



*Une expertise en énergie
au service de l'avenir*

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Energy Poverty on First Nation Reserves in Manitoba

submitted to the
Manitoba Public Utilities Board

Manitoba Hydro 2019 GRA

on behalf of

the Assembly of Manitoba Chiefs

by

Philip Raphals
Executive Director
Helios Centre

326, boul. Saint-Joseph Est, bureau 100
Montréal (Québec) Canada H2T 1J2

Téléphone : (514) 849 7900

Télécopieur : (514) 849 6357

sec@centrehelios.org

www.centrehelios.org

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1. INTRODUCTION

1.1. *Prior evidence*

In my expert report on behalf of the Assembly of Manitoba Chiefs (“AMC”) in the proceeding concerning Manitoba Hydro’s 2017 General Rate Application (GRA), I made several observations concerning energy poverty on First Nations reserves in Manitoba, based primarily on the Indigenous Voices Omnibus Survey 2017, undertaken by Probe Research with Manitoba Hydro’s participation.¹

Section 4.3.1 of my report, quoted here in full, clearly identified the fact that available data were inadequate for drawing firm conclusions.

4.3.1 Inadequate data

The PRA Report does not include a detailed quantitative analysis of energy poverty among First Nations customers, either on- or off-reserve.²

PRA further explained the limitations of its report with respect to First Nations as follows:

Two important limitations of the customer survey should be noted. First, although customers in arrears were over-sampled on the assumption that those in arrears would generally have lower income and/or be energy poor compared to the overall Manitoba Hydro customer base, the survey results revealed that this was not the case. As a result, the energy poor subgroups have small sample sizes, and all analyses based on these subgroups should be interpreted with caution. Second, the customer survey did not set regional quotas. As a result, relatively few customers in northern Manitoba were among the survey respondents, and those who completed the survey resided primarily in urban centres in the north. The ability to undertake regional analysis and/or analysis of customers residing in northern and remote First Nations communities was therefore limited.³ (emphasis added)

Under the heading, “Factors in energy poverty and arrears among First Nations,” PRA wrote:

Any discussion of energy poverty and arrears in Manitoba must acknowledge the unique circumstances of First Nations communities. As previously noted, due to methodological

¹ Raphals, P. Implications of Manitoba Hydro’s GRA, rev. Jan. 24, 2018, pages 20-29.

² PRA Report, page 48 of 242.

³ Ibid., page 56 of 242.

limitations, the survey of Manitoba Hydro customers did not obtain the data required to undertake a quantitative analysis of factors contributing to energy poverty and arrears within these communities. A document review and key informant interviews with First Nations community representatives were therefore undertaken to fill this gap.⁴ (emphasis added)

The “key informants” with respect to First Nations issues consisted of two persons from Manitoba Hydro, two persons from INAC, and two representatives of two First Nations communities in Manitoba.⁵

Again, few conclusions can be drawn regarding energy use, bill affordability and energy poverty in on-reserve First Nations communities, because sample sizes for First Nations respondents were so low.

We recommend that the Board require Manitoba Hydro to carry out an in-depth study of electricity consumption and affordability on First Nations reserves, in order to inform future decision-making.

In response to IR AMC-MH I-7 of the present proceeding, Manitoba Hydro made public its 2017 Residential Energy Use Survey (“REUS”), prepared by its Market Forecast and Load Research Department. The 2017 REUS sheds considerable new light on the matters addressed in my 2017 report. AMC has asked me to present a brief summary of this new information and to briefly consider certain rate implications of MH’s 2019 General Rate Application.

1.2. The 2017 REUS

The 2017 REUS made a concerted effort to reach residential customers residing on First Nation reserve lands. Of the 35,372 surveys mailed to residential customers, 43.5% (15,375) were sent to residential customers residing on First Nation reserve lands. While the response rate was considerably lower for these customers than for residential customers not residing on First Nation reserve lands (4.23% for First Nation reserves vs. 19.1% for the other residential customers), the authors concluded that, for residential customers residing on First Nation reserve lands, overall survey results are accurate within 4.23%, 19 times out of 20.

⁴ Ibid., page 86 of 242.

⁵ PRA Report, page 55 of 242.

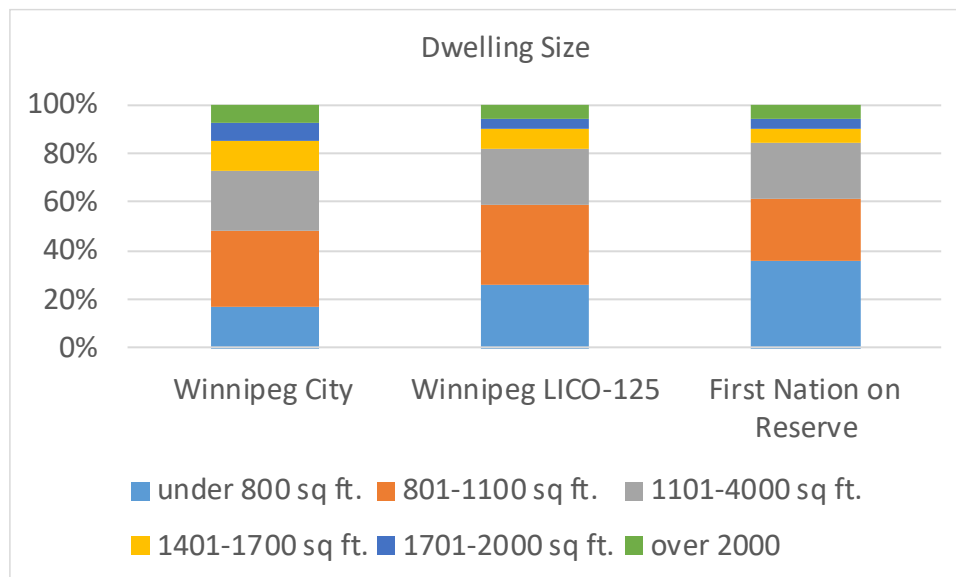
For residential customers not residing on First Nation reserve lands, the authors concluded that the overall survey results are accurate within 1.58%, 19 times out of 20.⁶

2. 2017 REUS FINDINGS WITH RESPECT TO FIRST NATION ON RESERVE HOUSEHOLDS

The following sections summarize the findings of the 2017 REUS for First Nation on Reserve (“FNOR”) households, compared to a) households identified as the “Winnipeg City” area, and b) LICO-125 households in the Winnipeg City area.

2.1. Dwellings

A substantially greater number of FNOR households are under 800 square feet than those in the Winnipeg City area, whether LICO-125 or not, as seen in Figure 1.⁷



⁶ 2017 REUS, AMC/MH-I-7, Attachment 1, page 10 of the pdf.

⁷ Ibid., page 19.

Figure 1

Considerably more FNOR dwellings have problems such as window condensation, odour and smell, and mold and mildew, as seen in Figure 2.⁸

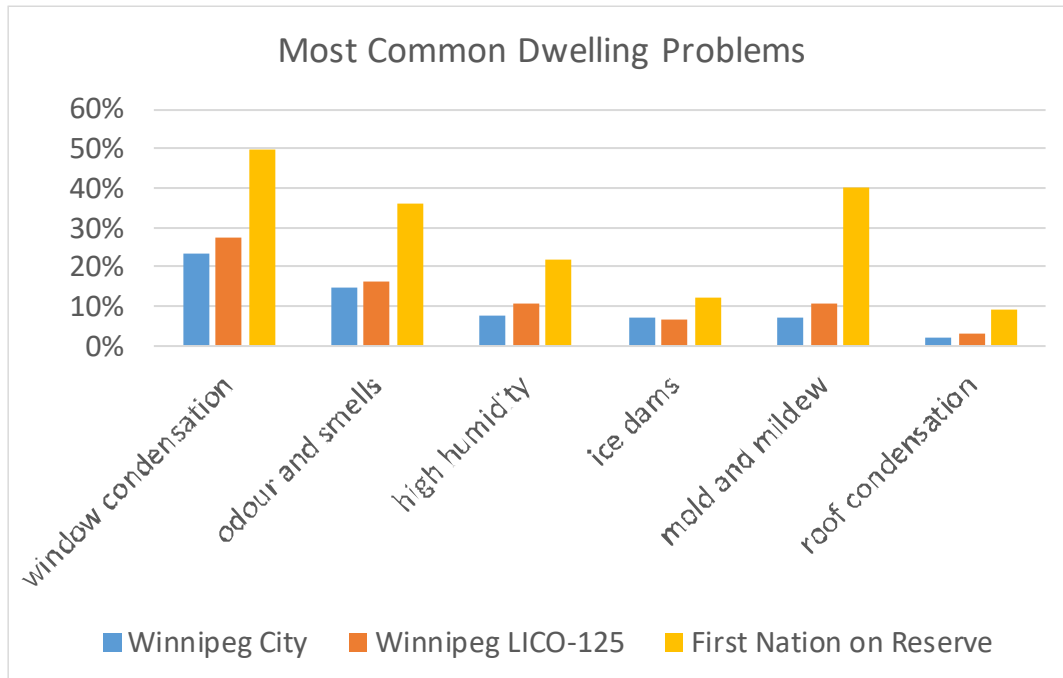


Figure 2

Two-thirds of FNOR dwellings have been built since 1990, compared to just 18.9% for Winnipeg City and 21.5% for Winnipeg LICO-125.⁹

⁸ Ibid., page 30.

⁹ Ibid., page 18.

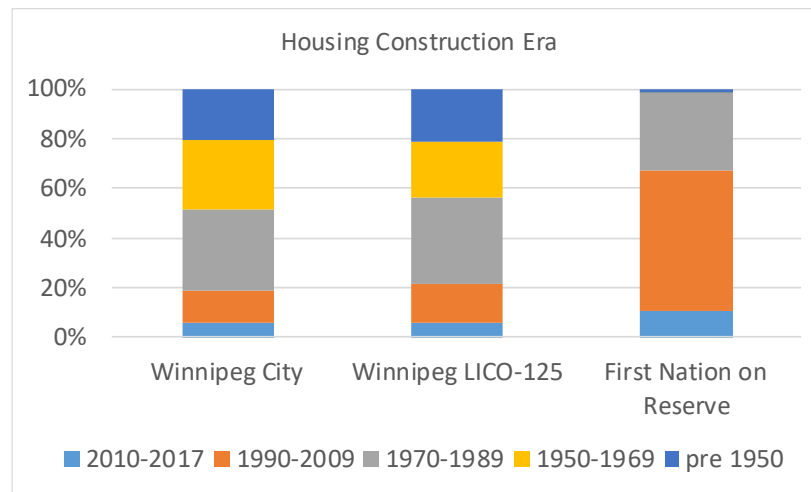


Figure 3

It is worth noting that, while the REUS table is designated “Building Code Construction Era”, the document makes clear that the data simply describes the year of construction, and does not explicitly reference the building codes in effect, or the extent of compliance with them.

Building Code Era - This refers to the periods when significant dwelling construction codes were introduced. Available tax assessment data was used to verify responses and to fill in any missing responses pertaining to year built.¹⁰

2.2. Heating systems

96.2% of FNOR residences are heated with electricity, compared to 15.6% of Winnipeg City residences and 49.1% of Winnipeg City LICO-125 residences.¹¹

Average annual energy consumption is considerably higher in FNOR residences, both in absolute terms and per unit floor space, as shown in Figure 3.¹² In both cases, FNOR values are

¹⁰ Ibid., page 11.

¹¹ Ibid., page 34.

¹² Ibid., pages 35 and 36.

roughly three times the average Winnipeg City values, and 35% -55% higher than the Winnipeg City LICO-125 values.

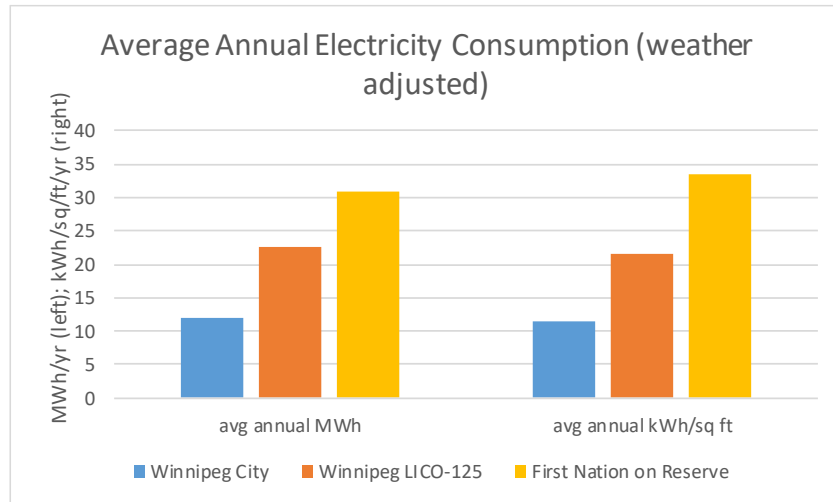


Figure 4

The average annual consumption data presented on the left side of Figure 3 includes all housing types. Thus, the Winnipeg City and Winnipeg LICO-125 values include multi-attached and apartment-suite dwelling types as well as single detached homes, which represent 94.3% of FNOR dwellings.¹³

If we compare single detached homes only, the values are comparable to those presented in the last GRA, as seen in Table 1:

¹³ Ibid., page 15. Some of the comparisons described below rely on the simplifying assumption that all FNOR dwellings are single detached homes.

Average annual electricity consumption (kWh/yr) for single detached dwellings		
	2017 REUS	GRA 2017, MH-108
FNOR	30,982	31,981
Off Reserve	28,206 ¹⁴	28,267
Ratio	109.8%	113.1%

Table 1

Table 2, below, shows that on-reserve dwellings have on average just 78.2% of the square footage of off-reserve single detached dwellings. The middle column of Table 2 shows the average annual consumption per square foot, derived by dividing the average annual consumption (the second column of Table 1) by the average square footage (the second column of Table 2).

The REUS also provides values for average annual consumption per square foot,¹⁵ shown in the last column of Table 2. These values are considerably greater than those shown in the middle column. As the REUS does not specify how the values shown in the last column were established, it is not possible to explain the discrepancy at this time. However, it should be noted that, in both cases, the ratio between on- and off-reserve annual consumption, expressed per square foot of floor space, is very similar.

Average annual electricity consumption (kWh/yr) for single detached dwellings			
	Dwelling square footage (sq ft)¹⁶	Average annual kWh/sq ft¹⁷	Average annual kWh/sq ft¹⁸
FNOR	1,072	28.9	33.5
Single Detached Off Reserve	1,371	20.6	23.5
Ratio	78.2%	140.4%	142.6%

Table 2

¹⁴ Ibid. Derived from annual consumption data presented in the 2017 REUS for all single detached dwellings (page 35), and number of single detached homes and of on-reserve dwellings (page 15).

¹⁵ Ibid., page 36.

¹⁶ Ibid., page 15.

¹⁷ These values are derived from the data shown in the preceding tables.

¹⁸ These are the values shown in the 2017 REUS, page 36.

Thus, while the average consumption for single detached FNOR houses is only slightly higher than for similar houses off reserve, the floor space is substantially lower. More precisely, the FNOR dwellings use on average 9.8% more electricity for 21.8% less floor space, resulting in average consumption per square foot some 40% higher for FNOR households than for off-reserve households.

2.3. Household income

More than 50% of FNOR households have household incomes of \$25,000/year or less, compared to 37.4% for Winnipeg City LICO-125 households and just 9.1% for Winnipeg City households in general, as seen in Figure 4.¹⁹

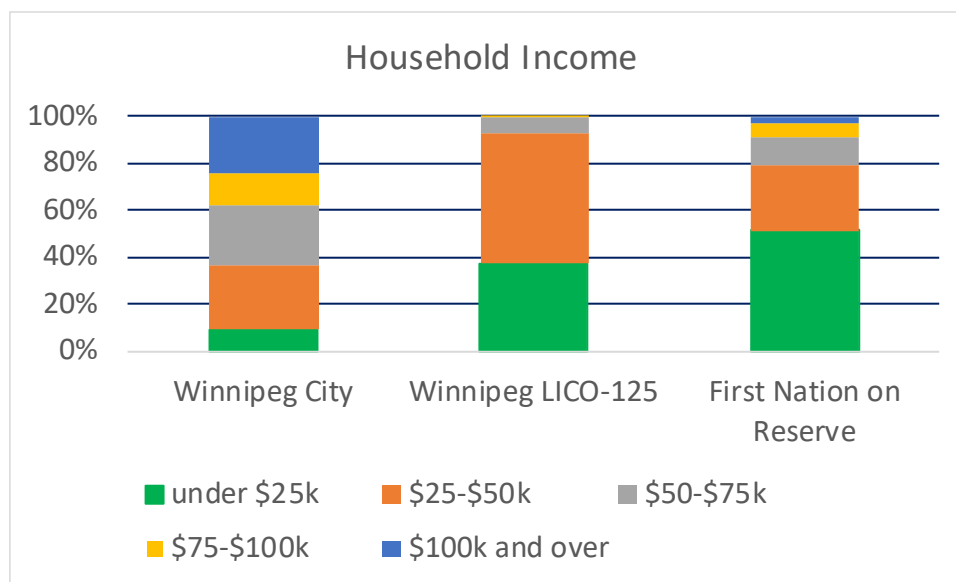


Figure 5

¹⁹ Ibid., page 179.

2.4. Energy consumption in relation to household income

In response to an IR from the PUB in Manitoba Hydro's 2017 GRA, MH provided chart showing the relationship between energy consumption and household income based on the 2014 REUS,²⁰ reproduced as Figure 6. The figure shows a Pearson Correlation Coefficient of 0.160061, indicating that electricity consumption shows a slight tendency to increase as annual household income increases.

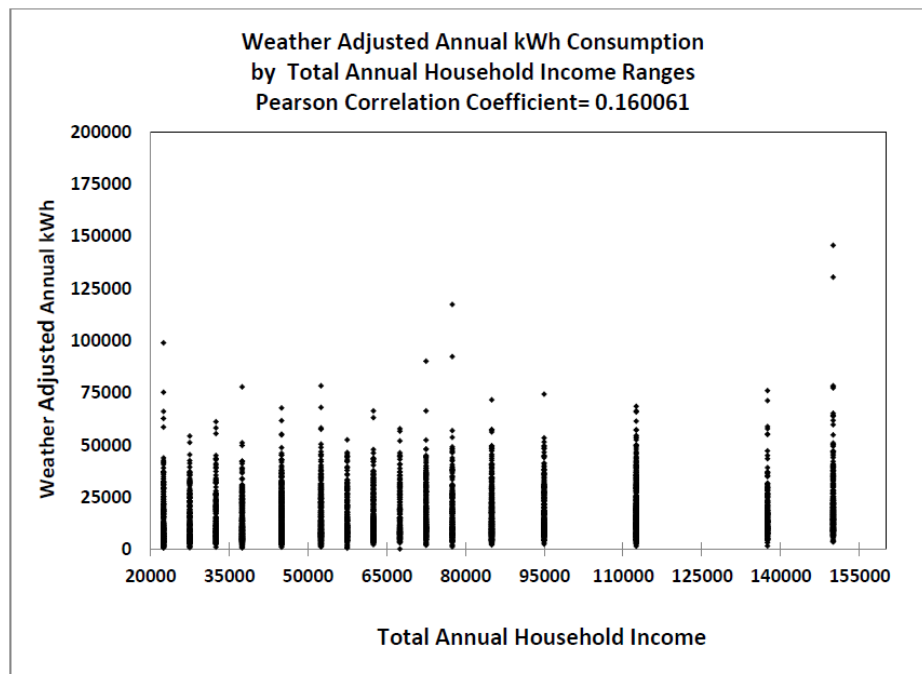


Figure 6

In the present file, MH has presented a similar chart for FNOR households based on 2017 data,²¹ reproduced in Figure 7. The figure shows a Pearson Correlation Coefficient of -0.02432, indicating that electricity consumption shows a slight tendency to *decrease* as annual household income increases.

²⁰ GRA 2017, PUB/MH I-125b.

²¹ AMC/MH I-14

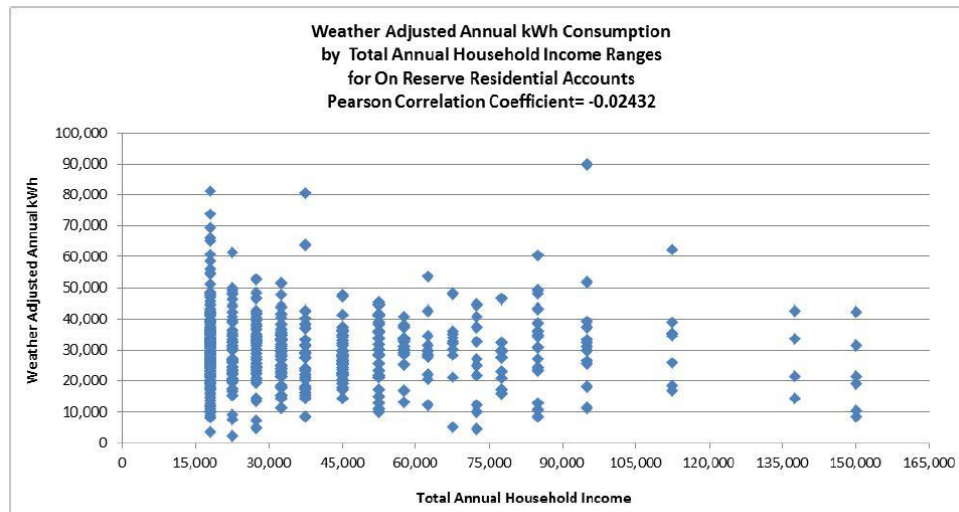


Figure 7

One noteworthy difference between the two charts is the cluster of points of high consumption (greater than 50,000 kWh/yr) found at low income levels (around \$15k to \$30k/yr) in Figure 7.

2.5. Energy burden

Manitoba Hydro described the results of the 2017 REUS with respect to FNOR energy burdens as follows:

- a. Based on the 2017 Residential Energy Use Survey
 - i. 72.2% of on-reserve First Nations customers spend 6% or more of their total annual household income on electricity bills; and,
 - ii. 48.9% of on-reserve First Nations customers spend 10% or more of their total annual household income on electricity bills.²²
- b. Based on the 2017 Residential Energy Use Survey, 81.9% of on-reserve First Nations customers are defined as LICO-125.
- c. Based on the 2017 Residential Energy Use Survey:

²² AMC/MH I-11-c-ii gives a value of 44.4%, which appears to be mistaken, according to AMC/MH I-7-Attachment 1, Page 184.

- i. 85.5% of on-reserve LICO-125 and 12.2% of on-reserve non-LICO-125 First Nations customers spend 6% or more of their total annual household income on electricity bills; and,
- ii. 59.7% of on-reserve LICO-125 and 0% of on-reserve non-LICO-125 First Nations customers spend 10% or more of their total annual household income on electricity bills.²³

The 2017 REUS demonstrates that the rate at which FNOR households have to reduce other expenditures in order to pay their Manitoba Hydro bills is substantially greater than for other households. The following charts demonstrate this in terms of reduced spending on food (Figure 5²⁴) and financial difficulties in general (Figure 6²⁵).

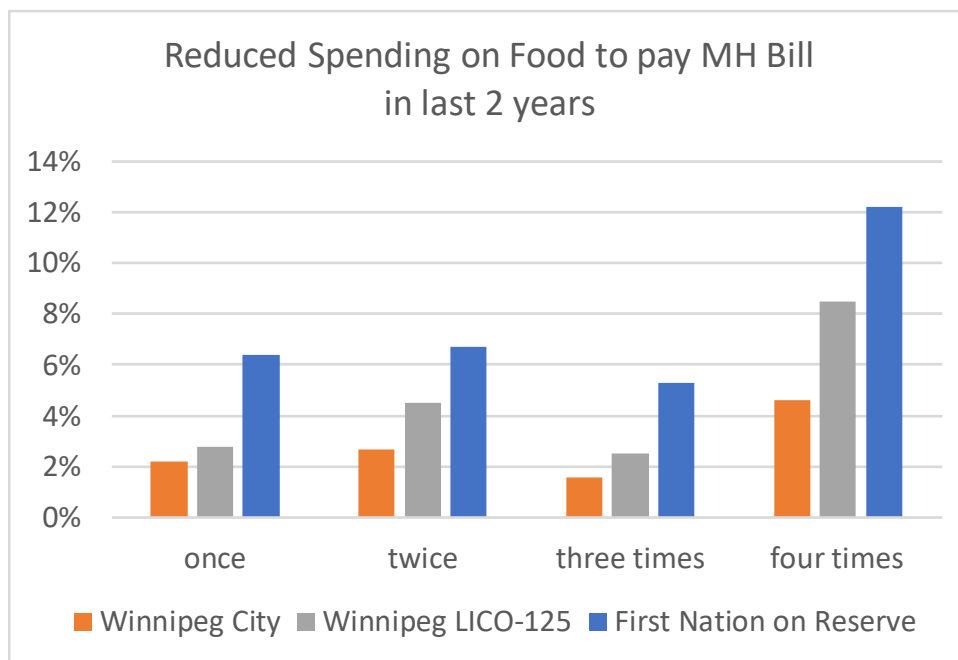


Figure 8

²³ AMC/MH I-10-a.

²⁴ Ibid., page 155.

²⁵ Ibid., page 167.

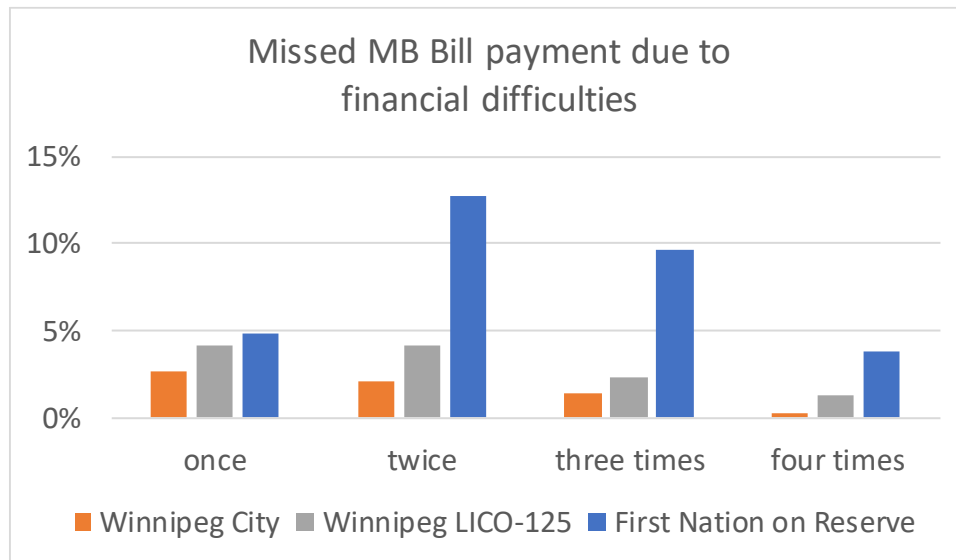


Figure 9

The average electricity bill in FNOR households is \$2,855, which is 59% higher than Winnipeg City LICO-125 households, and 82% higher than the average bill for all Winnipeg City households.²⁶

Almost half (48.9%) of FNOR households have weather-adjusted energy burdens of over 10%, as shown in Figure 7.²⁷ This is three times the percentage found in Winnipeg City LICO-125 households, and more than 30 times the percentage found among all Winnipeg City households.

In Figure 10, energy burdens of 6% or more are indicated by the hatched areas. As noted above, 72.2% of FNOR households spend of their total annual household income on electricity bills.²⁸ This is 67% more than the equivalent value for Winnipeg City LICO-125 households (43.2%), and almost 11 times more than the equivalent value for all Winnipeg City households (6.6%).

²⁶ Ibid., page 185.

²⁷ Ibid., page 184.

²⁸ AMC/MH I-10-a

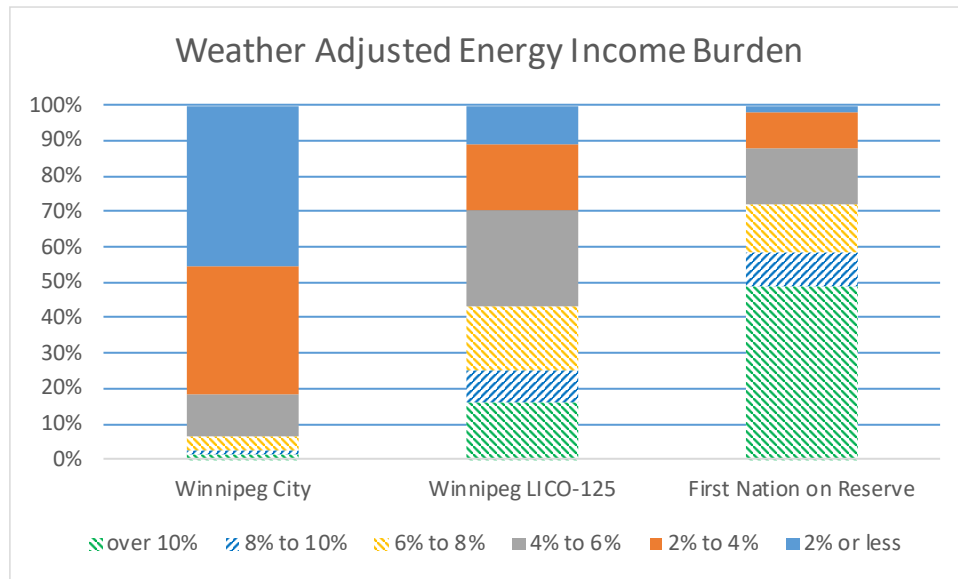


Figure 10

The average energy burden for FNOR households is 10.84%, compared to 6.44% for Winnipeg City LICO-125 households and 2.71 for all Winnipeg City households.²⁹

2.6. Conclusion

My report in the 2017 GRA, based on the 2014 REUS and the 2017 Indigenous Voices Omnibus Survey, suggested that energy poverty appeared to be substantially higher on First Nations reserves than among the general population.

The much stronger data found in the 2017 REUS confirm this observation.

²⁹ Ibid., page 185.

3. RATE IMPACTS

In its Order 59/18, the Board directed the creation of a First Nations On-Reserve Residential class and approved a 0% rate increase for this class for 2018/19.³⁰ In support of this decision, the majority opinion stated:

The creation of this new customer class is justified by the need to address energy poverty on-reserve, supported by evidence that 96% of First Nations people on-reserve live in poverty and that reserves in Manitoba have the highest rates of child poverty in Canada. In addition, the poor housing stock on reserves in Manitoba and the fact that the vast majority of on-reserve First Nations residential customers (61 out of 63 First Nations communities) have no access to the more economical option of natural gas for heating exacerbate the issue of energy poverty.

In response to an IR from the PUB regarding rate rebalancing, MH made the assumption that, after rate rebalancing, the FNOR rate would become equal to the residential rate, with a final RCC of 98.3%.³¹ If this rebalancing were effected in a single year, this would result in a 1.85% increase in the residential rate and a 5.61% FNOR increase.

In Order 59/18 the Board gave no indication as to how it intended the rates for this new customer class to evolve over time, but it seems unlikely that it simply intended the new rate to immediately return to parity with the residential rate.

In AMC/MHI-5, Manitoba Hydro was asked to explore other scenarios. Fig. 1 of AMC/MH I-5a is based on the assumption that the current 3.4% differential FNOR/residential remains in place over time. The result, again assuming a single-year rebalancing, would be to increase residential rates by 2.00%, and the FNOR rate by 2.12%.

If, on the other hand, FNOR remains frozen (0% increase), the residential rate would have to increase by 2.1% (Figure 2).

³⁰ Order 59/18, page 17

³¹ PUB/MH 61a, Figure 2, page 3.

Read together, these responses demonstrate that the difference, for residential customers, between a freeze of the FNOR rate and maintaining the current differential, would be an additional 0.1% increase.

This result is not surprising, given that the FNOR rate class accounts for just 0.08% of total domestic revenue.³²

³² AMC/MH I-2b