advisory's analysis are:

- Customers of sub-metering companies that are not currently members of the SCO.
- New sub-metering customers whose service began in 2018 or 2019.
- Non-residential sub-metering customers.

Given the size of the SCO members compared to other sub-metering providers, and the rate of growth of the sub-metering industry, Power Advisory estimates that our database includes the bulk of residential sub-metering customers in Ontario, and is therefore representative of the industry as a whole.

The following information from the SCO members' customer lists was used in the analysis:

- Either the LDC serving the area, or the municipality that the building is in, from which the LDC could be determined; in a few cases this required clarification beyond what was in the original files provided to the OEB.
- The number of residential customers served in each building
- The total number of units (residential and other) in each building, if available
- The sub-metering rates charged in 2018.

2.3 Sub-Metering Bill Estimates

USMPs calculate sub-metering bills in a number of different ways, but the most common method is to charge customers the USMP's fees, plus a share of the building's total electricity bill from the LDC, allocated to each customer based on their electricity consumption for that month. With this method, there are, in effect, three kinds of charges:

- Energy charges, including losses and energy-based regulatory charges, which flow from the LDC through directly to each unit based on their own consumption.
- A share of the building's delivery charges. These include both fixed and variable components, but all of it is allocated based on kWh consumed. Delivery charges are allocated to all units in the building, whether or not they are sub-metering customers; sub-metering customers pay their share, and the rest is the responsibility of the building owner.
- The USMP's fees, usually including one or more fixed monthly fees, sometimes including variable charges based on kWh consumed or other measures of electricity use.

Another fairly common method is to pass energy and volumetric regulatory charges through to customers, plus a fixed fee rather than allocating the building's delivery charges. With this method, the USMP's fees are higher, as they need to cover both the USMP's costs and the delivery component of the bulk bill, but the customer's bill is approximately the same. There are several variations and alternative ways of calculating customers bills.

For each residential building in the SCO members' databases, Power Advisory carried out the following steps:

- Determined how the customers' bills were calculated (allocation of bulk bill, fixed fee, etc.)
- Calculated the USMP's fees for a typical customer.
- Calculated the building's bulk bill and the customer's share of it (if that was how bills were determined), or other charges (if a different method was used).

For the purposes of this study, sub-metering customers were assumed to consume 400 kWh of electricity per month. This volume was suggested by the SCO members as being typical for the residential customers they serve, with many condo and apartment units using less, and townhouses using more. Buildings were assumed to have a 60% monthly average load factor, which means that a customer using 400 kWh/month would contribute approximately 0.91 kW to the building's monthly average peak demand (used in determining what rate category the building is in, and for calculating demand-based charges for larger buildings).

Table 1 below shows a sample bill for a hypothetical 100-unit building in Toronto Hydro's service territory using the bulk-bill-allocation method. Toronto Hydro was chosen for this example for two reasons:

- Approximately 2/3 of the sub-metering customers served by these USMPs are in Toronto, making Toronto's rates particularly important.
- Toronto Hydro's rates create additional complications, as discussed below. Calculations for other LDCs are similar but without these complications.
- Their rates are unusual in that fixed charges are expressed as \$ per 30 days, and demand charges are expressed as \$/kVA per 30 days. All other LDCs considered in this study expressed fixed and demand charges as \$ per month and \$/kW per month. Nonetheless, Toronto Hydro's was selected for this comparison given the high proportion of SCO customers in its service territory. This example is also largely illustrative of bills for other customers.

This hypothetical building, with 100 units, is estimated to have an average monthly peak demand of 91 kW, putting it in the "General Service 50 to 999 kW Service Classification". The sub-metering charge is assumed to be \$20 per month per customer.

Table 1: Typical Sub-Metering Monthly Bill in Toronto

	Building Volume	Bill Determinant	Rate	Charges for Building	Charges per Unit
Energy Charges					
Energy Charges	40,000	kWh	\$0.0770	\$3,080.00	\$30.80
Losses			3.76%	\$115.81	\$1.16
Sub-total				\$3,195.81	\$31.96
Delivery Charges					
Fixed Distribution Charges	1	month	\$56.27	\$56.27	\$0.56
Volumetric Distribution Charges	91	kW - months	\$6.7080	\$612.60	\$6.13
Transmission Charges	95	kW - months	\$4.1637	\$394.55	\$3.95
USMP Charges (Example)	100	unit - months	\$20.00	\$2,000.00	\$20.00
Sub-total				\$3,063.42	\$30.63
Regulatory Charges					
Volumetric Regulatory Charges	41,504	kWh	\$0.0039	\$161.87	\$1.62
Fixed Regulatory Charges	1	unit - months	\$0.25	\$0.25	\$0.00
Sub-total				\$162.12	\$1.62
Pre-Tax Total					
HST			13.00%	\$834.77	\$8.35
Provincial Rebate			-8.00%	-\$513.71	-\$5.14
Total				\$6,742.41	\$67.42

The bill estimates in Table 1 above are based on the following assumptions:

- Energy charges

- Energy charges are calculated based on the Regulated Price Plan (RPP) Tier Rates. Only the Tier 1 rate (\$0.077/kWh) is used as the hypothetical customer used in this study consumes 400 kWh/month, well below the Tier 1/Tier 2 threshold. Virtually all sub-metering customers in Ontario paid Tier, rather than Time-of-Use (TOU) rates in 2018. It is Power Advisory's understanding that this is due to limitations in the LDCs' billing systems, and that at some point sub-metering customers will pay TOU RPP rates.
- Losses are based on the LDC's loss factor, in this case 1.0376. The loss factor is the same for Residential and General Service customers in all the LDCs included in this study, with one exception: Hydro One. Hydro One's loss factor is for Residential is 1.057 for Urban High Density Residential and Commercial below 50 kW, and 1.050 for Urban Demand Commercial 50 kW and above. For the purposes of this report, losses are grouped with energy charges. (This is different from how they are treated on LDCs' residential bills, where they are included in Delivery Charges.) Grouping them with energy charges rather than delivery charges illustrates more clearly the sources of the differences between customers' costs with sub-metering vs. LDC metering.
- Delivery charges
 - Toronto Hydro's fixed charges are expressed in \$ per 30 days, whereas all of the other LDCs in this study have charges expressed as \$ per month. Toronto Hydro's rates are converted to \$ per month by multiplying by 1.0139 (365/360).
 - Toronto Hydro's volumetric distribution charges are expressed as \$/kVA per 30 days, whereas all other LDCs have charges expressed as \$ per kW per month. Toronto Hydro's charges are converted to \$/kW per month by multiplying by the same factor (1.0139). For simplicity, a power factor of 1.00 is assumed, meaning that rates per kW are the same as rates per kVA.
 - Toronto Hydro's transmission charges are also expressed as a charge per 30 days, so are adjusted in the same way. Transmission connection charges are based on the building's maximum demand at any time, but transmission network charges are based on the building's maximum demand between 7 a.m. and 7 p.m. on weekdays. For residential buildings, peak consumption is usually in the evening. For this study, peak kW are assumed to be 80% of maximum kW. Hydro One also used peak kW as the billing determinant for transmission network charges, but all of the other LDCs in this study use maximum demand at any time.
 - For comparison purposes, the USMP's fees are grouped with delivery charges.
- Regulatory charges
 - Regulatory charges are the same in all LDCs. The building pays a fixed charge of \$0.25 per month, plus volumetric charges of \$0.0039 per kWh (including losses), which flow through to sub-metering customers.

- Harmonized Sales Tax (HST)
 - Electricity bills, including sub-metering charges, are subject to the 13% HST and an 8% Provincial Rebate, for a net rate of 5%.

2.4 LDC Bill Estimates

The estimates of what sub-metering customers would pay if they were individually-metered LDC customers are based on the same consumption assumption: 400 kWh/month.³ Table 2 below shows the estimate of what such a customer would pay in Toronto Hydro’s service territory.

Table 2: Typical Individually-Metered Monthly Bill in Toronto

	Volume	Bill Determinant	Rate	Charges
Energy Charges				
Energy Charges	400	kWh	\$0.08205	\$32.82
Losses			3.76%	\$1.23
Sub-total				\$34.05
Delivery Charges				
Fixed Distribution Charges	1	month	\$33.78	\$33.78
Volumetric Distribution Charges	400	kWh	\$0.00791	\$3.16
Transmission Charges	415	kWh	\$0.01376	\$5.71
Sub-total				\$42.65
Regulatory Charges				
Volumetric Regulatory Charges	415	kWh	\$0.0039	\$1.62
Fixed Regulatory Charges	1	month	\$0.25	\$0.25
Sub-total				\$1.87
Pre-Tax Total				
HST			13.00%	\$10.21
Provincial Rebate			-8.00%	-\$6.29
Total				\$82.50

Table 2 above is based on Toronto Hydro’s Residential Service Classification rate. Toronto Hydro has another rate category which could apply: Competitive Sector Multi-Residential Multi-Unit

³ Some but not all sub-metering customers pay a share of consumption in common areas. If they were individually-metered LDC customers, it is likely that they would pay only for their own unit’s consumption, with the building owner or condo board paying for common-area consumption. However, accounting for this difference was considered to unfairly bias the analysis against sub-metering, because the cost of common-area consumption would be recovered from the individual units in some other way, such as higher rents or condo maintenance charges.

Residential Service Classification. In practice, this rate is only available to a limited number of buildings, at Toronto Hydro’s choice. For example, Toronto Hydro would typically not offer this rate to an existing apartment building where it would initially serve only a small fraction of total units, whereas some sub-metering providers would elect to serve these customers. Therefore, the Residential Service Classification rate is considered to provide a more reasonable comparison.

The vast majority of individually-metered residential LDC customers paid TOU RPP rates in 2018, so this rate – an average of \$0.082/kWh – has been used for LDC-metered customers in this analysis.

Table 3 below compares the rates that the customers in this hypothetical building would pay with sub-metering and individual LDC metering. Most of the difference is in delivery charges: sub-metering customers pay their USMP’s fees, but only a fraction of the building’s delivery charges. The difference in energy charges is due to the fact that almost all LDC-metered residential customers pay TOU RPP rates (at an average of \$0.082/kWh), whereas almost all sub-metering customer pay Tier 1 RPP rates (\$0.077/kWh). The difference in regulatory charges is due to the \$0.25/month fixed charge.

Table 3: Difference in Monthly Charges for a Typical Customer in Toronto

	Charges with Sub-Metering	Charges with LDC Metering	Savings (Loss) from Sub-Metering
Energy Charges Including Losses	\$31.96	\$34.05	\$2.09
Delivery Including USMP Fees	\$30.63	\$42.65	\$12.02
Regulatory Charges	\$1.62	\$1.87	\$0.25
Pre-Tax Total	\$64.21	\$78.58	\$14.36
HST	\$8.35	\$10.21	\$1.87
Provincial Rebate	-\$5.14	-\$6.29	-\$1.15
Total	\$67.42	\$82.50	\$15.08

Overall, customers in this example would pay \$15.08 less per month with sub-metering than with individual metering by the LDC. This difference will vary for each of the 2,000-plus buildings in the database based on a number of factors:

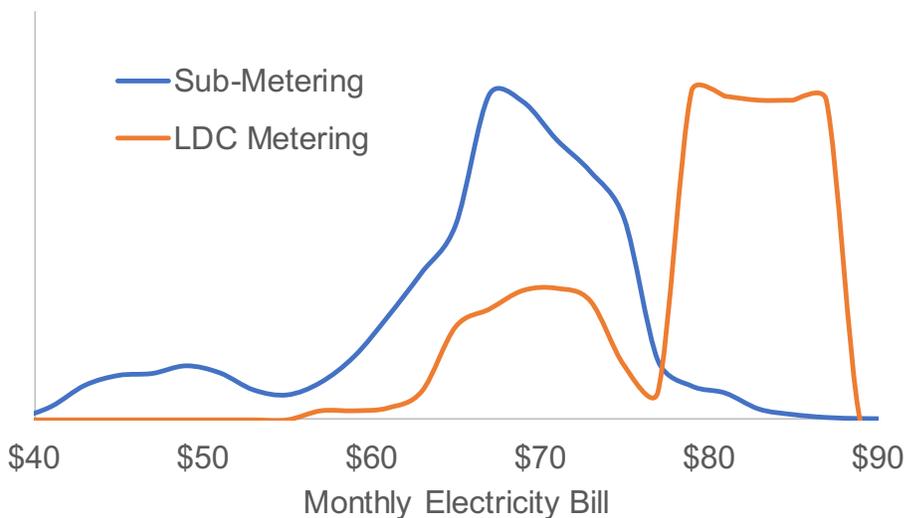
- The LDC in whose service territory the building is located, and its Residential and General Service rates.
- The number of units in the building; larger buildings will be subject to General Service rates for customers with demand of 50 kW or greater, and fixed monthly charges will be spread over more units.
- The sub-metering fees specified in the building’s contract with the sub-metering provider.

3. RESULTS AND CONCLUSIONS

3.1 Summary Results

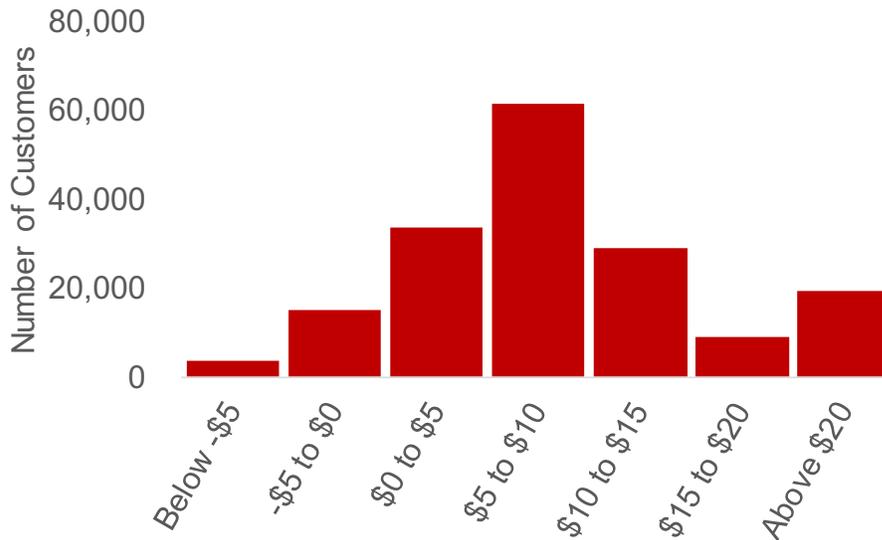
The approximately 170,000 sub-metering customers covered by this analysis would on average pay \$66.52 per month with sub-metering and \$78.43 with individual metering by the LDC – an average savings of \$11.91/month. The distribution of costs with sub-metering and LDC metering is shown in Figure 1 below.

Figure 1: Distribution of Sub-Metering and LDC Metering Monthly Costs



94% of the customers in the database are estimated to be paying less with sub-metering than they would with LDC metering, while 6% would pay more. Approximately \$2/month of these savings is due to energy rates (most LDC-metered residential customers pay TOU RPP rates, whereas most sub-metering customer pay RPP Tier rates due to limitations in the LDCs’ billing systems). If this difference is taken out, the average savings is \$9.66 per month. 89% of sub-metering customers pay lower delivery and regulatory rates than they would if they were LDC-metered.

For those customers who pay less with sub-metering, the average savings is \$11.31 per month, or \$136 per year (including only savings on delivery and regulatory charges, and excluding savings on energy charges). Of those who pay more, the average additional cost is \$3.17 per month, or \$38 per year. The distribution of costs and savings is shown in Figure 2 below (“savings” below \$0 indicate that the customers would pay more with sub-metering than LDC metering).

Figure 2: Distribution of Savings from Sub-Metering


3.2 Conclusions

The average residential sub-metering customer is estimated to save \$9.66 per month, or \$117 per year, on their electricity bill compared to what they would pay if they were individually metered by their LDC and paying the standard Residential Service Classification rate – not including savings due to paying Tier 1 rather than TOU RPP rates. This cost difference represents total annual savings of approximately \$20 million per year for sub-metering customers (including those who pay more than they would with LDC metering). Total savings for all sub-metering customers in Ontario, including newer customers of the three SCO members, customers of other USMPs, and non-residential customers, would be significantly higher.

While the vast majority of sub-metering customers in this study are saving on their electricity bills compared to LDC metering, a few are paying slightly more. Sub-metering fees vary widely between buildings for a number of reasons, including:

- **Cost to serve the building:** Retrofits (installing meters in an existing building) are typically more expensive than new construction (installing meters as part of the construction process). In existing rental buildings, USMPs install meters for all units up-front, but it may be several years before the majority of units are sub-metering customers. In the meantime, the USMPs are carrying the cost of their capital investment.
- **What is and is not covered by the contract:** Two of the most important differences are who owns (and pays for) the meter, the USMP or the customer, and who is responsible for late payment and bad debt. In many cases, sub-metering charges initially include fees to recover the cost of installation, but fees are reduced after the initial contract term because the meters have been paid for. There are many other contract variations to address customer preferences or specific building issues.

- Growth rates: some USMPs are growing very quickly, and incurring significant costs to set up communication systems, IT systems, call centers and other infrastructure (though these costs are not necessarily being passed on to customers in the form of higher fees).
- Rental retrofits vs. new construction and other types of ownership (mostly condos but also residential co-ops): At rental retrofit sites, meters are installed for all units while only a fraction are initially billed, whereas as condos, residential co-ops, and new rental sites, 100% of units are billed from the beginning of the contract.
- Fees and allowances paid to developers (one-time, for installing meters) and landlords (monthly, for sub-metering-related costs). While these fees cover essential services (such as meter installation by developers, and on-site customer service by landlords), they can be significant.

The fact that a specific customer is paying more for sub-metering than they would with LDC metering does not necessarily mean that they are being over-charged. In many cases, LDCs are not willing to incur the cost of installing meters for individual units, meaning that the only way that the occupants of these buildings can get individual billing (and the benefits that come with that, such as the incentive to conserve electricity consumption and the ability to control costs) is through sub-metering.