

MANITOBA HYDRO
2017/18 & 2018/19 GENERAL RATE APPLICATION

PROPOSED RATES AND CUSTOMER IMPACTS

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9.0 OVERVIEW

Tab 9 provides the electricity rates and customer bill impacts for the proposed rate increases in this Application. Section 9.1 discusses Manitoba Hydro's general rate making objectives; Section 9.2 discusses a number of rate design policy considerations; Section 9.3 provides details of the proposed rates by customer class and the customer bill impacts of the proposed rate changes; Section 9.4 discusses the status of alternative rate options including the Curtailable Rate Program ("CRP") and the Surplus Energy Program ("SEP") and Section 9.5 provides comparisons of electricity rates and bills across other jurisdictions.

The following summarizes the rate making proposals contained in this Application:

1. Manitoba Hydro has applied the proposed 7.9% rate increases for both test years to all components of the rates (monthly basic charges, energy charges and demand charges) on an across-the-board basis for all customer classes, with the exception of Diesel General Service, sufficient to generate additional revenue of \$87.7 million for fiscal 2017/18, and \$132.4 million for fiscal 2018/19.
2. For Diesel General Service customers Manitoba Hydro is proposing to increase the grid portion of the rate (Basic Charge and first 2,000 kWh per month for non-government customers) by 7.9% with the non-grid portion of the rate remaining unchanged.
3. Manitoba Hydro is seeking endorsement of modifications to the terms and conditions of Option 1 of the SEP program that were accepted on an interim basis in Order 43/13.

- 1 4. Manitoba Hydro is seeking approval of new Light Emitting Diode (“LED”) rates for
2 the Area and Roadway Lighting class (Sentinel Lighting), and final approval of LED
3 rates for the Area and Roadway Lighting class (Outdoor Lighting) approved on an
4 interim basis in Order 79/14. Manitoba Hydro is proposing to eliminate the Area
5 and Roadway Lighting class (Festoon Lighting) rate and the Area and Roadway
6 Lighting class (Christmas Lighting) rate. Neither of these rates had customers
7 billing on them.
8

9 **9.1 GENERAL RATE MAKING OBJECTIVES**
10

11 Manitoba Hydro’s general rate making objectives are as follows:
12

- 13 1. Recovery of Revenue Requirement – Rates must provide the Corporation the
14 opportunity to fully recover its allowed revenue requirement.
15
16 2. Fairness and Equity – Rate design should provide for equitable treatment of
17 customers both within a customer class (whereby similar customers receive
18 similar treatment) and between customer classes (whereby dissimilar customers
19 may be treated differently).
20
21 3. Rate Stability and Gradualism – In conformity with the principles of gradualism
22 and sensitivity to customer impacts, annual adjustments to revenues by
23 customer class should be less than two percentage points greater than the
24 overall proposed increase.
25
26 4. Efficiency – Manitoba Hydro views this goal in designing rates as the need to
27 provide appropriate price signals regarding the value of energy and to promote
28 the efficient and economic use of energy. The determination of an appropriate
29 price signal may recognize the application of marginal cost considerations.
30
31 5. Competitiveness of Rates - Maintain Manitoba Hydro’s competitive position with
32 respect to rates charged by other Canadian utilities for all rate classes.
33
34 6. Simplicity and Understandability – Rate design should be understandable to
35 customers and should be easy to interpret and apply.

9.2 RATE DESIGN POLICY ISSUES

Rate design is the determination of an appropriate pricing structure for the sale of electricity. In essence, it is the translation of the utilities revenue requirement into prices to be charged for service to each customer class.

The selection of an appropriate rate design involves the consideration and weighting of a number of different rate setting objectives. Manitoba Hydro has adopted the six rate design objectives set out in Section 9.1 and those objectives are useful in guiding the examination of an appropriate rate structure. It is necessary to recognize that there are conflicts between different rate design objectives. For example, some rate designs that are intended to promote the efficient use of energy, such as time-of-use rates, may be relatively complicated to apply and this level of complexity may conflict with the goal of simplicity and understandability.

It is also important to recognize that a change in the structure of rates for any customer class will result in changes to the bill impacts experienced across the spectrum of customers in that class. A change in rate structure will essentially redistribute the collection of revenues between the customers within that class.

Rates are designed to collect the required amount of revenue from each customer class. A change in rate design, with no accompanying change in revenue requirement, will redistribute the recovery of revenues such that some customers will be advantaged by the change and as a result experience lower annual bills. However, other customers will be disadvantaged by the change and will experience higher annual bills for the same amount of usage.

This issue of the redistribution of customer bill impacts is even more pronounced when rate structure changes occur in conjunction with overall general rate increases. The change in rate structure will then amplify the level of rate increase for those customers with usage characteristics that place them at a disadvantage when the new rate design is applied. Without a rate structure change, a rate increase applied across all components of the rate (basic charge and energy charge for residential customers, for example) will result in all customers experiencing the same average percentage increase in their monthly bills. However, a change in rate structure in conjunction with an overall

1 revenue increase will result in some customers experienced lower than average bill
2 increases while others experience higher than average bill increases, while the total
3 class revenue requirement is satisfied.
4

5 Conservation rate designs or inverted rate designs have characteristics that create a
6 economic incentive for customers to reduce their monthly energy consumption. In
7 order to be revenue neutral, and to recover all the necessary level of class revenue
8 requirement, customers that consume greater than average amounts of energy will pay
9 higher monthly bills than they otherwise would under the current single block rate
10 design. Customers that are relatively inelastic to price changes, such are rural electric
11 heating customers, would then bear an increased burden of the class revenue
12 requirement as a result of such a rate structure.
13

14 A similar situation exists for large energy users in the implementation of Time-of-Use
15 (TOU) rate structures. There are approximately 13 large industrial customers in the GSL
16 > 100 kV rate class. A TOU rate structure would be designed to recover the required
17 level of revenues from the entire group of GSL > 100 kV customers. However, the
18 distribution of the recovery of those revenues would shift between customers within
19 the class based upon their energy usage characteristics and whether they were able to
20 adapt their operations to benefit from a TOU rate design. Customers that are already
21 operating at extremely high load factors may not be able to shift production into the off-
22 peak periods and consequently would not benefit from such a rate design. In effect,
23 those customers unable to shift load would fund the bill reductions for those customers
24 within the class that had sufficient operating flexibility to take advantage of greater off-
25 peak energy use.
26

27 Manitoba Hydro has considered these implications carefully in light of the level of
28 overall rate increases being sought in this Application. The introduction of rate
29 structure changes in an environment where the average customer bill is proposed to
30 increase by 7.9% would result in some customers facing bill increases in excess of 7.9%
31 due to the amplification effect of a corresponding rate structure change.
32

33 With consideration for the additional bill impact that may be borne by certain
34 customers, over and above the average level of increase, Manitoba Hydro has not
35 advanced a proposal to change rate structures for its customer classes at this time.

9.3 PROPOSED RATE CHANGES & CUSTOMER IMPACTS BY CLASS

The following sections discuss the proposed rate schedules and customer impacts.

Manitoba Hydro is proposing 7.9% rate increases for both 2017/18 and 2018/19. The proposed rates have been designed such that the increases have been applied across-the-board to all rate classes and equally across all rate components for customers taking service from the Manitoba Hydro grid system. For the non-grid portion of rates charged to customers situated in the Diesel Communities, no increase has been proposed to the rates for General Service usage greater than 2000 kWh per month, or the Government and First Nations Education rates.

A Proof of Revenue for each fiscal year (2017/18 and 2018/19) depicting the total revenue increase by customer class is provided in Appendices 9.1 and 9.2. Please note the following:

- Appendix 9.1 includes two Proof of Revenues for fiscal year 2017/18; one including the result on revenues assuming the rate increase had been applied on the full fiscal year (annualized), and one indicating the result of applying the increase effective August 1, 2017 (four months at current rates and eight months at proposed rates).
- The Proof of Revenue schedules include a separate line item referred to as the “Adjustment to 2016 Load Forecast” which reflects the revenue associated with the adjustments made to the 2016 Load Forecast discussed in Section 7.1 of Tab 7.

Rate Schedules for proposed rates effective August 1, 2017 and April 1, 2018 are provided in Appendices 9.3 and 9.4, respectively. Appendices 9.5 and 9.6 provide Bill Comparisons between current August 1, 2016 rates, proposed August 1, 2017 rates and proposed April 1, 2018 rates.

On a class by class basis, the proposed increase in revenues is shown in Figure 9.1 below:

Figure 9.1 Additional Revenues by Customer Class

Customer Class	2017/18 Additional \$(millions)	2018/19 Additional \$(millions)
Residential	\$38.4	\$57.9
GS Small*	\$17.5	\$27.5
GS Medium	\$11.5	\$18.4
GS Large	\$20.0	\$32.0
A&R Lighting	\$1.3	\$2.1
Misc. & DSM **	(\$1.1)	(\$5.6)
Total GCR	\$87.7	\$132.4

*includes revenues from General Service customers in Diesel Communities

** includes revenues associated with the Adjustment to the 2016 Load Forecast

9.3.1 Residential

There are approximately 485,400 Residential electric customers, 19,700 Residential Seasonal customers, and approximately 600 Residential customers situated in Diesel Communities.

The proposed 7.9% increase applied to the current rates for the residential class would result in a monthly Basic Charge of \$8.44 and an Energy Charge of \$0.08556 per kWh for rates effective August 1, 2017. For the following fiscal year, the proposed 7.9% increase would result in a Basic Charge of \$9.11 and an Energy Charge of \$0.09232 per kWh for rates effective April 1, 2018.

A residential customer, without electric space heat, with an average usage of 1,000 kWh per month would experience an increase in their monthly bill of \$6.88 for 2017/18 and \$7.43 for 2018/19. A residential customer with electric space heat, using an average of

2,000 kWh a month, would experience increases of \$13.14 and \$14.19 per month for August 1, 2017 and April 1, 2018, respectively.

9.3.2 General Service Small and Medium

There are approximately 53,000 General Service Small non-demand customers, 12,800 General Service Small Demand billed customers and approximately 2,100 General Service Medium demand billed customers in Manitoba Hydro's service territory.

Manitoba Hydro is proposing to apply the 7.9% rate increase across all rate components in the General Service Small and Medium rate sub-classes.

Prior to the 2012/13 & 2013/14 General Rate Application, Manitoba Hydro was gradually adjusting the application of rate increases to eventually achieve the consolidation of the General Service Small and Medium rate classes. The rate structure for these two classes currently varies only with respect to the monthly Basic Charge and Three Phase Charge. As the proposed rate increases are to applied to all rate components, including Basic Charges and Three Phase Charges, no additional consolidation of these rate classes will result with this Application.

A 7.9% increase on August 1, 2017 would result in the Basic Charge increasing to \$22.87 for the GS Small Single Phase and \$32.25 for the GS Small Three Phase. It is proposed that on April 1, 2018 these charges will increase to \$24.68 and \$34.80 respectively. The Basic Charge for the GS Medium class is proposed to increase to \$34.04 on August 1, 2017 and to \$36.73 on April 1, 2018. All components of the Energy Charge are proposed to increase by 7.9% each of the fiscal years as shown below:

Figure 9.2 Energy Charges for General Service Small and Medium

	<u>August 1, 2017</u>	<u>April 1, 2018</u>
1 st 11,000 kWh @	\$0.08987 / kWh	\$0.09697 / kWh
Next 8,500 kWh @	\$0.06239	\$0.06732
Balance of kWh	\$0.04117	\$0.04442

1 In keeping with the past application of the demand charges, the first 50 kV.A of Billing
2 Demand each month will not be charged, but for demand in excess of 50 kV.A the rate is
3 proposed to increase 7.9% to \$10.54 on August 1, 2017 and to \$11.37 on April 1, 2018.

4 **9.3.3 General Service Diesel Rates**

5
6 There are approximately 120 General Service Customers and 67 Government and First
7 Nation Education customers in the Diesel Communities.

8
9 Manitoba Hydro is proposing to apply the 7.9% increases to only the grid portion of the
10 rate structure (equal to that proposed for grid customers) for general service and
11 government customers in the four remote communities served by diesel generation
12 (Shamattawa, Brochet, Lac Brochet and Tadoule Lake).

13
14 For General Service non-government customers, the first 2,000 kWh per month will be
15 the same for the grid-rate equivalent as being proposed for the General Service Small
16 and Medium customer class first block rate. Energy usage in excess of 2,000 kWh per
17 month will remain at the current rate of \$0.42617 per kWh. For General Service
18 government customers, including First Nation Education accounts, all energy is
19 proposed to be charged at the same current rate of \$2.59382 per kWh.

20 **9.3.4 General Service Large**

21
22 There are approximately 320 General Service Large (GSL) customers served at between
23 750 volts to 30 kV, 40 customers served at voltages between 30 kV and 100 kV and
24 approximately 13 customers served at voltages in excess of 100 kV.

25
26 Customers in the GSL classes obtain service directly from Manitoba Hydro's transmission
27 or sub-transmission system and these customers own and maintain their own electrical
28 transformation facilities.

29
30 This Application seeks a 7.9% increase in each test year to be applied equally to both the
31 Energy Charge and Demand Charge for the General Service Large sub-classes.
32

The present standard rate design of a single Energy Charge and a single Demand Charge is proposed for rates effective August 1, 2017 and April 1, 2018, both increasing by 7.9% each year as shown in **Figure 9.3**.

Figure 9.3 Energy and Demand Charges for General Service Large

	August 1, 2017		April 1, 2018	
Large Sub-Class	Energy Charge	Demand Charge	Energy Charge	Demand Charge
Large 750-30 kV	\$0.03873	\$8.94	\$0.04179	\$9.65
Large 30-100 kV	\$0.03600	\$7.66	\$0.03884	\$8.27
Large >100 kV	\$0.03488	\$6.82	\$0.03764	\$7.36

As the rate increases are being applied equally to both the Energy and Demand Charges, the bill impacts for all customers will be generally the same regardless of load factor.

9.3.5 Area and Roadway Lighting

Manitoba Hydro is proposing to apply the 7.9% rate increase to the Area and Roadway Lighting class for each of the two fiscal years. In addition, Manitoba Hydro is proposing two new LED rates for Outdoor Lighting and four new LED rates for Sentinel Lighting. Two existing rates – Festoon Lighting and Christmas Lighting - no longer have customers billing on them and are not available for new services, therefore have been removed from the rate schedules.

The new Outdoor Lighting rates are for the 150 W LED street lights where there are two lights on a hundred foot pole and four lights on a hundred foot pole. As part of the LED street light conversion, 400W HPS lights were being converted to 250 W LED lights which ranged in wattage from 180 watts to 280 watts. A new inventory of LED lights now allows existing 400W HPS lights to be replaced with 150W LED lights which range in wattage from 120 watts to 180 watts. Since there was no rates associated with the 150W LED lights on a hundred foot pole, the two new rates had to be added.

The four new proposed Sentinel LED rates have been added to account for new installations and/or Sentinel HPS lights which are now being converted to LED. The existing 100 and 150 watt HPS lights are being replaced with 60 and 90 watt LED lights.

1 The monthly rates for the LED Sentinel rentals will be the same rates as charged for the
2 HPS and MV rentals, as the energy portion for these lights is metered and therefore not
3 included in the flat rate charge.

4 **9.3.6 Limited Use of Billing Demand ("LUBD") Rate Option**

5
6 There are approximately 70 General Service customers currently on the LUBD Rate
7 Option.
8

9 The LUBD rate structure was introduced in 2000 to address the high unit energy costs
10 faced by a relatively small number of General Service customers who operate with very
11 low load factors. These customers, who set high demands relative to their overall
12 energy use, would normally face high demand charges even though they consumed
13 relatively little energy. Under the LUBD rate option, customers opt for a rate structure
14 which has a lower demand charge but recovers the required revenues through a higher
15 energy charge.
16

17 The LUBD rate was designed such that demand billed customers would be indifferent at
18 a billing load factor of 18% between this rate and the standard General Service rate for
19 which they otherwise qualify. By paying a higher energy charge in exchange for a lower
20 demand charge, customers with billing load factors less than 18% may benefit from
21 lower monthly bills compared to accepting service at standard General Service rates.
22

23 There is no difference in the level of the Basic Charge or the determination of the Billing
24 Demand when customers choose LUBD over standard rates.
25

26 The rates proposed for LUBD customers are derived from the rates proposed for
27 General Service Small, Medium and Large customer classes. The monthly Basic Charge
28 will increase to the same level as regular General Service Small/Medium customers. The
29 Demand Charge is set at approximately 25% of the Demand Charge of the
30 corresponding regular General Service class, with the energy charge calculated to
31 provide revenue neutrality at a load factor of approximately 18%.
32

Manitoba Hydro prepares annual reports to the PUB on the LUBD rate option, and reports covering the period April 1, 2015 to March 31, 2016, and April 1, 2014 to March 31, 2015, can be found as Appendix 9.7.

9.3.7 Flat Rate Water Heating ("FRWH")

There are approximately 3,300 Residential FRWH customers and approximately 350 General Service with Flat Rate Water Heating service.

These customers have unmetered electrical service to supply energy to their electric water heater in their home or business. The number of customers on FRWH is generally declining by approximately 5% per year.

Manitoba Hydro proposes to apply the 7.9% rate increases to the current monthly rate for both Residential and General Service FRWH customers.

9.4 ALTERNATIVE RATE PROGRAMS

9.4.1 Surplus Energy Program ("SEP")

There are approximately 30 General Service customers participating in the Surplus Energy Program.

The Surplus Energy Program is a rate program that enables a qualifying customer to purchase surplus energy at market prices that are determined on a weekly basis for peak, shoulder, and off-peak periods. Manitoba Hydro files for SEP rate approvals with the PUB on a weekly basis, for rates to be set for the following week.

Manitoba Hydro is seeking final confirmation of the rate approval process given the proposed change to the Terms and Conditions for SEP Option 1 which was proposed in the 2012/13 and 2013/14 General Rate Application, and approved on an interim basis in Order 43/13.

The change proposed for Option 1 would be to allow customers to have a different Reference Demand for each of the three pricing periods. The highest designated Reference Demand would be used in determining the customer's monthly billed

1 demand. The change would allow eligible General Service industrial customers to
2 nominate different levels of Surplus Energy Program energy purchases in peak periods
3 (5x8 weekdays – day time), off-peak periods (7x8 weekdays – night time), and shoulder
4 periods (other weekday or weekend periods). These changes would allow customers to
5 tailor their Option 1 purchases to minimize costs and/or maximize purchase
6 effectiveness.

7
8 Manitoba Hydro is requesting the changes to SEP Option 1 be approved as final. While
9 there are currently no customers on Option 1, this change would open the possibility for
10 customers to consider this Option in the future.

11
12 A copy of the amended SEP Terms and Conditions are included in Appendix 9.8.

13
14 Manitoba Hydro files an annual report with the PUB on the status of the SEP. Copies of
15 the reports covering the period November 1, 2015 to October 31, 2016 and November
16 1, 2014 to October 31, 2015 can be found in Appendix 9.9.

17
18 Manitoba Hydro also files quarterly reports with the PUB on the factors influencing SEP
19 pricing. Copies of the quarterly reports filed from the period August 1, 2015 to April 30,
20 2017 are included as Appendix 9.10.

21 **9.4.2 Curtailable Rate Program (“CRP”)**

22
23 There are currently three General Service Large customers participating in the
24 Curtailable Rates Program.

25
26 The Curtailable Rate Program is not a rate class, rather it is an optional program through
27 which Manitoba Hydro may call on participating customers to curtail a portion of their
28 load to assist in maintaining operating and contingency reserves in the event of loss of
29 generation or transmission.

30
31 Manitoba Hydro is not seeking any changes to the CRP. All changes previously approved
32 as final in Order 73/15 have been implemented. Manitoba Hydro is providing as
33 Appendix 9.11 copy of the CRP Terms and Conditions reflecting the approved and
34 implemented modifications to the CRP.

35

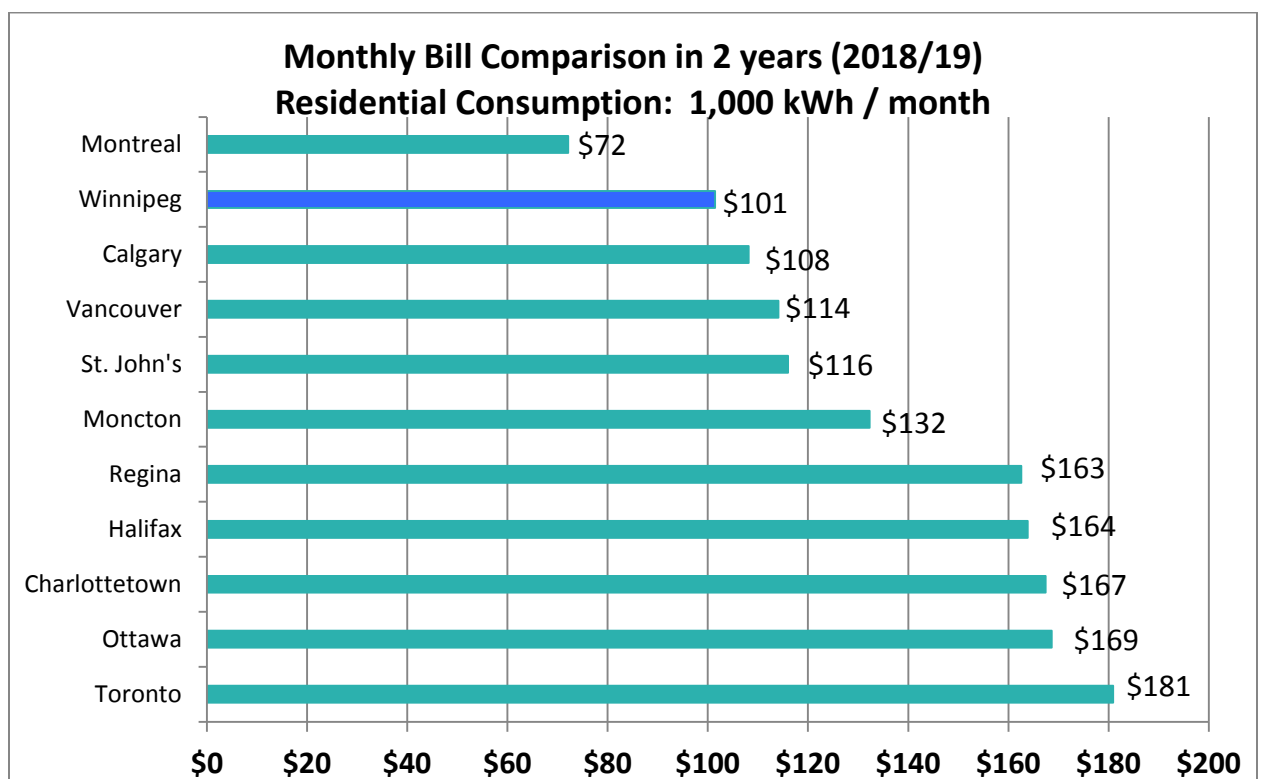
1 Manitoba Hydro files an annual report with the PUB on the status of the CRP. Copies of
2 the reports covering the period April 1, 2016 to March 31, 2017, April 1, 2015 to March
3 31, 2016 and April 1, 2014 to March 31, 2015, can be found in Appendix 9.12.
4

5 **9.5 COMPARISON OF ELECTRICITY RATES ACROSS JURISDICTIONS**
6

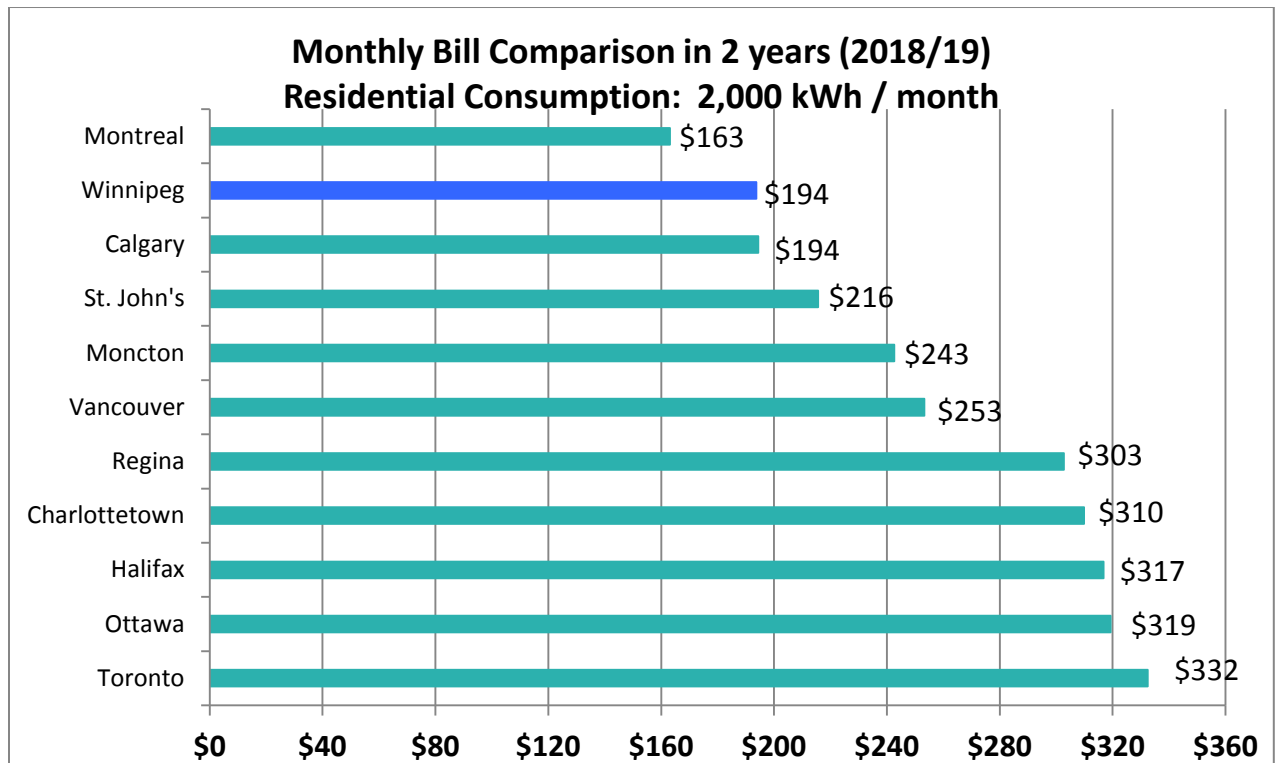
7 **Figure 9.4** below provides a comparison of the rate increases approved and proposed by
8 other Canadian electric utilities since 2007.
9

The charts provided in **Figure 9.5** compare monthly residential bills at 1,000 and 2000 kilowatt hours for major Canadian cities. Where published information on projected increases is not available, a simplifying and conservative assumption has been made that annual rate increases will be in line with inflation at 2% each year. Where information is available, projected rate increases have been reflected in the bill calculations. Even with two years of 7.9% rate increases for Manitoba Hydro, residential customers in Manitoba will still be paying amongst the lowest bills in the country.

Figure 9.5 Monthly Bill Comparisons



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9

Manitoba Hydro also uses its annual “Survey of Canadian Electricity Bills” (found in Appendix 9.13) to compare bill amounts for all major rate classes paid by Manitoba customers with those of other major Canadian utilities. As demonstrated in **Figure 9.6** below, based on the 2016 Survey of Canadian Electricity Bills, the average price per kWh paid by Manitobans are at or near the low end compared to other large Canadian cities.

Figure 9.6 2016 Survey of Canadian Electricity Bills Rate Comparison (Price per kWh)

	Residential		GS - Small		GS - Medium		GS - Large	
	1,000 kWh	2,000 kWh	1,000 kWh	5,000 kWh	120 MWh	200 MWh	5.5 GWh	12 GWh
Vancouver BC	10.70	11.88	12.47	11.87	8.40	8.44	7.67	6.04
Edmonton AB	10.51	9.34	11.30	9.97	n/a	n/a	n/a	n/a
Calgary AB	11.17	10.17	12.37	9.45	7.47	7.31	6.05	n/a
Regina SK	14.65	13.63	14.89	12.68	10.65	10.66	8.18	6.70
Winnipeg MB	8.71	8.32	10.45	8.75	6.70	6.64	5.26	4.29
Ottawa, ON	16.54	15.82	17.79	16.33	14.09	14.02	13.3	13.0
Montreal PQ	7.23	7.95	10.94	9.96	8.52	8.52	5.24	4.93
Halifax NS	15.88	15.34	15.24	15.21	12.66	12.66	9.27	8.97
Moncton NB	12.50	11.46	14.98	13.20	11.60	11.60	7.50	7.30
St. John's NL	11.96	11.19	12.54	11.46	9.68	9.36	8.02	7.74

n/a - did not respond to Manitoba Hydro's survey

Reflects rates in effect on May 1, 2016 except Winnipeg which was updated to reflect rates in effect on August 1, 2016.

To measure performance in the overall North American context, Manitoba Hydro uses the results of both the Edison Electric Institute ("EEI") survey as well as monthly statistics obtained from the United States Department of Energy ("DOE"). Unlike the EEI data that provides investor-owned utility comparisons, the DOE data provides comparisons by State which includes numerous utilities within each state. **Figure 9.7** below provides the Total Retail Average Rate compared to other low-cost jurisdictions and neighboring utilities, including primary MISO states, based on the December 2016 DOE data and January 1, 2017 EEI data, using an exchange rate of 1 US \$ =1.3592 Canadian as of April 26, 2017.

The Average Retail Rate provided in **Figure 9.7** was determined by dividing the combined total revenue billed by the combined total kilowatt hours billed for the 12-month period ending December 31, 2016 for all customer classes (residential, commercial and industrial), whereas the price per kilowatt hour in **Figure 9.6**, based on Manitoba Hydro's Survey of Canadian Electricity Bills, are provided for each customer class based on specific levels of consumption.

Figure 9.7 Total Retail Average Rate (Canadian \$)

State / Province	Cents per kWh
Manitoba	6.48
Quebec	6.84
British Columbia	8.56
Saskatchewan	10.09
Oklahoma	10.14
Louisiana	10.45
Iowa	10.48
Nevada	10.51
Washington	10.64
Arkansas	10.68
North Dakota	11.53
South Dakota	12.94
Minnesota	13.03
Wisconsin	14.56

Despite having competitive rates, Manitoba Hydro acknowledges that bill increases have an impact on customers. As discussed in Tab 7, Manitoba Hydro, as part of its Power Smart suite, offers programs to assist customers in managing their energy consumption through the implementation of energy efficiency opportunities in their homes and businesses. These opportunities not only result in energy bill savings in the short and long term, but also result in a more comfortable environment for customers. Moreover, to assist low-income customers, Manitoba Hydro continues to provide targeted and enhanced support through its Affordable Energy Program, to improve the energy efficiency of their homes resulting in lower energy bills and increased comfort.