GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

a) Please provide Hydro's current estimates of marginal T&D costs.

ANSWER:

The Public Utilities Board of Manitoba intends to review of Manitoba Hydro's Cost of Service Study methodology in a separate proceeding from the current General Rate Application hearing. Manitoba Hydro anticipates that marginal cost will be a matter canvassed during the upcoming Cost of Service Review and as such believes that it would be more efficient to address this matter at that time.

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

b) Please provide the Company's most recent marginal T&D cost study, including all workpapers and electronic spreadsheets (with formulas intact).

ANSWER:

Please see the Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

c) Please provide the source of Hydro's current estimates of marginal T&D costs, including studies, workpapers, and Excel spreadsheets (with formulas intact), if different from the response to (b).

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

d) Please provide the Company's distribution planning guidelines.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

e) Please provide the number of line transformers in service on the Hydro system.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

f) If available, please provide the number of line transformers in service on the Hydro system by capacity and type (e.g., overhead, pad mount, submersible).

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

g) Please provide the load diversity assumptions used by Hydro in designing its distribution additions.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

h) For each distribution substation, please provide any available data on the mix of load on that substation, by class.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

i) Please provide the most recent study of load diversity on Hydro's:

- **i) Subtransmission lines**
- **ii) Substations**
- **iii) Primary distribution lines**
- **iv) Secondary lines**
- **v) Line transformers**

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-1

Subject: Transmission and Distribution Marginal Cost

j) Please estimate the percentage of transmission, subtransmission, and distribution plant that is driven by the customer's individual maximum demand (that is, the billing units for demand charges).

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-2

Subject: Generation Marginal Cost

a) Please provide Hydro's current estimates of marginal generation plant and O&M costs.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-2

Subject: Generation Marginal Cost

b) Please provide the Company's most recent marginal generation plant and O&M cost study, including all workpapers and electronic spreadsheets (with formulas intact).

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-2

Subject: Generation Marginal Cost

c) Please specify the minimum reserve margin requirements that Hydro uses for capacity planning purposes.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-2

Subject: Generation Marginal Cost

d) Please provide the projected annual revenue requirements of the Wuskwatim Keeyask and the Conawapa projects and the assumptions and calculations upon which they are based.

ANSWER:

Please see Manitoba Hydro's response to PUB/MH I-25(c).

GAC/MH I-2

Subject: Generation Marginal Cost

e) Please provide MH's cost-benefit analysis of

i) the Wuskwatim project,
ii) the Keeyask project,
iii) the Conawapa project,
iv) changing the in-service date of the Wuskatim project,
v) changing the in-service date of the Keeyask project, and
vi) changing the in-service date of the Conawapa project.

ANSWER:

i) Manitoba Hydro's cost benefit analysis of the Wuskwatim project was contained within the Submission to the Manitoba Clean Environment Commission: Need for and Alternatives to the Wuskwatim Project.

ii) A review of matters related to the development of the Keeyask Generating Station and alternatives thereto are expected to take place in the context of a Needs For and Alternatives To (NFAT) hearing. This NFAT process is expected to commence in 2013. As such Manitoba Hydro declines to file a cost-benefit analysis of the Keeyask project in this proceeding.

iii) The review of matters related to the development of the Conawapa Generating Station and alternatives thereto are expected to take place in the context of a NFAT hearing. This NFAT process is expected to commence in 2013. As such Manitoba Hydro declines to file cost-benefit analysis of the Conawapa project in this proceeding.

iv) The Wuskwatim project is in the process of being commissioned. There is no ability to advance the in-service date, and no reason to defer it. Hence there are no benefits to be obtained by changing the in-service date.

v) A review of matters related to the development of the Keeyask Generating Station and alternatives thereto are expected to take place in the context of a NFAT hearing. The NFAT process is expected to commence in 2013. As such Manitoba Hydro declines to file information related to changing the in-service date of the Keeyask project in this proceeding.

vi) A review of matters related to the development of the Conawapa Generating Station and alternatives thereto are expected to take place in the context of a NFAT hearing. The NFAT process is expected to commence in 2013. As such Manitoba Hydro declines to file information related to changing the in-service date of the Conawapa project in this proceeding.

GAC/MH I-2

Subject: Generation Marginal Cost

f) Please provide in an Excel spreadsheet the output of each existing generation plant with and without exports for the next ten years.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-2

Subject: Generation Marginal Cost

g) Please provide, in an Excel spreadsheet, the costs of operation of each existing generation facility, including

i) Fuel,
ii) Fixed and variable O&M,
iii) Capital additions, and
iv) Environmental costs.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-3

Subject: **Rate Design**
Reference: **Bill Comparisons, Appendix 10.3**

a) Please provide Excel versions (with formulas intact) of the spreadsheets used to derive the bill comparisons in Appendix 10.3.

ANSWER:

Manitoba Hydro has been reviewing its ability to file electronic spreadsheets and has done so in some instances in this General Rate Application. Manitoba Hydro has not resolved concerns outlined below so as to be able to file electronic spreadsheets in all cases.

First, certain models used by the Corporation are large and complex. Manitoba Hydro expects that an independent analyst, untrained with Manitoba Hydro's models, would need to invest a significant amount of time and effort to be capable of operating the model correctly. Allowing other parties to work in and modify spreadsheets and pose questions in Information Requests and on cross-examination based on the modified schedules, will also require Manitoba Hydro to invest a significant amount of time analyzing the changes made to the spreadsheets and to understanding their potential impacts. This approach is inefficient, would require additional time to be provided within the regulatory process and would make the regulatory process more cumbersome.

Second, certain spreadsheets contain significant metadata, which includes working notes and references made by the staff responsible for the files which cannot be disclosed for confidentially or other reasons. In these situations, in order to remove the metadata, the file must be converted to an Adobe Acrobat portable document format (pdf) file. This is an electronic file format that is an open standard which is readable by many different operating systems, does not require specific software to read and allows all parties to access filed information.

Third, Manitoba Hydro notes that some of the Corporation's models may be subject to intellectual property rights reserved by third parties and are not available to be shared in the regulatory process. In addition, some spreadsheets may contain competitive or commercially sensitive information which is not appropriate to be disclosed.

In these situations, it is preferable for Intervenors to propose, through the interrogatory process, that Manitoba Hydro run specific scenarios using its models, changing the assumptions as requested, and providing updated results for all parties to examine. Manitoba Hydro is of the view that this is the most appropriate and efficient approach to test new scenarios.

GAC/MH I-3

Subject: **Rate Design**
Reference: **Bill Comparisons, Appendix 10.4**

b) For each domestic rate class, please provide a comparison table of per-unit demand, energy, customer and other charges under the existing and proposed rates.

ANSWER:

Provided below is a comparison of the April 1, 2012 rates and the interim rates approved by the PUB effective September 1, 2012 as per Order 117/12.

Residential

	April 1, 2012 $ / Month			September 1, 2012 $ / Month			Percent Change		
kWh	BC	Energy Charge	Total	BC	Energy Charge	Total	BC	Energy Charge	Total
	$6.85	0.0677		$6.85	0.0694		0.0%	2.5%	
250	$6.85	$16.93	$23.78	$6.85	$17.35	$24.20	0.0%	2.5%	1.8%
750	$6.85	$50.78	$57.63	$6.85	$52.05	$58.90	0.0%	2.5%	2.2%
1,000	$6.85	$67.70	$74.55	$6.85	$69.40	$76.25	0.0%	2.5%	2.3%
2,000	$6.85	$135.40	$142.25	$6.85	$138.80	$145.65	0.0%	2.5%	2.4%
5,000	$6.85	$338.50	$345.35	$6.85	$347.00	$353.85	0.0%	2.5%	2.5%

Residential - Seasonal

	April 1, 2012 $ / Summer			September 1, 2012 $ / Summer			Percent Change		
kWh	BC	Energy Charge	Total	BC	Energy Charge	Total	BC	Energy Charge	Total
	$82.20	0.0677		$82.20	0.0694		0.0%	2.5%	
250	$82.20	$16.93	$99.13	$82.20	$17.35	$99.55	0.0%	2.5%	0.4%
750	$82.20	$50.78	$132.98	$82.20	$52.05	$134.25	0.0%	2.5%	1.0%
1,000	$82.20	$67.70	$149.90	$82.20	$69.40	$151.60	0.0%	2.5%	1.1%
2,000	$82.20	$135.40	$217.60	$82.20	$138.80	$221.00	0.0%	2.5%	1.6%
5,000	$82.20	$338.50	$420.70	$82.20	$347.00	$429.20	0.0%	2.5%	2.0%

Residential - Diesel

	April 1, 2012 $ / Month			September 1, 2012 $ / Month			Percent Change		
kWh	BC	Energy Charge	Total	BC	Energy Charge	Total	BC	Energy Charge	Total
	$6.85	**0.0677**		**$6.85**	**0.0694**		**0.0%**	**2.5%**	
250	$6.85	$16.93	$23.78	$6.85	$17.35	$24.20	0.0%	2.5%	1.8%
750	$6.85	$50.78	$57.63	$6.85	$52.05	$58.90	0.0%	2.5%	2.2%
1,000	$6.85	$67.70	$74.55	$6.85	$69.40	$76.25	0.0%	2.5%	2.3%
2,000	$6.85	$135.40	$142.25	$6.85	$138.80	$145.65	0.0%	2.5%	2.4%
5,000	$6.85	$338.50	$345.35	$6.85	$347.00	$353.85	0.0%	2.5%	2.5%

General Service Small
< 50 kV.A

		April 1, 2012 $ / Month			September 1, 2012 $ / Month			Percent Change		
kW.h	1st block	BC	Energy Charge	Total	BC	Energy Charge	Total	BC	Energy Charge	Total
	11,000	**$18.55**	**0.0710**		**$18.55**	**0.0729**		**0.0%**	**2.7%**	
750	750	$18.55	$53.25	$71.80	$18.55	$54.68	$73.23	0.0%	2.7%	2.0%
2,000	2,000	$18.55	$142.00	$160.55	$18.55	$145.80	$164.35	0.0%	2.7%	2.4%
5,000	5,000	$18.55	$355.00	$373.55	$18.55	$364.50	$383.05	0.0%	2.7%	2.5%
10,000	10,000	$18.55	$710.00	$728.55	$18.55	$729.00	$747.55	0.0%	2.7%	2.6%

General Service Small
51 kV.A

Note: First 50 kV.A @ No Charge

kW.h	1st block	2nd Block	Balance	Demand
	11,000	**8,500**		**51 -50 = 1**
9,308	9,308	0	0	1
18,615	11,000	7,615	0	1
27,923	11,000	8,500	8,423	1
37,230	11,000	8,500	17,730	1

April 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$26.15	**0.0710**	**0.0494**	**0.0326**	**$8.34**	
$26.15	$660.87	$0.00	$0.00	$8.34	$695.36
$26.15	$781.00	$376.18	$0.00	$8.34	$1,191.67
$26.15	$781.00	$419.90	$274.59	$8.34	$1,509.98
$26.15	$781.00	$419.90	$578.00	$8.34	$1,813.39

September1,2012					
$/Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$26.15	**0.0729**	**0.0506**	**0.0334**	**$8.55**	
$26.15	$678.55	$0.00	$0.00	$8.55	$713.25
$26.15	$801.90	$385.32	$0.00	$8.55	$1,221.92
$26.15	$801.90	$430.10	$281.33	$8.55	$1,548.03
$26.15	$801.90	$430.10	$592.18	$8.55	$1,858.88

Percent Change					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
0.0%	**2.7%**	**2.4%**	**2.5%**	**2.5%**	
0.0%	2.7%	0.0%	0.0%	2.5%	2.6%
0.0%	2.7%	2.4%	0.0%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%

General Service Small
100 kV.A

Note: First 50 kV.A @ No Charge

kW.h	1st block	2nd Block	Balance	Demand
	11,000	**8,500**		**100 -50 = 50**
18,250	11,000	7,250	0	50
36,500	11,000	8,500	17,000	50
54,750	11,000	8,500	35,250	50
73,000	11,000	8,500	53,500	50

April 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$26.15	**0.0710**	**0.0494**	**0.0326**	**$8.34**	
$26.15	$781.00	$358.15	$0.00	$417.00	$1,582.30
$26.15	$781.00	$419.90	$554.20	$417.00	$2,198.25
$26.15	$781.00	$419.90	$1,149.15	$417.00	$2,793.20
$26.15	$781.00	$419.90	$1,744.10	$417.00	$3,388.15

September 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$26.15	**0.0729**	**0.0506**	**0.0334**	**$8.55**	
$26.15	$801.90	$366.85	$0.00	$427.50	$1,622.40
$26.15	$801.90	$430.10	$567.80	$427.50	$2,253.45
$26.15	$801.90	$430.10	$1,177.35	$427.50	$2,863.00
$26.15	$801.90	$430.10	$1,786.90	$427.50	$3,472.55

Percent Change					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
0.0%	**2.7%**	**2.4%**	**2.5%**	**2.5%**	
0.0%	2.7%	2.4%	0.0%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%

General Service
Seasonal

kW.h	1st block	April 1, 2012 $ / Summer			September 1, 2012 $ / Summer			Percent Change		
		BC	Energy Charge	Total	BC	Energy Charge	Total	BC	Energy Charge	Total
	66,000	**$222.60**	**0.0710**		**$222.60**	**0.0729**		**0.0%**	**2.7%**	
750	750	$222.60	$53.25	$275.85	$222.60	$54.68	$277.28	0.0%	2.7%	0.5%
2,000	2,000	$222.60	$142.00	$364.60	$222.60	$145.80	$368.40	0.0%	2.7%	1.0%
5,000	5,000	$222.60	$355.00	$577.60	$222.60	$364.50	$587.10	0.0%	2.7%	1.6%
10,000	10,000	$222.60	$710.00	$932.60	$222.60	$729.00	$951.60	0.0%	2.7%	2.0%

General Service
Diesel

kW.h	1st block	Balance	April 1, 2012 $ / Month				September 1, 2012 $ / Month				Percent Change			
			BC	1st Block	Balance	Total	BC	1st Block	Balance	Total	BC	1st Block	Balance	Total
	2,000		**$18.55**	**0.07100**	**0.3500**		**$18.55**	**0.0729**	**0.3730**		**0.0%**	**2.7%**	**6.6%**	
750	750	0	$18.55	$53.25	$0.00	$71.80	$18.55	$54.68	$0.00	$73.23	0.0%	2.7%	0.0%	2.0%
2,000	2,000	0	$18.55	$142.00	$0.00	$160.55	$18.55	$145.80	$0.00	$164.35	0.0%	2.7%	0.0%	2.4%
5,000	2,000	3,000	$18.55	$142.00	$1,050.00	$1,210.55	$18.55	$145.80	$1,119.00	$1,283.35	0.0%	2.7%	6.6%	6.0%
10,000	2,000	8,000	$18.55	$142.00	$2,800.00	$2,960.55	$18.55	$145.80	$2,984.00	$3,148.35	0.0%	2.7%	6.6%	6.3%

General Service
Government and First Nation Education

	April 1, 2012 $ / Month			September 1, 2012 $ / Month			Percent Change %		
kWh	**BC**	**Energy Charge**	**Total**	**BC**	**Energy Charge**	**Total**	**BC**	**Energy Charge**	**Total**
	$18.55	**$2.13**		**$18.55**	**$2.27**		**0.0%**	**6.6%**	
750	$18.55	$1,598	$1,616	$18.55	$1,703	$1,721	0.0%	6.6%	6.5%
2,000	$18.55	$4,260	$4,279	$18.55	$4,540	$4,559	0.0%	6.6%	6.5%
5,000	$18.55	$10,650	$10,669	$18.55	$11,350	$11,369	0.0%	6.6%	6.6%
10,000	$18.55	$21,300	$21,319	$18.55	$22,700	$22,719	0.0%	6.6%	6.6%

General Service Medium
500 kV.A

Note: First 50 kV.A @ No Charge

kW.h	1st block	2nd Block	Balance	Demand	
	11,000	**8,500**		**500 -50 = 450**	
91,250	11,000	8,500	71,750	450	
182,500	11,000	8,500	163,000	450	
273,750	11,000	8,500	254,250	450	
365,000	11,000	8,500	345,500	450	
April 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$27.60	**0.0710**	**0.0494**	**0.0326**	**$8.34**	
$27.60	$781.00	$419.90	$2,339.05	$3,753.00	$7,320.55
$27.60	$781.00	$419.90	$5,313.80	$3,753.00	$10,295.30
$27.60	$781.00	$419.90	$8,288.55	$3,753.00	$13,270.05
$27.60	$781.00	$419.90	$11,263.30	$3,753.00	$16,244.80
September 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$27.60	**0.0729**	**0.0506**	**0.0334**	**$8.55**	
$27.60	$801.90	$430.10	$2,396.45	$3,847.50	$7,503.55
$27.60	$801.90	$430.10	$5,444.20	$3,847.50	$10,551.30
$27.60	$801.90	$430.10	$8,491.95	$3,847.50	$13,599.05
$27.60	$801.90	$430.10	$11,539.70	$3,847.50	$16,646.80
Percent Change					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
0.0%	**2.7%**	**2.4%**	**2.5%**	**2.5%**	
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%

General Service Medium
1,000 kV.A

Note: First 50 kV.A @ No Charge

kW.h	1st block	2nd Block	Balance	Demand
	11,000	**8,500**		**1,000 -50 = 950**
182,500	11,000	8,500	163,000	950
365,000	11,000	8,500	345,500	950
547,500	11,000	8,500	528,000	950
730,000	11,000	8,500	710,500	950

April 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$27.60	**0.0710**	**0.0494**	**0.0326**	**$8.34**	
$27.60	$781.00	$419.90	$5,313.80	$7,923.00	$14,465.30
$27.60	$781.00	$419.90	$11,263.30	$7,923.00	$20,414.80
$27.60	$781.00	$419.90	$17,212.80	$7,923.00	$26,364.30
$27.60	$781.00	$419.90	$23,162.30	$7,923.00	$32,313.80
September 1, 2012					
$ / Month					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
$27.60	**0.0729**	**0.0506**	**0.0334**	**8.55**	
$27.60	$801.90	$430.10	$5,444.20	$8,122.50	$14,826.30
$27.60	$801.90	$430.10	$11,539.70	$8,122.50	$20,921.80
$27.60	$801.90	$430.10	$17,635.20	$8,122.50	$27,017.30
$27.60	$801.90	$430.10	$23,730.70	$8,122.50	$33,112.80
Percent Change					
BC	**1st Block**	**2nd Block**	**Balance**	**Demand**	**Total**
0.0%	**2.7%**	**2.4%**	**2.5%**	**2.5%**	
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%
0.0%	2.7%	2.4%	2.5%	2.5%	2.5%

General Service Large - 750 V to 30 kV
5 000 kV.A

		April 1, 2012				September 1, 2012				Percent Change			
		$ / Month				$ / Month							
kW.h	Demand	BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
		N/A	0.0307	$7.08		N/A	0.0314	$7.26		N/A	2.3%	2.5%	
912,500	5,000	N/A	$28,014	$35,400	$63,414	N/A	$28,653	$36,300	$64,953	N/A	2.3%	2.5%	2.4%
1,825,000	5,000	N/A	$56,028	$35,400	$91,428	N/A	$57,305	$36,300	$93,605	N/A	2.3%	2.5%	2.4%
2,737,500	5,000	N/A	$84,041	$35,400	$119,441	N/A	$85,958	$36,300	$122,258	N/A	2.3%	2.5%	2.4%
3,650,000	5,000	N/A	$112,055	$35,400	$147,455	N/A	$114,610	$36,300	$150,910	N/A	2.3%	2.5%	2.3%

General Service Large - 30 kV to 100 kV
10 000 kV.A

		April 1, 2012				September 1, 2012				Percent Change			
		$ / Month				$ / Month							
kW.h	Demand	BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
		N/A	0.0285	$6.06		N/A	0.0292	$6.21		N/A	2.5%	2.5%	
1,825,000	10,000	N/A	$52,013	$60,600	$112,613	N/A	$53,290	$62,100	$115,390	N/A	2.5%	2.5%	2.5%
3,650,000	10,000	N/A	$104,025	$60,600	$164,625	N/A	$106,580	$62,100	$168,680	N/A	2.5%	2.5%	2.5%
5,475,000	10,000	N/A	$156,038	$60,600	$216,638	N/A	$159,870	$62,100	$221,970	N/A	2.5%	2.5%	2.5%
7,300,000	10,000	N/A	$208,050	$60,600	$268,650	N/A	$213,160	$62,100	$275,260	N/A	2.5%	2.5%	2.5%

General Service Large - Over 100 kV
50 000 kV.A

kW.h	Demand	April 1, 2012 $ / Month				September 1, 2012 $ / Month				Percent Change			
		BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
		N/A	**0.0276**	**$5.40**		**N/A**	**0.0283**	**$5.53**		**N/A**	**2.5%**	**2.4%**	
9,125,000	50,000	N/A	$251,850	$270,000	$521,850	N/A	$258,238	$276,500	$534,738	N/A	2.5%	2.4%	2.5%
18,250,000	50,000	N/A	$503,700	$270,000	$773,700	N/A	$516,475	$276,500	$792,975	N/A	2.5%	2.4%	2.5%
27,375,000	50,000	N/A	$755,550	$270,000	$1,025,550	N/A	$774,713	$276,500	$1,051,213	N/A	2.5%	2.4%	2.5%
36,500,000	50,000	N/A	$1,007,400	$270,000	$1,277,400	N/A	$1,032,950	$276,500	$1,309,450	N/A	2.5%	2.4%	2.5%

Limited Use Billing Demand - General Service Small
100 kV.A

Note: First 50 kV.A @ No Charge

kW.h	Demand	April 1, 2012 $ / Month				September 1, 2012 $ / Month				Percent Change			
		BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
	100 – 50 = 50	**$26.15**	**0.0807**	**$2.09**		**$26.15**	**0.0827**	**$2.14**		**0.0%**	**2.5%**	**2.4%**	
3,650	50	$26.15	$294.56	$104.50	$425.21	$26.15	$301.86	$107.00	$435.01	0.0%	2.5%	2.4%	2.3%
7,300	50	$26.15	$589.11	$104.50	$719.76	$26.15	$603.71	$107.00	$736.86	0.0%	2.5%	2.4%	2.4%
10,950	50	$26.15	$883.67	$104.50	$1,014.32	$26.15	$905.57	$107.00	$1,038.72	0.0%	2.5%	2.4%	2.4%
14,600	50	$26.15	$1,178.22	$104.50	$1,308.87	$26.15	$1,207.42	$107.00	$1,340.57	0.0%	2.5%	2.4%	2.4%

Limited Use Billing Demand - General Service Medium
500 kV.A

Note: First 50 kV.A @ No Charge

		April 1, 2012				September 1, 2012				Percent Change			
		$ / Month				$ / Month							
kW.h	Demand	BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
	500 – 50 = 450	**$27.60**	**0.0807**	**$2.09**		**$27.60**	**0.0827**	**$2.14**		**0.0%**	**2.5%**	**2.4%**	
18,250	450	$27.60	$1,472.78	$940.50	$2,440.88	$27.60	$1,509.28	$963.00	$2,499.88	0.0%	2.5%	2.4%	2.4%
36,500	450	$27.60	$2,945.55	$940.50	$3,913.65	$27.60	$3,018.55	$963.00	$4,009.15	0.0%	2.5%	2.4%	2.4%
54,750	450	$27.60	$4,418.33	$940.50	$5,386.43	$27.60	$4,527.83	$963.00	$5,518.43	0.0%	2.5%	2.4%	2.5%
73,000	450	$27.60	$5,891.10	$940.50	$6,859.20	$27.60	$6,037.10	$963.00	$7,027.70	0.0%	2.5%	2.4%	2.5%

Limited Use Billing Demand - General Service Large - 750 V to 30 kV
5 000 kV.A

		April 1, 2012				September 1, 2012				Percent Change			
		$ / Month				$ / Month							
kW.h	Demand	BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
		N/A	**0.0715**	**$1.77**		**N/A**	**0.0732**	**$1.82**		**N/A**	**2.4%**	**2.8%**	
182,500	5,000	N/A	$13,049	$8,850	$21,899	N/A	$13,359	$9,100	$22,459	N/A	2.4%	2.8%	2.6%
365,000	5,000	N/A	$26,098	$8,850	$34,948	N/A	$26,718	$9,100	$35,818	N/A	2.4%	2.8%	2.5%
547,500	5,000	N/A	$39,146	$8,850	$47,996	N/A	$40,077	$9,100	$49,177	N/A	2.4%	2.8%	2.5%
730,000	5,000	N/A	$52,195	$8,850	$61,045	N/A	$53,436	$9,100	$62,536	N/A	2.4%	2.8%	2.4%

Limited Use Billing Demand - General Service Large - 30 kV to 100 kV
10 000 kV.A

		April 1, 2012				September 1, 2012				Percent Change			
		$ / Month				$ / Month							
kW.h	Demand	BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
		N/A	**0.0631**	**$1.56**		**N/A**	**0.0650**	**$1.56**		**N/A**	**3.0%**	**0.0%**	
365,000	10,000	N/A	$23,032	$15,600	$38,632	N/A	$23,725	$15,600	$39,325	N/A	3.0%	0.0%	1.8%
730,000	10,000	N/A	$46,063	$15,600	$61,663	N/A	$47,450	$15,600	$63,050	N/A	3.0%	0.0%	2.2%
1,095,000	10,000	N/A	$69,095	$15,600	$84,695	N/A	$71,175	$15,600	$86,775	N/A	3.0%	0.0%	2.5%
1,460,000	10,000	N/A	$92,126	$15,600	$107,726	N/A	$94,900	$15,600	$110,500	N/A	3.0%	0.0%	2.6%

Limited Use Billing Demand - General Service Large - Over 100 kV
50 000 kV.A

		April 1, 2012				September 1, 2012				Percent Change			
		$ / Month				$ / Month							
kW.h	Demand	BC	Energy	Demand	Total	BC	Energy	Demand	Total	BC	Energy	Demand	Total
		N/A	**0.0583**	**$1.41**		**N/A**	**0.0600**	**$1.41**		**N/A**	**2.9%**	**0.0%**	
1,825,000	50,000	N/A	$106,398	$70,500	$176,898	N/A	$109,500	$70,500	$180,000	N/A	2.9%	0.0%	1.8%
3,650,000	50,000	N/A	$212,795	$70,500	$283,295	N/A	$219,000	$70,500	$289,500	N/A	2.9%	0.0%	2.2%
5,475,000	50,000	N/A	$319,193	$70,500	$389,693	N/A	$328,500	$70,500	$399,000	N/A	2.9%	0.0%	2.4%
7,300,000	50,000	N/A	$425,590	$70,500	$496,090	N/A	$438,000	$70,500	$508,500	N/A	2.9%	0.0%	2.5%

GAC/MH I-3

Subject: **Rate Design**
Reference: **Bill Comparisons, Appendix 10.5**

c) For each non-demand-metered class or subclass, please provide bill comparison tables that show:

i) the % of total kW.h included in the block;
ii) the % of total bills included in the block;
iii) the $ and % change in bill.
iv) Include an electronic copy of this bill comparison table.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-3(a) and GAC/MH I-3(b).

GAC/MH I-3

Subject: **Rate Design**
Reference: **Bill Comparisons, Appendix 10.5**

d) For demand-metered rates, please provide bill comparisons by kW.h for a given kW rather than by load factor.

ANSWER:

Bill comparisons in Appendix 10.5 were based on the April 1, 2012 rates and the proposed September 1, 2012 rates filed in Manitoba Hydro's application on July 1, 2012. Provided below are the bill comparisons for demand-metered rates by kWh comparing the April 1, 2012 rates and PUB interim approved September 1, 2012 rates from Board Order 117/12 dated August 31, 2012.

General Service Small
51 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
9 308	$695.36	$713.25	$17.89	2.57%
18 615	$1,191.67	$1,221.92	$30.25	2.54%
27 923	$1,509.98	$1,548.03	$38.05	2.52%
37 230	$1,813.39	$1,858.88	$45.49	2.51%

General Service Small
100 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
18 250	$1,582.30	$1,622.40	$40.10	2.53%
36 500	$2,198.25	$2,253.45	$55.20	2.51%
54 750	$2,793.20	$2,863.00	$69.80	2.50%
73 000	$3,388.15	$3,472.55	$84.40	2.49%

General Service Medium
500 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
91 250	$7,321	$7,504	$183	2.50%
182 500	$10,295	$10,551	$256	2.49%
273 750	$13,270	$13,599	$329	2.48%
365 000	$16,245	$16,647	$402	2.47%

General Service Medium
1 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
182 500	$14,465	$14,826	$361	2.50%
365 000	$20,415	$20,922	$507	2.48%
547 500	$26,364	$27,017	$653	2.48%
730 000	$32,314	$33,113	$799	2.47%

General Service Large - 750 V to 30 kV
5 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
912 500	$63,414	$64,953	$1,539	2.43%
1 825 000	$91,428	$93,605	$2,177	2.38%
2 737 500	$119,441	$122,258	$2,817	2.36%
3 650 000	$147,455	$150,910	$3,455	2.34%

General Service Large - 30 kV to 100 kV
10 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
1 825 000	$112,613	$115,390	$2,777	2.47%
3 650 000	$164,625	$168,680	$4,055	2.46%
5 475 000	$216,638	$221,970	$5,332	2.46%
7 300 000	$268,650	$275,260	$6,610	2.46%

General Service Large - Over 100 kV
50 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
9 125 000	$521,850	$534,738	$12,888	2.47%
18 250 000	$773,700	$792,975	$19,275	2.49%
27 375 000	$1,025,550	$1,051,213	$25,663	2.50%
36 500 000	$1,277,400	$1,309,450	$32,050	2.51%

Limited Use Billing Demand - General Service Small
100 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
3 650	$425.21	$435.01	$9.80	2.30%
7 300	$719.76	$736.86	$17.10	2.38%
10 950	$1,014.32	$1,038.72	$24.40	2.41%
14 600	$1,308.87	$1,340.57	$31.70	2.42%

Limited Use Billing Demand - General Service Medium
500 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
18 250	$2,440.88	$2,499.88	$59.00	2.42%
36 500	$3,913.65	$4,009.15	$95.50	2.44%
54 750	$5,386.43	$5,518.43	$132.00	2.45%
73 000	$6,859.20	$7,027.70	$168.50	2.46%

Limited Use Billing Demand - General Service Large - 750 V to 30 kV
5 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
182 500	$21,899	$22,459	$560	2.56%
365 000	$34,948	$35,818	$870	2.49%
547 500	$47,996	$49,177	$1,181	2.46%
730 000	$61,045	$62,536	$1,491	2.44%

Limited Use Billing Demand - General Service Large - 30 kV to 100 kV
10 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
365 000	$38,632	$39,325	$693	1.79%
730 000	$61,663	$63,050	$1,387	2.25%
1095 000	$84,695	$86,775	$2,080	2.46%
1460 000	$107,726	$110,500	$2,774	2.58%

Limited Use Billing Demand - General Service Large - Over 100 kV 50 000 kVA

kWh	April 1, 2012 $ / Month	September 1, 2012 $ / Month	Difference in $ / Month	Percent Change
1 825 000	$176,898	$180,000	$3,102	1.75%
3 650 000	$283,295	$289,500	$6,205	2.19%
5 475 000	$389,693	$399,000	$9,307	2.39%
7 300 000	$496,090	$508,500	$12,410	2.50%

GAC/MH I-4

Subject: Bill Frequency

a) Please provide, in Excel, a bill frequency table for the residential class.

ANSWER:

Please see the tables below which provide bill frequency tables for Basic Residential, Seasonal Residential and Residential Diesel.

BILL FREQUENCY DATA FOR BASIC RESIDENTIAL

BLOCK END	BLOCK KW.H	BLOCK BILLS	CUMULATIVE KW.H	CUMULATIVE BILLS	CONSOL. FACTOR	% CONSOL FACTOR	USE / AVG. USE	0
0	-137,664	54.3	(137,664)	54	(137,664)	(0.000019714)	0.000000000	1
50	2,303,160	92,015	2,165,496	92,070	262,695,921	0.037618444	0.037967566	2
60	997,327	17,526.0	3,162,823	109,596	314,747,773	0.045072346	0.045561079	3
70	1,213,083	18,144.0	4,375,906	127,740	366,621,601	0.052500755	0.053154592	4
80	1,489,449	19,389.5	5,865,355	147,129	418,309,275	0.059902506	0.060748105	5
100	3,808,780	41,381	9,674,135	188,510	521,090,895	0.074620986	0.075935132	6
120	5,119,342	45,675	14,793,477	234,185	623,012,637	0.089216329	0.091122158	7
140	6,517,778	49,342	21,311,255	283,527	723,992,437	0.103676786	0.106309185	8
150	3,775,294	25,674.0	25,086,549	309,201	774,108,144	0.110853429	0.113902698	9
165	5,589,896	35,203	30,676,445	344,404	848,791,639	0.121548216	0.125292968	10
175	4,561,499	26,736	35,237,944	371,141	898,257,007	0.128631730	0.132886481	11
185	4,941,553	27,362	40,179,497	398,502	947,452,039	0.135676531	0.140479994	12
200	9,231,203	47,558	49,410,700	446,060	1,020,734,320	0.146170662	0.151870264	13
500	359,478,525	1,002,909	408,889,225	1,448,969	2,335,743,675	0.334481943	0.379675659	14
750	537,596,777	859,188	946,486,002	2,308,157	3,192,376,977	0.457153096	0.569513489	15
900	365,488,253	442,149	1,311,974,255	2,750,306	3,609,109,415	0.516829797	0.683416187	16
1200	710,923,419	680,956	2,022,897,674	3,431,261	4,268,597,714	0.611269495	0.911221582	17
1400	420,340,620	323,515	2,443,238,294	3,754,776	4,610,300,954	0.660201903	1.063091846	18
1600	372,389,488	248,381	2,815,627,782	4,003,157	4,894,861,862	0.700951446	1.214962110	19
1800	325,634,745	191,528	3,141,262,527	4,194,685	5,135,650,467	0.735432729	1.366832374	20
2000	285,164,761	150,047	3,426,427,288	4,344,732	5,342,320,288	0.765028153	1.518702637	21
2500	584,162,443	261,490.0	4,010,589,731	4,606,222	5,751,730,981	0.823656369	1.898378297	22
3000	476,633,547	173,904.7	4,487,223,278	4,780,126	6,054,878,678	0.867067566	2.278053956	23
3500	422,805,167	130,362.3	4,910,028,445	4,910,489	6,282,691,695	0.899690727	2.657729615	24
4000	380,686,979	101,682.4	5,290,715,424	5,012,171	6,452,743,824	0.924042443	3.037405275	25
5000	601,155,769	134,889.0	5,891,871,193	5,147,060	6,669,961,693	0.955148362	3.796756593	26
50000	1,091,297,032	155,618	6,983,168,225	5,302,678	6,983,168,225	1.000000000		

BILL FREQUENCY DATA FOR SEASONAL RESIDENTIAL

BLOCK END	BLOCK KW.H	BLOCK BILLS	CUMULATIVE KW.H	CUMULATIVE BILLS	CONSOL. FACTOR	% CONSOL FACTOR	USE / AVG. USE	0
0	0	0	0	0	0	0.000000000	0.000000000	1
10	16,011	603	16,011	603	266,195	0.003439733	0.003310734	2
20	32,094	341	48,105	944	541,655	0.006999186	0.006621467	3
30	44,294	289	92,399	1,232	824,069	0.010648498	0.009932201	4
40	74,976	351	167,375	1,584	1,128,883	0.014587260	0.013242935	5
50	92,496	339	259,871	1,922	1,444,831	0.018669893	0.016553669	6
60	131,219	392	391,090	2,314	1,789,516	0.023123862	0.019864402	7
70	143,138	363	534,228	2,677	2,140,336	0.027657107	0.023175136	8
80	206,637	452	740,865	3,129	2,540,257	0.032824827	0.026485870	9
90	272,691	530	1,013,556	3,659	2,990,136	0.038638097	0.029796604	10
100	280,834	488	1,294,390	4,148	3,441,760	0.044473916	0.033107337	11
110	332,001	522	1,626,391	4,669	3,931,100	0.050797095	0.036418071	12
120	354,608	511	1,980,999	5,180	4,433,907	0.057294294	0.039728805	13
130	373,824	496	2,354,823	5,676	4,947,647	0.063932766	0.043039539	14
140	433,599	532	2,788,422	6,208	5,506,270	0.071151210	0.046350272	15
150	470,027	538	3,258,449	6,746	6,089,699	0.078690194	0.049661006	16
155	218,764	238	3,477,213	6,984	6,365,933	0.082259643	0.051316373	17
160	237,684	250	3,714,897	7,235	6,656,753	0.086017582	0.052971740	18
165	253,593	259	3,968,490	7,494	6,959,511	0.089929777	0.054627107	19
170	291,020	289	4,259,510	7,782	7,292,123	0.094227740	0.056282474	20
175	243,967	235	4,503,477	8,017	7,584,212	0.098002071	0.057937841	21
180	289,556	271	4,793,033	8,288	7,913,081	0.102251668	0.059593207	22
185	256,484	234	5,049,517	8,521	8,213,036	0.106127636	0.061248574	23
190	315,497	279	5,365,014	8,801	8,560,947	0.110623297	0.062903941	24
195	290,933	251	5,655,947	9,052	8,887,039	0.114837003	0.064559308	25
200	291,939	246	5,947,886	9,297	9,212,706	0.119045231	0.066214675	26
250	3,095,914	2,289	9,043,800	11,586	12,552,600	0.162202849	0.082768344	27
300	3,331,314	2,022	12,375,114	13,608	15,978,984	0.206478079	0.099322012	28
350	3,257,103	1,669	15,632,217	15,278	19,252,442	0.248777221	0.115875681	29
400	3,093,268	1,373	18,725,485	16,651	22,313,565	0.288332602	0.132429350	30
450	2,831,180	1,112	21,556,665	17,763	25,092,900	0.324246760	0.148983019	31

500	2,599,999	914	24,156,664	18,677	27,628,664	0.357013529	0.165536687	32
550	2,214,748	702	26,371,412	19,380	29,804,292	0.385126674	0.182090356	33
600	2,042,410	592	28,413,822	19,972	31,803,402	0.410958879	0.198644025	34
650	2,008,698	537	30,422,520	20,509	33,745,775	0.436057937	0.215197693	35
700	1,759,322	435	32,181,842	20,943	35,456,512	0.458163828	0.231751362	36
750	1,698,978	391	33,880,820	21,334	37,096,220	0.479351894	0.248305031	37
800	1,343,363	289	35,224,183	21,623	38,422,983	0.496496130	0.264858700	38
850	1,430,804	289	36,654,987	21,912	39,807,977	0.514392818	0.281412368	39
900	1,257,932	239	37,912,919	22,151	41,036,009	0.530261267	0.297966037	40
950	1,163,589	210	39,076,508	22,361	42,173,888	0.544964772	0.314519706	41
1000	1,091,465	187	40,167,973	22,547	43,241,873	0.558765117	0.331073375	42
1500	8,589,134	1,173	48,757,107	23,720	51,608,757	0.666880760	0.496610062	43
2000	7,570,059	722	56,327,166	24,442	58,685,966	0.758331413	0.662146749	44
2500	6,393,904	476	62,721,070	24,917	64,480,820	0.833211663	0.827683436	45
3000	4,398,931	270	67,120,001	25,188	68,420,801	0.884123518	0.993220124	46
3500	3,638,709	188	70,758,710	25,376	71,617,960	0.925436736	1.158756811	47
4000	2,001,144	90	72,759,854	25,465	73,383,454	0.948250189	1.324293498	48
5000	2,758,959	104	75,518,813	25,569	75,779,813	0.979215587	1.655366873	49
6000	1,071,467	33	76,590,280	25,602	76,703,680	0.991153661	1.986440247	50
50000	798,003	19	77,388,283	25,621	77,388,283	1.000000000		

BILL FREQUENCY DATA FOR DIESEL RESIDENTIAL

BLOCK END	BLOCK KW.H	BLOCK BILLS	CUMULATIVE KW.H	CUMULATIVE BILLS	CONSOL. FACTOR	% CONSOL FACTOR	USE / AVG. USE	0
0	0	.0	0	0	0	0.000000000	0.000000000	1
50	1,773	63	1,773	63	328,258	0.042545503	0.042722680	2
80	2,198	32	3,971	95	523,787	0.067888007	0.068356288	3
100	2,424	26	6,395	121	653,535	0.084704639	0.085445360	4
130	4,307	37	10,702	158	847,174	0.109802180	0.111078968	5
150	4,058	28	14,760	186	975,720	0.126463021	0.128168040	6
175	5,829	36	20,589	222	1,135,409	0.147160304	0.149529380	7
200	10,040	53	30,629	275	1,294,109	0.167729403	0.170890720	8

225	5,336	24.8	35,965	300	1,451,800	0.188167726	0.192252060	9
250	13,364	56.0	49,329	356	1,608,479	0.208474884	0.213613400	10
275	9,796	37.0	59,125	393	1,764,015	0.228633897	0.234974740	11
300	13,159	45.6	72,284	439	1,918,484	0.248654616	0.256336080	12
350	28,852	87	101,136	526	2,224,481	0.288314872	0.299058760	13
400	35,953	95	137,089	621	2,525,889	0.327380348	0.341781440	14
450	42,294	99	179,383	719	2,822,323	0.365801144	0.384504119	15
500	65,575	137	244,958	856	3,113,058	0.403483293	0.427226799	16
550	71,861	136.4	316,819	993	3,396,709	0.440247285	0.469949479	17
600	95,491	165.2	412,310	1,158	3,673,070	0.476066421	0.512672159	18
650	112,693	179.5	525,003	1,337	3,940,818	0.510769226	0.555394839	19
700	107,882	159.2	632,885	1,497	4,200,015	0.544363736	0.598117519	20
750	148,280	203.6	781,165	1,700	4,450,390	0.576814828	0.640840199	21
800	170,835	219.8	952,000	1,920	4,690,000	0.607870668	0.683562879	22
850	195,700	235.7	1,147,700	2,156	4,918,980	0.637548754	0.726285559	23
900	206,873	235.2	1,354,573	2,391	5,136,013	0.665678391	0.769008239	24
950	201,596	217.0	1,556,169	2,608	5,341,539	0.692316605	0.811730919	25
1000	211,185	216.0	1,767,354	2,824	5,535,954	0.717514724	0.854453599	26
1200	1,020,762	927	2,788,116	3,750	6,198,636	0.803404905	1.025344319	27
1400	1,036,285	798	3,824,401	4,549	6,685,861	0.866554113	1.196235038	28
1600	1,000,304	668	4,824,705	5,217	7,025,665	0.910596093	1.367125758	29
1800	743,248	438	5,567,953	5,655	7,256,353	0.940495553	1.538016478	30
2000	604,696	318	6,172,649	5,972	7,413,049	0.960804914	1.708907198	31
2500	938,474	422.8	7,111,123	6,395	7,604,623	0.985634811	2.136133997	32
50000	604,334	197	7,715,457	6,593	7,715,457	1.000000000		

GAC/MH I-4

Subject: Bill Frequency

b) Please provide, in Excel, a bill frequency tables for the residential class, for the winter and summer periods separately.

ANSWER:

Manitoba Hydro is unable to provide bill frequency data by winter and summer periods.

GAC/MH I-4

Subject: Bill Frequency

c) Please provide, in Excel, a bill frequency table for low-income residential customers only.

ANSWER:

Manitoba Hydro is unable to produce bill frequency data for low-income residential customers only as the customer billing system does not maintain this information on a per-account basis. Any data pertaining to low income customers has been derived through survey data only.

GAC/MH I-4

Subject: Bill Frequency

d) Please provide, in Excel, a bill frequency data for low-income residential customers only, for the winter and summer periods separately.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-4(c).

GAC/MH I-4

Subject: Bill Frequency

e) Please provide sales by month for each class for each proposed rate year.

ANSWER:

Although Manitoba Hydro prepares annual sales for all forecast years, monthly sales are only prepared for the first two years. Since the current rate application is based on the 2011 System Load Forecast, monthly sales data was only prepared for 2011/12 and 2012/13, not 2013/14. Therefore the monthly data is only being provided for the test year 2012/13 which incorporates both the April 1, 2012 rates and the September 1, 2012 rates interim-approved rates. Annual data is provided for the 2013/14 test year on which the April 1, 2013 rates are based.

	RESIDENTIAL BASIC			RESIDENTIAL DIESEL			RESIDENTIAL SEASONAL			RESIDENTIAL FRWH		
	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)
April	635,966,349	452,912	46,179,316	676,955	557	49,515	35,251,642	21,206	3,845,878	1,778,307	4,192	99,697
May	476,569,392	453,232	35,259,917	670,591	557	48,772	0	21,220	0	1,767,944	4,174	99,269
June	409,379,656	453,632	30,657,121	607,191	558	41,373	0	21,235	0	1,756,338	4,157	98,865
July	415,220,735	454,090	31,057,261	575,452	558	37,668	0	21,249	0	1,756,545	4,139	98,437
August	422,719,402	454,581	31,570,953	517,143	559	30,863	0	21,264	0	1,745,767	4,122	98,033
September	396,693,555	455,156	30,482,456	575,372	559	38,530	0	21,278	0	1,731,466	4,104	99,998
October	448,999,496	455,866	34,149,173	567,019	559	37,533	46,079,658	21,293	3,435,976	1,716,543	4,087	99,584
November	612,201,368	456,638	45,589,843	743,139	560	58,564	0	21,308	0	1,721,518	4,069	99,146
December	742,618,019	457,221	54,732,225	778,777	560	62,820	0	21,322	0	1,708,460	4,052	98,731
January	980,927,644	457,652	71,438,050	776,311	561	62,526	0	21,337	0	1,686,905	4,034	98,293
February	887,477,768	458,018	64,887,088	713,865	561	55,069	0	21,351	0	1,683,589	4,017	97,879
March	786,944,303	458,372	57,839,557	753,003	562	59,742	0	21,366	0	1,672,811	3,999	97,440
2012/13	7,215,717,687	5,467,370	533,842,960	7,954,818	6,711	582,975	81,331,300	255,429	7,281,855	20,726,193	49,146	1,185,372
2013/14	7,325,560,344	5,536,236	565,031,761	8,098,556	6,768	618,697	83,541,950	257,532	7,738,124	19,689,625	46,692	1,177,411

	GS SMALL NON-DEMAND			GS SMALL DEMAND (incl LUBD)			GS MEDIUM (incl LUBD)		
	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)
April	140,390,991	51,636	10,923,398	167,383,801	12,123	10,420,977	256,606,279	1,926	14,387,563
May	115,160,928	51,655	9,187,318	142,731,307	12,155	9,218,075	236,583,331	1,928	13,655,359
June	109,454,903	51,675	8,794,687	142,992,499	12,186	9,230,820	243,996,451	1,930	13,926,444
July	118,753,611	51,694	9,434,531	150,587,155	12,218	9,601,396	258,482,248	1,933	14,456,163
August	117,680,683	51,713	9,360,702	149,140,554	12,249	9,530,810	253,889,468	1,935	14,288,214
September	108,349,462	51,732	8,927,296	141,304,798	12,281	9,376,535	242,782,211	1,937	14,227,405
October	111,974,658	51,752	9,182,716	144,017,175	12,312	9,512,183	235,085,543	1,939	13,938,950
November	132,246,493	51,771	10,611,007	167,644,993	12,344	10,693,827	256,087,801	1,941	14,726,072
December	149,478,365	51,790	11,825,111	181,488,161	12,375	11,386,134	264,980,422	1,943	15,059,349
January	188,689,003	51,809	14,587,772	226,453,345	12,407	13,634,876	323,023,804	1,946	17,234,698
February	170,416,716	51,829	13,300,363	202,001,768	12,438	12,412,034	288,055,945	1,948	15,924,173
March	163,052,529	51,848	12,781,505	193,422,620	12,470	11,982,985	282,811,402	1,950	15,727,618
2012/13	1,625,648,342	620,904	128,916,406	2,009,168,176	147,558	127,000,651	3,142,384,905	23,256	177,552,008
2013/14	1,632,178,221	623,652	134,563,726	2,069,186,835	152,064	136,517,560	3,206,729,028	23,820	189,538,310

	GS LARGE 750-30 KV (incl LUBD)			GS LARGE 30 - 100 KV			GS LARGE >100 KV (incl LUBD)		
	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)
April	136,612,330	284	6,451,879	88,427,256	40	3,601,381	405,811,033	16	15,148,079
May	129,147,615	285	6,058,272	88,835,408	40	3,546,383	399,185,912	16	14,828,608
June	146,280,222	286	6,961,325	88,419,618	40	3,502,551	396,921,350	16	14,684,783
July	157,218,477	287	7,537,818	90,515,403	40	3,622,367	392,864,238	16	14,654,268
August	136,682,597	288	6,455,255	88,487,230	40	3,628,185	390,137,548	16	14,512,945
September	140,386,438	289	6,808,675	85,936,458	40	3,653,899	404,264,325	16	15,343,510
October	137,118,886	290	6,632,347	90,292,038	40	3,747,654	418,493,468	16	15,923,889
November	144,601,802	291	7,036,038	91,047,162	40	3,832,615	418,838,495	16	15,843,019
December	151,348,555	291	7,399,626	91,502,007	41	3,811,395	421,858,694	16	15,978,427
January	148,987,412	292	7,272,415	89,822,217	41	3,661,092	443,698,707	16	16,629,463
February	164,276,565	293	8,096,529	83,390,769	41	3,423,139	402,736,767	16	15,414,034
March	151,600,103	294	7,413,536	89,827,425	41	3,706,419	434,521,462	16	16,274,062
2012/13	1,744,261,001	3,470	84,123,717	1,066,502,992	484	43,737,081	4,929,332,000	192	185,235,088
2013/14	1,832,951,000	3,651	93,256,328	1,218,773,234	501	53,192,507	5,085,332,000	180	199,793,602

	SEP (MEDIUM & LARGE)			DIESEL FULL COST			GS SEASONAL			GS FRWH		
	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)
April	2,412,213	26	83,890	493,799	178	490,596	946,000	852	254,693	606,260	407	43,334
May	1,843,446	26	63,362	487,740	178	484,576	0	853	0	596,207	406	43,228
June	942,199	26	33,143	398,565	178	395,979	0	853	0	587,782	404	43,015
July	652,928	26	23,443	375,376	178	372,941	0	853	0	598,968	402	42,802
August	426,849	26	15,863	334,781	178	332,609	0	853	0	600,455	401	42,695
September	699,972	26	25,021	402,806	178	400,368	0	854	0	590,260	399	43,565
October	1,373,949	26	47,620	398,730	178	396,317	3,784,000	854	279,740	585,020	397	43,346
November	2,680,744	26	93,056	523,268	178	520,101	0	854	0	580,418	396	43,237
December	3,539,313	26	122,363	457,391	179	454,623	0	855	0	584,242	394	43,019
January	3,648,657	26	126,096	627,370	179	623,573	0	855	0	591,392	392	42,800
February	4,033,517	26	139,233	494,736	179	491,742	0	856	0	577,091	391	42,691
March	3,346,213	26	115,772	513,518	179	510,410	0	856	0	581,905	389	42,473
2012/13	25,600,000	312	888,862	5,508,080	2,140	5,473,833	4,730,000	10,248	534,433	7,080,000	4,778	516,203
2013/14	0	0	0	5,556,489	2,160	5,883,387	4,750,000	859	558,171	6,730,000	4,548	513,956

	STREET LIGHTING			SENTINEL FLAT RATES			SENTINEL RENTALS		
	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)	KWH	BILLS	REVENUE($)
April	6,824,244	1,161	1,493,324	1,012,441	20,259	62,648	0	25,665	176,439
May	5,773,716	1,162	1,493,324	955,245	20,283	62,648	0	25,691	176,439
June	4,936,271	1,163	1,493,324	963,033	20,308	62,648	0	25,716	176,439
July	5,354,994	1,164	1,493,324	955,012	20,333	62,648	0	25,742	176,439
August	6,371,093	1,165	1,493,324	954,198	20,357	62,648	0	25,768	176,439
September	7,475,590	1,165	1,531,350	954,663	20,382	64,055	0	25,794	180,981
October	8,771,768	1,166	1,531,350	1,013,719	20,407	64,055	0	25,820	180,981
November	9,903,249	1,167	1,531,350	961,871	20,431	64,055	0	25,846	180,981
December	10,560,178	1,168	1,531,350	961,987	20,456	64,055	0	25,871	180,981
January	10,329,415	1,169	1,531,350	964,545	20,481	64,055	0	25,897	180,981
February	8,546,588	1,169	1,531,350	963,498	20,505	64,055	0	25,923	180,981
March	8,202,306	1,170	1,531,350	965,010	20,530	64,055	0	25,949	180,981
2012/13	93,049,412	13,989	18,186,070	11,625,222	244,732	761,627	0	309,682	2,149,062
2013/14	93,814,118	14,100	19,168,905	11,792,835	248,280	818,976	0	313,404	2,301,456

GAC/MH I-4

Subject: Bill Frequency

f) Please provide metered demand by month for each class for each proposed rate year.

ANSWER:

Please see Manitoba Hydro's response to CAC/MH I-81(a).

GAC/MH I-4

Subject: Bill Frequency

g) Please provide billing demand (including ratchet effects) by month for each class for each proposed rate year.

ANSWER:

Please see Manitoba Hydro's response to CAC/MH I-81(a).

GAC/MH I-5

Subject: Seasonal Pricing

a) Please indicate whether MH has considered proposing seasonally-differentiated rates for Residential and General Service non-demand rates

i) If not, explain why not.

ANSWER:

The following was provided in the last General Rate Application hearing in response to RCM/TREE/MH I-8(f):

Manitoba Hydro has done some preliminary review of seasonally-differentiated rates for the Residential rate class. One method looked at increasing the size of the first block rate in the winter months and reducing the first block size in the summer months. This method would have the advantage of mitigating impacts on winter bills for those customers who have no choice but to use electricity to heat their homes.

In terms of customer impacts of a seasonally differentiated rate, the winter bill advantage would be offset, at least in part, by higher summer bills. Further, because the larger winter block shelters a larger portion of residential energy from the second block price, the second block price may have to be higher in order to capture the same revenue as a rate design which is not seasonally differentiated.

From a billing administration perspective, implementing a seasonally-differentiated rate is more complex than the current rate structure. However compared to other potential TOU rate structures it is relatively easy to implement and for customers to understand. All residential services would be affected with two rate changes a year. Billing issues could be problematic for customers in the two rate change months as customers may notice the billing difference and would be more apt to contact the Contact Centre and/or their district office with enquiries. The major complaint would be unfairness of estimated bills and proration of bills.

GAC/MH I-5

Subject: Seasonal Pricing

b) Please indicate whether MH has considered proposing seasonally-differentiated rates for the General Service Small and Medium demand rates.

i) If not, explain why not.

ANSWER:

Manitoba Hydro has not formally considered seasonally-differentiated rates for the General Service Small and Medium demand rates. Customers in these classes cover a wide spectrum of diverse business types, all of which operate in different manners. Trying to design a rate that would recover costs while taking account of different customer impacts would be challenging, given this diversity. This may be an area worth exploring if and when Manitoba Hydro has gained some experience with TOU rates for the General Service Large customer classes > 30 kV.

GAC/MH I-5

Subject: Seasonal Pricing

c) Please provide all available analyses of the costs and benefits of implementation of seasonal pricing.

ANSWER:

Manitoba Hydro had not preformed a formal analysis of the cost and benefits (if any) of implementing seasonal pricing for Residential and Small / Medium General Service customers.

GAC/MH I-6

Subject: Marginal Cost Pricing

a) Please provide a table comparing the proposed Residential and General Service tail blocks with the Company's estimates of marginal cost.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-6

Subject: Marginal Cost Pricing

b) Document the derivation of the marginal cost estimates, including all workpapers and electronic spreadsheets.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-1(a).

GAC/MH I-7

Subject: **Proposed Rate Structure**
Reference: **Proof of Revenue, Appendices 10.1 and 10.2**

a) Please provide the workpapers and electronic copies of the spreadsheets (with formulas intact) used to derive the Proof of Revenue

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-3(a).

GAC/MH I-7

Subject: **Proposed Rate Structure**
Reference: **Proof of Revenue, Appendices 10.1 and 10.3**

b) For each rate category and subcategory shown in the Proof of Revenue, please provide:

i) The number of billing units assumed,
ii) The per unit charges under the current and proposed rates, and
iii) Total revenues from each unit charge, separately, under the current and proposed rates

ANSWER:

Please see Manitoba Hydro's response to MIPUG/MH I-20(a).

GAC/MH I-7

Subject: **Proposed Rate Structure**
Reference: **Proof of Revenue, Appendices 10.1 and 10.7**

c) Please provide the basis for the current and proposed DSM reduction.

ANSWER:

The DSM revenue reductions are calculated by applying the forecasted rates to the load reduction forecast for each DSM program in the 2011 Power Smart Plan.

GAC/MH I-7

Subject: **Proposed Rate Structure**
Reference: **Proof of Revenue, Appendices 10.1 and 10.8**

d) Please provide the basis for the current and proposed "Misc. Rev & Adjs."

ANSWER:

Miscellaneous Revenues and Adjustments pertain to revenues derived from miscellaneous charges. These can be in the form of late payment charges (referred to as Customer Accounting Adjustments), specific read fees, disconnect /reconnect fees, year-end accrual adjustment, etc. Late payment charges however account for the majority of the revenue in this category.

Since Miscellaneous Revenues and Adjustments vary from year-to-year, Manitoba Hydro forecasts this sector based solely on average historical data and proposed rate increases.

GAC/MH I-8

Subject: **Rebalancing Energy and Demand Charges**
Reference: **Tab 10 - Proposed Rates and Customer Impacts**

a) Please explain whether Hydro accepts in principle collecting some demand-related costs in a peak period energy charge rather than a demand charge.

ANSWER:

Manitoba Hydro has previously indicated that it could support collecting some demand related costs in a peak period energy charge. Please find pages 54 through to 56 of Manitoba Hydro's Rebuttal Evidence filed on February 28, 2008 attached.

(1400 kW.h Block)

KW.H	MARCH 1, 2007 $ / MONTH	APRIL 1, 2008 $ / MONTH	DIFFERENCE IN $ / MONTH	PERCENT CHANGE
250	$20.98	$19.69	($1.29)	-6.15%
750	$49.93	$49.59	($0.34)	-0.68%
1 000	$64.41	$64.54	$0.13	0.20%
2 000	$122.31	$126.14	$3.83	3.13%
5 000	$296.01	$314.54	$18.53	6.26%

RATE DESIGN; GENERAL SERVICE CLASSES

This section deals with the General Service rate design evidence provided by Paul Chernick on behalf of Resource Conservation Manitoba / Time to Respect Earth's Ecosystems ("RCM/TREE"). Specifically, it will deal with: Demand Charges and Ratchets; Mr. Chernick's specific recommendations for General Service Small and Medium for April 1, 2008; and Time of Use ("TOU") Rates.

Demand Charges and Ratchets

Mr. Chernick would like Manitoba Hydro to reduce or eliminate demand charges and demand ratchets for General Service customers (pages 27 through 31). Mr. Chernick is, in theory, correct that demand charges based on the individual customer peak do not necessarily or always provide the best price signal. Restricting the application of demand charges to peak periods, or replacing them with TOU rates that apply high energy charges to peak periods is a more direct way of signaling the cost of those loads.

Such a rate design requires the capability to meter and bill TOU rates. Absent that capability, the only price signal available to a utility to recognize capacity constraints is a demand charge applied to the customer's own peak demand. Mr. Chernick is correct that such a demand charge may not necessarily allow a customer to distinguish periods when demand reduction is most beneficial. However, it does signal the desirability of reducing peak loads. In Manitoba most customer peak loads, in the General Service Small and Medium rate classes, and for many General Service Large customers as well, occur during the peak winter hours as a matter intrinsic to the customers' operations. Class coincident factor (class load at system peak divided by class

load at class peak) is in the order of 90% for both General Service Medium and Large classes. The coincidence factor for all General Service Medium and Large customers individually (class contribution to system peak divided by sum of individual customer peaks) is in excess of 80%. Consequently demand charges applied to individual customer peaks do have an impact on usage at peak hours.

In Manitoba, demand charges are expressed in kV.A and this provides another important incentive: to customers; to improve their power factor. This is particularly important on the numerous long rural feeders serving customers throughout the province.

The demand ratchet, currently set at 70% of maximum winter demand (December, January, and February) acts to reinforce the signal to reduce customer peak load, most of which occurs during the most strained period on the province's Distribution system. Manitoba Hydro has worked extensively with General Service customers to assist them in reducing their demand, and much of customer willingness to work with Manitoba Hydro on demand reductions stems from the price signal available through the combination of the demand charge and winter ratchet.

As Manitoba Hydro noted in its response to PUB/MH I-14(b), other price signals could replace the winter ratchet, notably seasonal and TOU rate designs which provide higher prices for both demand and energy during the peak seasons (June-August and December-February) and the peak hours (weekdays from 7:00 am through 11:00 pm.) However, the winter ratchet remains an important signal until such provisions can be designed and implemented.

Most Canadian utilities have ratchet provisions comparable to Manitoba Hydro's and Manitoba Hydro's provision is within the range of those required by other utilities. For example, ATCO Electric sets an annual ratchet at 85% of the highest demand in the past 12 months and 100% of contract demand. New Brunswick Power's demand ratchet is set at 90% of average monthly demand from the past year, 90% of previous winter demand or 90% of contract, whichever is highest.

Mr. Chernick's evidence appears to be that the ratchet is useful only for utility revenue stability (response to MH/RCM/TREE-15). The impact of Manitoba Hydro's winter ratchet on revenue stability is more a testament to the effectiveness of the ratchet in controlling customer demands.

Ratchet revenue accounts for less than 1% of Manitoba Hydro's revenue from customers whose billing demand is subject to the ratchet provisions.

Having said this, it is also true that a lower demand charge with no ratchet, coupled with a TOU energy rate with a strong winter peak period signal may be even more effective in reducing demand during peak periods. But implementation of such a rate will require resolution of a number of issues, most particularly, the installation of appropriate metering and billing systems for the vast majority of Manitoba Hydro's customers who are currently billed for demand. More than 94% of demand billed customers do not currently have TOU metering capability. It may also require investigation of the potential impacts of such a rate design on commercial and institutional heating loads, particularly outside of areas serviced by natural gas.

Specific Recommendations for April 1, 2008, General Service Rates

Mr. Chernick's specific recommendations for April 1, 2008, are set forth in his evidence from page 25, line 6 through page 31, line 19. These recommendations are either not feasible or not appropriate.

First, Mr. Chernick is recommending something which is impossible, an inverted rate for a service which is un-metered. Flat-rate water heating is exactly as described, a flat monthly charge for energy to a water heater, which is un-metered. The charges vary depending on the watt-size of the water heater and they are based on expected usage and the tail block rate for energy for General Service Small customers. Some of these water heaters receive discounts because they were once subject to remote interruption. The discounts are being phased out, but because the phase-out is not complete, the average revenue for all these services is less than the General Service Small tail block rate. This rate has not been available for new services for many years; consequently, the number of customers served under this rate schedule is in gradual decline.

Second, Mr. Chernick's recommendations with respect to the main General Service Small rate would have unacceptable individual customer impacts and would potentially cause unacceptable increases to peak winter loads on at least some parts of the Distribution system. Mr. Chernick's

GAC/MH I-8

Subject: **Rebalancing Energy and Demand Charges**
Reference: **Tab 10 - Proposed Rates and Customer Impacts**

b) Please provide Hydro's implementation plans for collecting some demand-related costs in a peak period energy charge where infrastructure for Time-of-Use billing is now in place.

ANSWER:

Please see Appendix 10.11 of Tab 10 of the Application.

GAC/MH I-8

Subject: **Rebalancing Energy and Demand Charges**
Reference: **Tab 10 - Proposed Rates and Customer Impacts**

c) Please describe the metering in place by class (e.g., single period energy, energy and demand, time of use, hourly recording, remote hourly reading).

ANSWER:

Residential metering:

Single Phase; walk up kWh energy register read. Single period energy.

General Service Small – Non-Demand metering:

Single Phase; walk up kWh energy register read. Single period energy.

General Service Small –Demand metering:

Single and poly phase, walk up kWh energy and 15 minute peak kVA register reads reset monthly. Single period energy.

General Service Medium metering:

Poly phase; walk up kWh energy and 15 minute peak kVA register reads reset monthly. Single period energy.

GSL 750V-30kV metering:

75% remote interrogation: Polyphase; 5 or 15 minute kW, kVAR or KVA recording. Single period energy. TOU energy calculated outside the meter. Peak demand calculated outside the meter.

25% walk up: Polyphase; kWh energy and 15 minute peak kVA register reads reset monthly. Single period energy.

GSL 30kV – 100 kV metering:

Remote interrogation: Polyphase; 5 or 15 minute kW, kVAR or KVA recording. Single period energy. Energy calculated outside the meter. Peak demand calculated outside the meter.

GSL > 100 kV metering:

Remote interrogation: Polyphase; 5 or 15 minute kW, kVAR or KVA recording. Single period energy. Energy calculated outside the meter. Peak demand calculated outside the meter.

GAC/MH 1-8

Subject: **Rebalancing Energy and Demand Charges**
Reference: **Tab 10 – Proposed Rates and Customer Impacts**

d) Please describe Hydro's plans for upgrading metering by class.

ANSWER:

Approximately 25% of the General Service Large 750 V – 30 kV services would require upgrade to meters capable of recording 5 or 15 minute kW, kVAR or kVA values in order for Time-of-use (TOU) billing to take place. Within this group as meters are replaced, they are replaced with TOU-capable metering.

Manitoba Hydro is currently assessing the merits of an Advanced Metering Infrastructure (AMI) initiative. There are no confirmed plans for upgrading any of Manitoba Hydro's meters at this time, except as noted in the previous paragraph.

GAC/MH 1-8

Subject: Rebalancing Energy and Demand Charges

Reference: Tab 10 – Proposed Rates and Customer Impacts

e) If Hydro has considered time-of-use rates for the General Service Medium class, please provide all studies and memos on such rates. If not, please explain why.

ANSWER:

Manitoba Hydro has considered time-of-use rates for the General Service Medium class, however, time-of-use rates require supporting communication capability such as advanced metering infrastructure (AMI). At this time, Manitoba Hydro does not have an approved implementation plan for AMI in Manitoba. Please see response to GAC/MH 1-8(d).

GAC/MH I-8

Subject: **Rebalancing Energy and Demand Charges**
Reference: **Tab 10 - Proposed Rates and Customer Impacts**

f) Please provide any available data on the distribution of sales among hours by month for any class for which Hydro has such estimates. If hourly estimates are not available, please provide any available data for on- and off-peak periods.

ANSWER:

Please see Appendix 25 for the 8760 hour load profiles for the five demand billed classes: General Service Small – Demand, General Service Medium, General Service Large 750 V – 30 kV, General Service Large 30 kV – 100 kV and General Service Large > 100 kV.

The hourly load profiles are estimates based on Load Research for the General Service Small – Demand, General Service Medium and General Service Large 750 V – 30 kV classes. The General Service Large 30 kV – 100 kV and General Service Large > 100 kV class load profiles are measured at population.

GAC/MH I-9

Subject: **Demand-Side Management**
Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

a) Please explain how MH screens DSM projects.

ANSWER:

Please see Appendix F of the 2011 Power Smart Plan provided in Appendix 7.1 of the Application. Appendix F outlines how energy efficient opportunities are assessed.

GAC/MH I-9

Subject: **Demand-Side Management**
Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

b) Please identify all potential DSM programs screened for the Power Smart Plan.

ANSWER:

Programs that were screened for the 2011 Power Smart Plan are included within the Plan which is provided in Appendix 7.1 of this Application. Two other programs, Power Smart Shops and Power Smart Energy Manager, were included in previous Power Smart Plans but are not included in the 2011 Power Smart Plan. These programs were not cost effective; alternative approaches are being investigated.

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

c) Please provide MH's evaluation of the cost-effectiveness of its current DSM programs.

ANSWER:

Please refer to the 2010/11 Power Smart Annual Review which can be found in Appendix 7.2 of the Application. The cost-effectiveness results of Manitoba Hydro's current DSM programs can be found in the report on page 65 (Rate Impact Measure), page 67 (Levelized Utility Cost), and page 76 (Total Resource Cost).

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

d) Please specify the avoided cost estimates MH is using to screen DSM projects.

i) Document the derivation of the avoided costs, including all workpapers and electronic spreadsheets.

ANSWER:

Please see Manitoba Hydro's response to PUB/MH I-107(a).

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

e) Please provide the penetration rate estimated for each program and provide the basis of that estimate.

ANSWER:

Similar information has been previously submitted under Manitoba Hydro's response to RCM/TREE/MH I-10(e) of the 2010/11 & 2011/12 Electric General Rate Application. Please see this response attached.

Examination of matters related to Manitoba Hydro's major capital development plans and alternatives, including DSM, is expected to take place in the context of a Needs For and Alternatives To (NFAT) hearing, which is expected to commence in 2013.

RCM/TREE/MH I-10

Demand-Side Management

Reference: 2009 Power Smart Plan, Appendix 9.1; and 2007-2008 Power Smart Annual Review, Appendix 9.2

e) Please provide the penetration rate estimated for each program and provide the basis of that estimate.

ANSWER:

Residential Programs:

New Home Program – Market penetration is expected to be 8% by the year 2012, the scheduled end date for the program. This estimate is based on historical and projected program participation rates.

Home Insulation Program – Market penetration is expected to be 56% by the year 2017, the scheduled end date for the program. This estimate is based on historical and projected program participation rates.

Water & Energy Saver Package – Market penetration is expected to be 25% by the end of the five-year proposed program. This estimate is based on predicted market acceptance of water saving technologies as well participation results from other utilities offering similar programs.

Compact Fluorescent Lighting Program – Market penetration is expected to be 31% by the scheduled program end date in 2012. This estimate is based on historical and projected customer participation rates.

Power Smart Appliance Program – The incentive program for Energy Star appliances ended on March 31 2009. Market penetration was estimated to be 62% by the end of the program, based on program participation rates and feedback received from participating retailers.

Lower Income Energy Efficiency Program (LIEEP) – Market penetration is expected to be approximately 7% by the end of March 2011. The total participation is estimated to be 5,650 by March 2011, and the potential market size is estimated to be approximately 76,000 lower income (LICO x 125%) dwellings based on the residential study of 2003.

Seasonal LED Program – The trade and save incentive program ended in December of 2008. Results indicate a Program market penetration of 20% however, informal shelf space surveys of retailers indicate that approximately 80% of the product available is now LED. Building on the premise of the Power Smart Program, a number of participating retailers have continued to offer LED sales promotions with at least one retailer offering incandescent light string turn-in events. This indicates that the market is continuing to move toward the more efficient technology.

Energy Efficient Light Fixtures Program – Market penetration is expected to be 10% by 2011. The penetration rate estimate is based on the availability of qualifying Energy Star fixtures as determined by a physical shelf space inventory of retailers across Manitoba and historical and projected customer participation.

HE Furnace & Boiler Program (ECM motors) – Market penetration for furnaces that incorporate ECM motors was estimated to be 35% as of the program end date of December 31, 2009.

Refrigerator Recycling – Market penetration is expected to be 20% by the end of the three year proposed program. This estimate is based on participation rates for similar programs offered by other utilities.

<u>Commercial Programs</u>:

Commercial Lighting Program – Market penetration is expected to be 60% by the year 2024. This estimate is based on historical and projected customer participation.

Commercial Custom Measures Program – This program is used to support any and all energy saving upgrades not addressed by the existing suite of programs. It serves as a catch-all for sometimes unique and unknown upgrades. As such, it is very difficult to define the overall market and market penetration.

Commercial Windows Program – Market penetration is expected to be 27% by the year 2024. This estimate is based on historical and projected customer participation.

Commercial HVAC Program (Chiller) – Market penetration is expected to be 53% by the scheduled program end date in 2017. This estimate is based on historical and projected customer participation.

Commercial Parking Lot Controller Program – Market penetration is expected to be 60% at the scheduled program end date on March 31, 2010.This estimate is based on historical and projected customer participation**.**

Commercial Rinse & Save Program – Market penetration is expected to be 58% at the scheduled program end date on March 31, 2010. This estimate is based on historical and projected customer participation.

Commercial Refrigeration Program – Market penetration is expected to be 51% by the year 2024. This estimate is based on historical and projected customer participation.

Commercial Insulation Program – Market penetration is expected to be 37% by the year 2024. This estimate is based on historical and projected customer participation.

Commercial Earth Power Program – Market penetration for electric base case commercial customers is estimated at 14% by the scheduled program end date in 2016/17. This estimate is based on historical and projected customer participation.

Commercial New Construction Program – Market penetration is expected to be 21% by the scheduled program end date in 2018. This estimate is based on market size, and also on the predicted availability of skilled design professionals to accommodate demand, as well as market acceptance for the emerging practices required in high performance building design.

Commercial Building Optimization Program – Market penetration is expected to be 31% by the year 2024. This estimate is based on historical and projected customer participation.

Agricultural Heat Pad Program – Market penetration is expected to be 37% at the scheduled program end date on March 31, 2010. This estimate is based on historical and projected customer participation.

Power Smart Energy Manager Program – Market penetration is expected to be 46% by the year 2017. This estimate is based on discussions with school divisions that had expressed interest in participating after Manitoba Hydro's pilot program with Pembina Trails School Division.

Commercial Kitchen Appliance Program – Market penetration is expected to be 46% by the scheduled program end date in 2017. This estimate is based on historical and projected customer participation.

Commercial Clothes Washers Program – Market penetration is expected to be 44% by the scheduled program end date in 2018. This estimate is based on historical and projected customer participation.

Network Energy Management Program – Market penetration is expected to be 41% by the scheduled program end date in 2013. This estimate is based on historical and projected customer participation.

Power Smart Shops – Market penetration is expected to be 57% by the scheduled program end date in 2018. This estimate is based on historical and projected customer participation,

CO2 Sensors – Market penetration is expected to be 71% by the scheduled program end date in 2018. As a newly launched program, this estimate is based on predicted availability and market acceptance of this technology.

Industrial Programs:

Performance Optimization Program – Market penetration is expected to be 18% by the program end date of 2018 and was based on the economic opportunities related to mechanical processes in industrial and large commercial customers.

Emergency Preparedness Program – The Emergency Preparedness Program plan is targeting a penetration rate of 70% for its program period. This is based on a target consisting of the top 250 electric customers in greater Winnipeg.

GAC/MH I-9

Subject: **Demand-Side Management**
Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

f) Please estimate the utility costs for each of MH's DSM programs.

ANSWER:

Please refer to the 2011 Power Smart Plan which can be found in Appendix 7.1 of the Application. The Annual Program Electric Budgets (Utility Costs) for all DSM programs can be found in Appendix A.5 of the Power Smart Plan. For budgets associated with initiatives supporting DSM programs under the Affordable Energy Fund, please refer to the 2011 Power Smart Plan in Appendix 7.1, Section 6, page 44.

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

g) Please provide the basis of MH's forecast of energy and peak savings from each of its DSM programs.

ANSWER:

Manitoba Hydro determines the energy savings that will be achieved through its Power Smart programs using a variety of methods including manufacturer's data, engineering analysis, prototype testing, pilot projects, pre and post measurements or ongoing program monitoring and verification. The total energy savings are determined by estimating the number of customers or projects that will participate in a project and multiplying the estimated energy savings per participant or project by the total number of participants or projects. The results are further adjusted for persistence, interactive effects, free rider and free driver factors.

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

h) Please provide MH's total budget for DSM projects.

ANSWER:

Please refer to the 2011 Power Smart Plan which can be found in Appendix 7.1 of this Application. Section 7, page 48 outlines Manitoba Hydro's total DSM budget for DSM projects.

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

i) Please explain how MH determined how much to spend on Energy Efficiency and what amount of savings to strive for.

ANSWER:

As outlined in Manitoba Hydro's response to RCM/TREE/MH I-10(i) of the 2010/11 & 2011/12 Electric General Rate Application, Manitoba Hydro undertakes a bottom up approach to in determining the energy savings targets and the associated budgets required to pursue these targets. Economic energy efficient opportunities are identified and subsequently, programs are designed to pursue those opportunities. The individual programs and their associated budgets are combined into an overall Power Smart Plan.

GAC/MH I-9

Subject: **Demand-Side Management**
Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

j) Please identify all Energy Efficiency programs in which MH has been forced to shut off applications or wait-list customers, due to budget constraints.

ANSWER:

There are no programs that fall into this category.

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

k) Please identify all Energy Efficiency programs in which MH could reach additional customers or fund additional cost-effective measures, if the program budget were increased.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-9(j).

GAC/MH I-9

Subject: **Demand-Side Management**

Reference: **2011 Power Smart Plan, Appendix 7.1; and 2010-2011 Power Smart Annual Review, Appendix 7.2**

l) Please indicate whether the Energy Efficiency investment per customer is limited in any program.

i) If so, describe those limits and explain why MH is not willing to make all cost-effective investments in Energy Efficiency.

ANSWER:

Manitoba Hydro does not place a limit on the investment per customer in its Power Smart programs based on budget constraints.

GAC/MH I-10

Subject: Demand-Side Management

a) Please provide all written documentation of internal and independent reviews of Manitoba Hydro's current Power Smart Program, including analyses, reports and memoranda.

ANSWER:

The 2010/11 Power Smart Annual Review of Manitoba Hydro's current Power Smart Program which can be found in Appendix 7.2 of this Application provides the most recent internal review. In 2009, Dunsky Energy Consulting was retained by Manitoba Hydro to provide an independent review of its Power Smart activities. A copy of this report along with Manitoba Hydro's Action Plan was filed as part of the 2010/11 & 2011/12 Electric General Rate Application process, as Appendix 71.

GAC/MH I-11

Subject: Residential Late Fees

a) Please provide the dollars of residential late fee revenue collected by month for each month October 2007 to present.

ANSWER:

The following table presents the late payment charges billed to residential accounts by month for the period October 2007 to July 2012.

Residential Late Payment Charges Billed ($)						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		211,070	217,243	257,025	241,035	247,193
November		196,436	203,349	250,682	218,156	220,485
October		207,425	199,478	247,485	233,535	226,861
September		208,651	222,688	271,083	264,722	
August		231,178	245,801	288,178	277,360	
July	179,434	261,621	263,220	309,452	280,536	
June	230,707	260,150	296,105	338,222	307,891	
May	255,861	301,410	279,548	357,305	236,938	
April	265,280	337,294	371,867	386,359	365,892	
March	250,387	341,137	378,423	401,053	366,744	
February	259,149	334,732	343,157	373,137	332,177	
January	229,557	268,566	328,455	296,081	278,090	

GAC/MH I-11

Subject: Residential Late Fees

b) Please provide the number of residential accounts paying a late charge by month for each month October 2007 to the present.

ANSWER:

The following table presents the number of residential accounts billed late payment charges by month for the period October 2007 to July 2012.

Residential Late Payment Charges Billed (Number of Accounts)						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		78,148	77,747	81,978	77,955	83,008
November		74,532	73,626	81,515	74,398	76,772
October		75,251	72,902	78,575	74,279	78,417
September		72,407	69,887	79,395	79,397	
August		76,289	78,431	80,834	78,837	
July	72,524	83,292	76,581	82,536	78,897	
June	77,206	81,095	83,480	84,709	81,877	
May	76,020	83,250	70,084	88,963	86,365	
April	78,869	82,275	85,073	85,373	86,051	
March	80,974	86,090	89,443	90,488	88,923	
February	81,864	88,701	94,083	90,772	88,141	
January	77,960	81,209	84,255	84,012	85,112	

GAC/MH I-11

Subject: Residential Late Fees

c) Please provide the cost basis for the current residential late payment fee.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-12(b).

GAC/MH I-11

Subject: Residential Late Fees

d) Please provide the most recent Board finding on the reasonableness of this fee.

ANSWER:

Please see Manitoba Hydro's response to GAC/MH I-12(b).

GAC/MH I-12

Subject: Residential Fees

a) Please provide a list of all Manitoba Hydro residential electric service charges not covered by an energy charge, and for all such charges, provide:

i) by month for the months October 2006 to present, the revenue generated by that service charge; or

ANSWER:

As previously outlined in Manitoba Hydro's response to RCM/TREE/MH I-46 in the 2010/11 & 2011/12 Electric General Rate Application, the following are residential service charges not covered by an energy charge:

- Late payment charge;
- Residential reconnect charge;
- Residential special reading fee;
- Residential returned cheque charge; and
- Residential Federal Meter Dispute charge.

Please refer to GAC/MH 1-11(a) for the late payment charges billed to residential accounts by month from October 2007 to present.

The following table presents the reconnect charges billed to residential accounts by month from October 2007 to present.

Residential Reconnect Charges						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 8,553	$ 7,865	$ 9,175	$ 6,315	$ 4,500
November		17,160	17,850	19,520	15,565	26,150
October		25,382	27,705	21,820	27,850	41,125
September		37,215	38,565	37,440	40,045	
August		48,785	49,525	44,400	52,415	
July	$ 42,255	50,665	59,285	65,580	77,950	
June	44,655	65,120	67,360	67,150	87,400	
May	43,530	47,090	52,465	35,860	64,955	
April	19,570	24,425	26,000	22,880	16,645	
March	14,470	17,785	16,385	14,470	9,990	
February	14,200	13,655	14,465	11,050	10,890	
January	12,613	10,345	10,620	7,315	10,175	

The following table presents the special reading fees billed to residential accounts by month from October 2007 to present.

Residential Special Reading Fees						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 79,150	$ 73,543	$ 96,165	$ 82,265	$ 58,485
November		62,600	64,200	89,045	77,245	66,480
October		55,455	54,000	50,360	67,640	58,380
September		57,900	78,900	68,760	64,360	
August		70,570	81,350	61,920	53,920	
July	$ 67,700	66,950	72,800	69,320	60,325	
June	78,050	68,700	75,350	66,375	54,885	
May	78,800	68,700	59,950	65,030	48,840	
April	69,450	72,600	84,600	61,610	57,240	
March	71,650	74,650	76,065	83,120	53,050	
February	86,900	79,850	73,955	63,820	62,575	
January	81,350	75,800	78,505	72,335	59,215	

The following table presents the returned cheque charges billed to residential accounts by month from October 2007 to present.

Residential Returned Cheque Charges						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 3,500	$ 4,200	$ 4,090	$ 4,840	$ 4,080
November		3,460	4,520	4,720	4,560	5,060
October		3,100	3,480	4,740	5,320	5,140
September		4,440	4,280	4,800	5,880	
August		5,060	5,800	5,840	5,540	
July	$ 4,400	4,940	5,720	7,000	7,340	
June	4,180	4,580	6,880	8,100	8,260	
May	4,740	5,880	6,000	6,520	7,360	
April	4,540	4,680	5,840	6,060	7,240	
March	4,700	5,300	6,520	7,200	6,380	
February	3,900	4,980	5,440	6,020	5,660	
January	4,300	4,280	5,280	5,780	6,640	

The following table presents the Federal Meter Dispute charges billed to residential accounts by month from October 2007 to present.

Residential Federal Meter Dispute Charges						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 105	$ -	$ 35	$ 70	$ -
November		70	-	35	35	-
October		35	-	(35)	-	-
September		-	-	35	35	
August		35	70	35	-	
July	$ -	35	-	-	105	
June	140	140	35	70	70	
May	105	70	35	35	35	
April	70	35	70	-	70	
March	35	70	-	35	70	
February	-	140	105	-	35	
January	35	-	70	70	35	

GAC/MH I-12

Subject: Residential Fees

b) For each service charge, provide the most recent cost-justification for the fee as submitted to the Manitoba Public Utilities Board.

ANSWER:

As previously outlined in Manitoba Hydro's response to RCM/TREE/MH I-47 in the 2010/11 & 2011/12 Electric General Rate Application, the late payment charge, residential reconnection charge, residential special reading fee, residential returned cheque charge, and residential Federal meter dispute charge are not charges which are approved by the PUB.

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

i) The total number of residential accounts by month

ANSWER:

The following table presents the number of residential accounts by month for the period of October 2007 to July 2012.

Total Residential Accounts						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		473,435	468,709	464,305	459,972	454,308
November		472,910	468,204	463,860	459,455	453,817
October		472,274	467,526	463,392	458,835	453,215
September		471,648	467,029	462,776	458,104	
August		471,261	466,537	462,310	457,582	
July		470,813	466,128	461,969	457,108	
June	475,592	470,437	465,776	461,599	456,706	
May	475,333	470,274	465,438	461,315	456,157	
April	474,859	469,971	465,055	461,075	455,798	
March	474,661	469,635	465,055	460,804	455,430	
February	474,303	469,251	464,846	460,615	455,073	
January	473,934	469,079	464,562	460,269	454,777	

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

ii) The average bill for all residential accounts;

ANSWER:

The following table presents the average bill for residential accounts by month for the period October 2007 to July 2012.

Average Residential Bill						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 101	$ 112	$ 101	$ 105	$ 103
November		81	81	78	78	80
October		69	66	76	66	78
September		64	59	59	58	
August		71	71	57	59	
July		72	69	60	56	
June	$ 64	65	60	65	53	
May	72	75	68	71	65	
April	94	106	92	103	88	
March	105	119	98	108	105	
February	119	122	114	116	117	
January	124	139	132	140	115	

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

iii) The average arrears of accounts in arrears;

ANSWER:

The following table represents the average arrears for all (residential and general service) accounts in arrears by month beginning February 2009. Manitoba Hydro did not collect this data prior to February 2009.

*Average arrears of accounts in arrears by month***				
Month	*2012*	*2011*	*2010*	*2009*
December		$499.69	$393.13	$442.97
November		$461.54	$369.86	$415.51
October		$367.33	$369.59	$436.87
September		$389.73	$421.13	$446.20
August		$416.03	$414.33	$460.86
July		$423.13	$446.17	$502.91
June	$381.78	$436.76	$447.88	$506.03
May	$418.01	$458.91	$453.61	$529.85
April	$426.21	$454.36	$487.96	$555.63
March	$447.21	$451.94	$505.97	$547.52
February	$433.09	$441.40	$491.55	$523.28
January	$421.56	$414.71	$470.12	n/a

**Data includes both active & inactive accounts

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

iv) The average bill of accounts in arrears;

ANSWER:

The following table represents the average bill for all accounts (residential and commercial) in arrears by month beginning February 2009. Manitoba Hydro did not collect this data prior to February 2009.

*Average bill of accounts in arrears by month***				
Month	*2012*	*2011*	*2010*	*2009*
December		$543.11	$571.17	$584.58
November		$503.81	$528.85	$573.24
October		$491.37	$519.25	$564.12
September		$550.51	$555.84	$557.53
August		$576.24	$550.87	$574.90
July		$576.49	$563.80	$583.93
June	$518.84	$595.34	$593.01	$620.65
May	$571.71	$633.61	$591.13	$660.23
April	$606.74	$686.24	$667.25	$716.93
March	$642.93	$701.79	$676.65	$728.45
February	$624.54	$666.28	$660.08	$683.95
January	$626.07	$643.90	$658.17	n/a

**Data includes both active & inactive accounts

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

v) The total dollars of residential arrears

ANSWER:

The following table represents the total dollars of residential arrears by month beginning September 2009. Data prior to September 2009 is not available.

*Total Dollars of Residential Arrears($000s)***				
Month	*2012*	*2011*	*2010*	*2009*
December		16,995	17,302	17,494
November		15,276	15,245	16,564
October		15,377	15,349	16,391
September		16,519	16,489	17,397
August		17,481	17,288	
July		18,993	18,394	
June	18,128	20,767	20,351	
May	20,123	22,332	23,000	
April	21,732	23,587	23,854	
March	21,520	23,205	24,929	
February	21,178	24,050	24,292	
January	18,673	19,871	20,259	

**Data includes active and inactive, residential, electric, 30, 60 & 90 day arrears and excludes EPP.

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

vi) The percentage of residential dollars constituting arrears;

ANSWER:

The following table represents the percentage of residential arrears compared to overall arrears by month beginning September 2009. Manitoba Hydro cannot provide this data prior to September 2009.

*Residential Arrears as a Percentage of Overall Arrears ***				
Month	*2012*	*2011*	*2010*	*2009*
December		72%	75%	67%
November		74%	74%	66%
October		75%	75%	65%
September		74%	72%	67%
August		70%	71%	
July		71%	70%	
June	79%	72%	72%	
May	77%	75%	75%	
April	75%	78%	73%	
March	76%	78%	74%	
February	76%	77%	71%	
January	76%	75%	69%	

**Data includes active and inactive, residential, electric, 30, 60 & 90 day arrears and excludes EPP.

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

vii) The percentage of billed accounts having arrears; and

ANSWER:

The following table represents the percentage of billed accounts (residential and commercial) having arrears by month beginning February 2009. Manitoba Hydro did not collect this data prior to February 2009.

*Average arrears of accounts in arrears by month***				
Month	*2012*	*2011*	*2010*	*2009*
December		12.71%	13.18%	13.56%
November		12.47%	12.73%	13.94%
October		12.59%	12.79%	13.27%
September		12.71%	12.40%	13.44%
August		13.10%	13.24%	14.44%
July		13.68%	13.24%	13.94%
June	13.02%	14.20%	13.95%	15.18%
May	13.27%	13.80%	15.12%	15.34%
April	13.75%	14.25%	14.66%	14.45%
March	13.34%	14.23%	14.58%	14.85%
February	13.61%	15.24%	15.24%	15.35%
January	12.96%	13.98%	13.99%	n/a

**Data includes both active & inactive accounts

GAC/MH I-13

Subject: Residential Late Payments

a) Please provide by month for each month since October 2007:

viii) The average arrears of all residential accounts disconnected for nonpayment in that month.

ANSWER:

Manitoba Hydro does not separate arrears dollars by disconnected accounts.

GAC/MH I-14

Subject: Residential Arrears

a) Please provide by month, for each month October 2007 to present, a distribution of the number of accounts in arrears by the size of arrears by the following bands: (1) $0 - $100; (2) $101 - $200; (3) $201 - $300; (4) $301 - $500; (5) $501 - $750; (6) $751 - $1,000; (7) $1,001 - $2,000; and (8) $2,001 and above. If these bands are not available, please provide the numbers of accounts by available bands.

ANSWER:

The following tables represent the number of accounts in arrears by dollar range by month from February 2009. Manitoba Hydro did not collect this data prior to February 2009.

*Number of Accounts in Arrears by Dollar Range by Month***												
Year 2009												
Range	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
$0-100	-	36273	34659	34661	38190	40832	39730	42880	40307	40846	40920	38805
$101-200	-	14451	13524	12929	14235	14291	13129	13688	12832	13074	14866	13882
$201-300	-	7525	7673	6947	7447	6537	5661	5630	5205	5028	6116	6190
$301-500	-	8094	7720	7337	7170	6354	5218	4879	4534	4195	4782	5471
$501-750	-	5233	5043	4624	4504	3786	3142	2815	2581	2222	2337	2756
$751-1000	-	2994	2988	2787	2553	2141	1750	1639	1370	1219	1235	1324
$1001-2000	-	4200	4390	4454	4333	3606	2882	2694	2380	1997	1969	1915
$2001 +	-	2162	2322	2470	2587	2425	2207	2166	1997	1777	1764	1734
Totals	-	80932	78319	76209	81019	79972	73719	76391	71206	70358	73989	72077

*Number of Accounts in Arrears by Dollar Range by Month***												
Year 2010												
Range	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
$0-100	37151	36925	35016	36361	39868	39684	40135	39727	36593	39860	39770	38676
$101-200	13782	14943	13641	13912	14383	13135	12079	13634	13039	12834	12869	13687
$201-300	7031	7687	7638	7282	7119	6009	5170	5365	5399	5213	5121	6166
$301-500	6747	8388	7763	7334	7018	5588	4661	4378	4236	3972	3998	5177
$501-750	3728	5068	4774	4534	4213	3274	2798	2450	2184	2030	2084	2447
$751-1000	1769	2609	2770	2464	2260	1847	1455	1324	1199	1132	1087	1215
$1001-2000	2354	3363	3817	3896	3506	2800	2415	2129	1881	1693	1655	1713
$2001 +	1843	2109	2207	2259	2204	2048	1913	1830	1739	1663	1626	1624
Totals	74405	81092	77626	78042	80571	74385	70626	70837	66270	68397	68210	70705

*Number of Accounts in Arrears by Dollar Range by Month***												
Year 2011												
Range	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
$0-100	37685	38232	35769	36583	36904	40499	41675	39662	38463	39101	39141	37917
$101-200	13626	14322	12932	12725	12719	13542	12724	13394	13452	13155	12732	13193
$201-300	7197	7757	7112	7033	6676	6125	5411	5398	5334	5190	5054	5887
$301-500	7017	8462	7484	7540	6475	5955	5046	4464	4203	3960	4073	4949
$501-750	3840	5143	4730	4468	3880	3451	2851	2431	2317	2054	2069	2396
$751-1000	1775	2719	2709	2444	2161	1869	1552	1302	1116	1116	1106	1123
$1001-2000	2106	3182	3583	3595	3323	2897	2539	2149	1926	1819	1697	1760
$2001 +	1788	2031	2118	2168	2116	2094	1885	1813	1713	1599	1559	1569
Totals	75034	81848	76437	76556	74254	76432	73683	70613	68524	67994	67431	68794

*Number of Accounts in Arrears by Dollar Range by Month***												
Year 2012												
Range	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
$0-100	36238	35726	34623	36113	36709	38676						
$101-200	12548	12943	12611	13017	12792	13203						
$201-300	6584	7059	6842	7055	6097	5601						
$301-500	6180	7233	6909	6905	6035	4975						
$501-750	3410	4275	4143	4134	3601	2707						
$751-1000	1534	2158	2273	2184	1941	1578						
$1001-2000	2032	2624	3092	3191	2965	2308						
$2001 +	1687	1788	1905	2023	1952	1738						
Totals	70213	73806	72398	74622	72092	70786						

**Data includes both active & inactive accounts; commercial & residential accounts; and represents regular arrears/not balance differences for accounts in the Equal Payment Plan.

GAC/MH I-15

Subject: Residential Budget Billing Plan

a) Please provide the eligibility requirements for a residential customer's participation in a levelized monthly Budget Billing plan.

ANSWER:

Attached is Manitoba Hydro's policy for the Equal Payment Plan (EPP).

Equal Payment Plan

General

The Equal Payment Plan provides a convenient method of payment for electricity for customers in all service classifications except Seasonal services.

The monthly equal payment applies for 11 consecutive billings commencing with meters read on and after September 1 through to July 31. The amount includes:

a) the estimated annual electricity billing including monthly Basic Charge divided into 12 equal installments; and

b) monthly contract payments, flat-rate (unmetered) services and rental charges.

Settlement Payment

The settlement payment is due with the billing for meters read from August 1 to August 31 or upon customer request for termination. The settlement payment includes:

a) total of any unpaid electricity bills;

b) deferred balance (the difference between the installments and the actual charges billed);

c) monthly contract payments, flat-rate (unmetered) services and rental charges.

Full payment of the settlement billing is a condition of continuing with the Equal Payment Plan. When the net bill for the settlement period is a credit, it will be applied to offset the next equal payment or may be refunded at the customer's request.

Equal Payment Plan Arrears

Where a customer fails to pay the installments and has arrears exceeding 1.5 times but NOT exceeding three times the equal payment amount, the customer will be cautioned that participation is contingent on payment. When the arrears exceed three payments, the customer will be removed from the Equal Payment Plan.

Equal Payment Plan Review

Installment amounts will be reviewed and, if applicable, changed as follows:

a) annual review - prior to the start of each equal payment billing season, estimated annual electricity billing will be revised, recognizing the past year's use, weather conditions and any rate adjustments;

b) monthly review - the deferred balance will be monitored and where it appears that the balance for the settlement period will be excessive, the monthly equal payment amount will be adjusted accordingly.

GAC/MH I-15

Subject: Residential Budget Billing Plan

b) Please provide the number of residential accounts using levelized monthly Budget Billing by month for each month October 2005 to present. For each month:

i) Provide the total number of customers on Budget Billing;

ANSWER:

The following table presents the number of residential customers on Manitoba Hydro's Equal Payment Plan (EPP).

*Equal Payment Plan Customers***						
	2012	*2011*	*2010*	*2009*	*2008*	*2007*
December		111,070	106,529	101,852	96,654	92,214
November		110,089	105,462	101,020	95,935	91,456
October		109,508	104,368	100,033	94,667	90,208
September		94,759	90,062	92,782	82,706	
August		5,087	4,786	9,495	9,142	
July	107,108	103,944	98,000	94,492	89,117	
June	108,504	105,107	99,108	95,744	90,491	
May	109,695	106,224	100,671	96,632	91,433	
April	110,624	106,949	101,537	97,369	92,343	
March	111,206	107,263	102,016	97,725	92,813	
February	111,384	107,307	102,336	97,725	93,009	
January	111,277	107,038	102,071	96,910	92,628	

** Note: For program administration purposes, customers are removed from the EPP in the balancing month (August) and re-enrolled the following billing month.

GAC/MH I-15

Subject: Residential Budget Billing Plan

b) Please provide the number of residential accounts using levelized monthly Budget Billing by month for each month October 2005 to present. For each month:

ii) Provide the total number of customers newly entering into a levelized Budget Billing plan that month;

ANSWER:

The following table presents the number of residential customers newly entering the Manitoba Hydro Equal Payment Plan (EPP) by month for the period of October 2007 to July 2012.

*Equal Payment Plan Customers – New***						
	2012	*2011*	*2010*	*2009*	*2008*	*2007*
December		1,220	1,301	1,094	1,105	1,247
November		2,051	1,962	1,708	1,508	1,710
October		1,924	2,176	2,104	2,224	2,195
September		20,577	20,033	12,310	17,246	
August		96,622	91,379	87,329	82,447	
July	20	11	15	25	221	
June	65	68	17	60	292	
May	150	141	60	123	264	
April	224	259	133	176	238	
March	457	517	419	453	309	
February	751	797	608	770	568	
January	1,000	1,109	1,071	1,476	1,118	

** Note: For program administration purposes, customers are removed from the EPP in the balancing month (August) and re-enrolled the following billing month.

GAC/MH I-15

Subject: Residential Budget Billing Plan

b) Please provide the number of residential accounts using levelized monthly Budget Billing by month for each month October 2005 to present. For each month:

iii) Provide the total number of customers removed from Budget Billing for collection-related reasons (i.e., having incurred an arrears);

ANSWER:

The following table presents the number of residential customers removed from the Manitoba Hydro Equal Payment Plan (EPP) by month for the period October 2007 to July 2012. Reasons for removal are not identified; the figures presented below include all possible reasons for removal from EPP such as year-end balancing, account arrears, and customer requests.

*Equal Payment Plan Customers – Removed***						
	2012	*2011*	*2010*	*2009*	*2008*	*2007*
December		1,056	885	946	836	922
November		1,351	1,077	1,107	918	1,025
October		1,122	1,055	1,205	1,281	1,075
September		6,952	6,209	6,429	10,992	
August		103,539	97,772	88,814	84,291	
July	1,481	1,254	1,447	1,278	1,648	
June	1,355	1,273	1,334	1,007	1,223	
May	1,158	990	1,004	881	1,123	
April	1,040	837	901	779	778	
March	910	835	929	772	720	
February	894	837	775	680	727	
January	1,007	796	852	826	813	

**Note: For program administration purposes, customers are removed from the EPP in the balancing month (August) and re-enrolled the following billing month.

GAC/MH I-15

Subject: Residential Budget Billing Plan

b) Please provide the number of residential accounts using levelized monthly Budget Billing by month for each month October 2005 to present. For each month:

iv) Provide the total number of customers with credit balances in that month;

ANSWER:

The following table presents the number of residential Equal Payment Plan (EPP) customers with credit balances month by month for the period of October 2007 to July 2012. A credit (-) balance exists when the installments billed for the EPP year to date exceed the actual/estimate usage to date.

*Equal Payment Plan Customers - Credit Balances***						
	2012	*2011*	*2010*	*2009*	*2008*	*2007*
December		56,047	43,638	50,354	42,709	28,727
November		88,649	80,571	88,178	70,417	54,600
October		101,164	99,112	77,236	85,642	74,840
September		71,005	77,671	68,550	71,431	
August		48,180	32,462	46,093	42,066	
July	51,302	64,136	56,908	73,624	73,226	
June	78,944	92,845	84,379	77,439	79,602	
May	66,894	95,709	87,640	86,386	82,667	
April	53,973	57,132	73,322	43,840	59,168	
March	52,895	38,898	46,596	38,757	25,645	
February	37,926	40,683	33,300	30,095	20,472	
January	29,687	24,614	15,990	16,105	17,665	

** Note: For program administration purposes, customers are removed from the EPP in the balancing month (August) and re-enrolled the following billing month.

GAC/MH I-15

Subject: Residential Budget Billing Plan

b) Please provide the number of residential accounts using levelized monthly Budget Billing by month for each month October 2005 to present. For each month:

v) Provide the total number of customers with positive balances in that month.

ANSWER:

The following table presents the number of residential Equal Payment Plan (EPP) customers with debit balances month by month for the period of October 2007 to July 2012. A debit (+) balance exists when the actual/estimated usage to date exceed the installments billed for the EPP year to date.

*Equal Payment Plan Customers - Debit Balances***						
	2012	*2011*	*2010*	*2009*	*2008*	*2007*
December		49,796	57,916	46,949	54,140	59,084
November		22,081	25,624	18,545	21,032	37,107
October		13,097	10,136	23,301	9,888	15,695
September		30,393	18,781	24,410	25,449	
August		60,125	69,562	48,049	42,345	
July	55,308	34,138	34,848	25,062	20,998	
June	34,095	11,827	14,393	12,995	5,930	
May	36,928	14,443	11,304	14,220	8,079	
April	55,472	43,519	25,937	47,622	32,204	
March	57,346	67,461	53,069	63,089	66,206	
February	72,751	66,162	66,224	62,639	71,957	
January	86,338	86,920	90,929	85,402	79,687	

** Note: For program administration purposes, customers are removed from the EPP in the balancing month (August) and re-enrolled the following billing month.

GAC/MH I-16

a) For each month October 2007 to present, please provide:

i) the interest rate paid on residential cash security deposits by month;

ANSWER:

The following table presents the effective annual interest rate paid on residential security deposits by month for the period of October 2007 to July 2012.

Interest Rate - Residential Deposits						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		2.12%	2.19%	1.40%	3.46%	5.66%
November		2.20%	2.18%	1.40%	4.01%	5.82%
October		2.20%	2.15%	1.40%	4.22%	5.95%
September		2.19%	1.92%	1.40%	4.12%	
August		2.99%	1.80%	1.40%	4.15%	
July	1.90%	2.20%	1.66%	1.40%	4.12%	
June	2.01%	2.20%	1.51%	1.40%	4.17%	
May	1.99%	2.20%	1.47%	1.56%	4.48%	
April	1.93%	2.20%	1.41%	1.66%	4.63%	
March	2.20%	2.20%	1.40%	2.00%	4.98%	
February	2.20%	3.00%	1.40%	2.28%	5.27%	
January	2.20%	2.20%	1.40%	2.77%	5.60%	

GAC/MH I-16

a) For each month October 2007 to present, please provide:

ii) the number of residential accounts for whom cash security deposits were held;

ANSWER:

The following table presents the number of residential accounts for which security deposits were held by month for the period of October 2007 to July 2012.

Number of Residential Deposits						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		1,078	890	1,000	1,345	1,593
November		1,021	894	1,012	1,379	1,628
October		897	915	1,035	1,428	1,681
September		868	915	1,070	1,488	
August		858	926	1,110	1,590	
July	1,579	863	939	1,119	1,607	
June	1,603	866	956	1,166	1,613	
May	1,558	880	976	1,198	1,585	
April	1,340	895	990	1,232	1,504	
March	1,289	898	988	1,270	1,544	
February	1,175	884	992	1,293	1,566	
January	1,117	891	993	1,316	1,579	

GAC/MH I-16

a) For each month October 2007 to present, please provide:

iii) the dollar amounts of cash security deposits held for residential customers; and

ANSWER:

The following table presents the dollar amount of security deposits held for residential customers by month for the period of October 2007 to July 2012.

Residential Security Deposits(dollars)						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 93,875	$ 69,271	$ 75,406	$ 98,607	$ 108,979
November		89,800	69,546	75,906	100,207	109,404
October		76,496	71,866	78,681	103,032	112,379
September		72,946	71,541	81,441	107,435	
August		72,146	71,541	84,316	114,740	
July	$ 155,375	71,246	72,966	83,212	116,090	
June	157,350	69,496	74,166	86,012	115,890	
May	151,425	69,971	76,066	87,487	111,115	
April	128,100	70,771	77,056	89,987	102,629	
March	122,825	70,871	74,581	92,807	105,254	
February	106,325	69,421	74,331	95,207	107,454	
January	98,000	69,646	74,631	96,757	108,404	

GAC/MH I-16

a) For each month October 2007 to present, please provide:

iv) the dollars of interest paid on residential cash security deposits by month for each month October 2005 to present.

ANSWER:

The following table presents the dollars of interest paid on residential security deposits by month for the period of October 2005 to July 2012.

*Interest Paid on Residential Deposits***							
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*	*2006*
December		1,302	995	$ 1,085	$ 3,316	$ 3,688	$ 7,730
November		42	36	50	137	140	277
October		21	30	58	152	205	389
September		30	25	48	145	166	362
August		23	21	34	82	134	521
July	52	25	18	39	121	90	199
June	20	20	14	27	79	61	213
May	24	20	10	22	79	58	642
April	14	12	5	19	59	33	300
March	13	7	6	(32)	29	25	
February	8	7	2	10	24	13	
January	2	1	1	2	10	4	

**Interest paid on residential deposits prior to April 2006 is not available.

GAC/MH I-17

Subject: Manitoba Hydro Credit and Collections

a) Please provide and explain the criteria Manitoba Hydro uses to assess the effectiveness of its current credit and collection activities.

ANSWER:

Manitoba Hydro follows generally accepted industry practices and utilizes commonly accepted methods of monitoring and assessing the operational effectiveness of credit and collection activities. These measures include, but are not limited to:

- Yearly Write Off statistics
- Aging of Receivables statistics
- Monthly Bad Debt Assignment statistics
- Inbound and Outbound call volumes
- Payment arrangement statistics
- Daily work assignment volumes
- Disconnection/Reconnection statistics

These measures are regularly confirmed through discussions with utility organizations, such as Canadian Electricity Association and industry conferences, to ensure the measures continue to be relevant and to compare overall performance.

GAC/MH I-17

Subject: Manitoba Hydro Credit and Collections

b) Please provide all evaluations prepared since January 1, 2011 of the effectiveness of Manitoba Hydro's credit and collection activities.

ANSWER:

As previously outlined in Manitoba Hydro's responses to RCM/TREE/MH I-60 and RCM/TREE/MH I-70 in the 2010/11 & 2011/12 Electric General Rate Application, Manitoba Hydro follows generally accepted industry practices in its credit and collection processes. To assess the ongoing effectiveness of its credit and collections activities, Manitoba Hydro monitors the trending of a number of associated metrics related to the collections activity. Please see Manitoba Hydro's response to GAC/MH I-17(a) for a list of common used metrics.

GAC/MH I-17

Subject: Manitoba Hydro Credit and Collections

c) State the total budgeted collection costs for each fiscal year 2005 to current inclusive, separated by residential and non-residential accounts, associated with handling delinquent accounts, excluding administrative and overhead expenses.

ANSWER:

As previously outlined in Manitoba Hydro's response to RCM/TREE/MH I-62 under the 2010/11 & 2011/12 Electric General Rate Application, collection activities are part of the services provided by several areas within the corporation and are not budgeted for separately for residential and non-residential accounts.

The following table provides the budgeted collection costs for write offs associated with uncollectible accounts and external collection costs.

Fiscal Year	Collection Costs ($000s)
2012/13	4,347
2011/12	4,646
2010/11	4,542
2009/10	4,430
2008/09	5,463
2007/08	5,359

GAC/MH I-17

Subject: Manitoba Hydro Credit and Collections

d) State the total actual collection costs for each fiscal year 2005 to current inclusive, separated by residential and non-residential accounts, associated with handling delinquent accounts, excluding administrative and overhead expenses.

ANSWER:

As previously outlined in Manitoba Hydro's response to RCM/TREE/MH I-63 under the 2010/11 and 2011/12 Electric General Rate Application, collection activities are part of the services provided by several areas within the Corporation and are not separated for residential and non-residential accounts.

The following table provides the costs for write offs associated with uncollectible accounts and external collection costs.

Fiscal Year	Collection Costs ($000s)
2011/12	4,035
2010/11	4,497
2009/10	4,599
2008/09	5,019
2007/08	5,256

GAC/MH I-18

a) For each month since October 2007, please provide the number of each of the following for residential accounts:

i) Disconnection of service for nonpayment;

ANSWER:

The following table represents the number of residential accounts disconnected for nonpayment each month.

Disconnection of service for nonpayment						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		95	57	74	92	22
November		191	254	268	200	444
October		463	604	371	426	838
September		772	759	1,036	792	
August		1,098	1,216	1,120	1,104	
July	949	1,108	1,314	1,600	1,896	
June	1,131	1,638	1,677	1,612	1,864	
May	1,233	1,306	1,275	977	1,712	
April	384	453	528	415	313	
March	179	223	273	224	94	
February	236	194	178	159	103	
January	158	112	97	53	109	

GAC/MH I-18

a) For each month since October 2007, please provide the number of each of the following for residential accounts:

ii) Written disconnect notice (mailed);

ANSWER:

Manitoba Hydro does not mail disconnection notices separate from the customer's monthly bill. Without an active payment arrangement at 90 days, the "Urgent Notice of Disconnection" message is printed on the customer's bill.

GAC/MH I-18

a) For each month since October 2007, please provide the number of each of the following for residential accounts:

iii) Written disconnect notice (posted) (e.g., door hanger);

ANSWER:

The following table represents the number of residential accounts receiving a written disconnection notice each month.

Written disconnect notice						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		316	589	726	456	268
November		988	1,325	1,375	861	820
October		1,059	1,295	1,199	982	803
September		1,089	1,353	1,532	648	
August		1,519	1,817	1,565	989	
July	1,264	1,283	1,696	1,972	1,198	
June	1,802	1,731	2,093	1,768	1,188	
May	1,863	1,615	1,865	1,457	1,328	
April	1,245	2,119	1,671	1,307	914	
March	696	2,037	1,526	1,315	740	
February	943	1,298	1,534	899	838	
January	1,346	1,220	1,387	1,119	1,160	

GAC/MH I-18

a) For each month since October 2007, please provide the number of each of the following for residential accounts:

iv) The reconnection of service.

ANSWER:

The following table represents the number of residential accounts reconnected each month.

Residential Service Reconnections						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		163	192	161	147	70
November		336	370	397	306	665
October		585	721	610	611	990
September		1,023	955	1,112	1,028	
August		1,139	1,186	1,037	1,183	
July	905	1,161	1,295	1,498	1,853	
June	1,044	1,477	1,543	1,321	1,777	
May	937	1,001	966	692	1,345	
April	306	381	455	338	397	
March	218	251	273	216	114	
February	215	189	192	155	142	
January	238	124	126	80	118	

GAC/MH I-19

a) For each month October 2007 to present, please provide:

i) the total number of residential customers, by month and by tariff class; and

ANSWER:

Please see Manitoba Hydro's response to CAC/MH I-63(b).

GAC/MH I-19

a) For each month October 2007 to present, please provide:

ii) the average bill by month and by tariff class.

ANSWER:

The following tables present the average bill for a residential customer, by month and by tariff class, for the period October 2007 to March 2012.

Average Bill - Monthly Residential						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 106	$ 117	$ 105	$ 109	$ 105
November		84	84	81	81	78
October		72	69	79	68	65
September		65	59	59	59	
August		72	73	58	60	
July		72	70	60	56	
June		65	60	66	54	
May		77	70	73	68	
April		109	95	107	91	
March	109	124	103	111	109	
February	124	127	119	121	122	
January	129	145	138	146	120	

Average Bill - Diesel Residential						
	2012	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 86	$ 90	$ 241	$ 84	$ 103
November		82	112	113	103	109
October		67	46	55	81	65
September		84	110	74	60	
August		79	35	48	74	
July		75	86	104	59	
June		91	99	84	70	
May		84	119	96	88	
April		107	89	95	89	
March	$ 81	113	82	109	100	
February	113	132	102	88	107	
January	107	118	(3)	141	75	

**Average Bill - Seasonal Residential*						
Month	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
December		$ 13	$ 13	$ 14	$ 9	$ 9
November		13	13	14	9	9
October		13	13	14	9	9
September		55	47	50	40	
August		55	47	50	40	
July		55	47	50	40	
June		55	47	50	40	
May		27	23	25	20	
April		27	23	25	20	
March	$ 5	18	5	46	38	
February	13	13	14	9	9	
January	13	13	14	9	9	

GAC/MH I-20

a) Please provide Hydro's most recent analysis of the minimum level of residential arrears that would make service disconnection cost-effective.

ANSWER:

Under Manitoba Hydro's current policy, a residential bill must be past the due date of the 60 day bill and greater than $100 to disconnect a residential service.

When residential accounts are in arrears, Manitoba Hydro works with the customer to establish a mutually agreed upon payment arrangement that is both manageable for the customer and to ensure the customer does not fall further behind on their energy bill.

Payment arrangement guidelines encourage flexibility in working around the customer's paydays, child tax benefits, pension income, etc., and allows for changes to the previously agreed upon payment arrangement. Staff work within the customer's ability to pay, taking into consideration family circumstances such as unexpected health concerns, economic changes or family emergencies. The customer is asked to call back if the terms of the arrangement need to be altered to accommodate their specific circumstances.

Customers experiencing financial difficulties are also advised of the various social agencies that might be able to help, including Neighbours Helping Neighbours, Employment and Income Assistance or Community Financial Counselling Services. Customers are also informed of the Low Income Energy Efficiency Home Program (LIEEHP) and, if interest is expressed, a package of information is sent to customers who may qualify for the program.

GAC/MH I-21

a) For each fee on the residential tariff sheets, please provide:

i) The total residential revenue by year for 2007 to present generated by that fee;
ii) The ratemaking treatment of that revenue; and
iii) The proposed ratemaking treatment of that revenue in this proceeding.

ANSWER:

i) The tables on the following pages provide the breakdown of total residential revenue for the fiscal years 2007/08 to 2011/12 into billing determinants based on annual bill frequency data and the applicable rates for each year.

ii) Residential revenues are included in the class revenue in the Cost of Service Study. These revenues are compared to the cost to serve this customer class.

iii) Please see response to ii).

	RESIDENTIAL BASIC										
	Customer Months		Energy Usage (kWh)		Basic Charge $		Energy Charge $		Calculated	Adj.	Book
	<200 Amp	>200 Amp	1st Block	Balance	<200 Amp	>200 Amp	1st Block	Balance	Revenue	Factor	Revenue
2007/08	5,185,731	29,585	875,287,498	5,860,527,122	$32,358,961	$184,610	$51,992,077	$339,324,520	$423,860,170	1.0001	$423,909,786
2008/09	5,247,150	31,897	2,927,295,709	3,919,899,809	$34,106,475	$207,331	$176,808,661	$236,369,959	$447,492,425	1.0003	$447,668,363
2009/10	5,300,521	34,709	3,578,785,422	3,207,369,721	$36,308,569	$237,757	$223,674,089	$202,064,292	$462,284,707	0.9986	$461,657,959
2010/11	5,350,583	37,928	3,619,725,789	3,332,363,328	$36,651,494	$259,807	$230,938,505	$218,936,271	$486,786,076	0.9989	$486,269,178
2011/12	5,408,971	41,116	3,676,973,420	3,140,659,715	$37,051,451	$281,645	$243,415,640	$207,911,673	$488,660,410	0.9992	$488,254,336

	RESIDENTIAL DIESEL									
	Customer	Energy Usage (kWh)			Customer	Energy Charge $			Calculated	Adj.	Book
	Months	1st Block	2nd Block	Balance	Months $	1st Block	2nd Block	Balance	Revenue	Factor	Revenue
2007/08	6,377	1,088,601	5,522,262	234,407	$39,792	$64,663	$319,739	$96,740	$520,934	0.9934	$517,510
2008/09	6,476	4,019,176	3,097,498	218,727	$42,094	$242,758	$186,779	$90,268	$561,900	1.0060	$565,274
2009/10	6,473	5,064,661	2,155,555	260,271	$44,340	$316,541	$135,800	$107,414	$604,095	0.9859	$595,583
2010/11	6,601	5,132,320	2,230,684	306,998	$45,217	$327,442	$146,556	$121,886	$641,101	0.9829	$630,142
2011/12	6,818	5,289,830	2,310,314	320,585	$46,703	$350,187	$152,943	$48,088	$597,920	1.0002	$598,036

	RESIDENTIAL SEASONAL								
	Customer Months	Energy Usage (kWh)		Customer Months $	Energy Charge $		Calculated Revenue	Adj. Factor	Book Revenue
		1st Block	Balance		1st Block	Balance			
2007/08	20,437	39,007,327	29,382,211	$1,530,323	$2,317,035	$1,701,230	$5,548,588	0.9879	$5,481,273
2008/09	20,648	70,504,275	3,853,496	$1,546,141	$4,286,660	$235,950	$6,068,750	0.9909	$6,013,445
2009/10	20,839	78,094,538	3,368,728	$1,712,980	$4,880,909	$212,230	$6,806,118	0.9922	$6,752,753
2010/11	20,950	74,043,711	2,937,786	$1,722,083	$4,723,989	$193,013	$6,639,084	0.9947	$6,604,101
2011/12	20,844	78,788,174	4,312,320	$1,713,377	$5,215,777	$285,476	$7,214,630	0.9911	$7,150,537

GAC/MH I-22

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 2:

a) Please explain whether Hydro believes that time-of-use rates "Mitigate the Impact of Low Domestic Industrial Rates," to wit, that "Low energy rates attract energy-intensive load to Manitoba," reducing exports, requiring new resources, and increasing average costs and rates. If so, please explain how Hydro believes that time-of-use rates mitigate this problem.

ANSWER:

Time-of-Use rates would provide a clearer price signal to prospective energy-intensive loads regarding the value that firm export sales of on-peak energy provides to Manitoba Hydro and its domestic ratepayers. It is anticipated a strong on-peak time-of-use price signal will support the inclusion of load shifting and off-peak operation as key considerations for both existing and prospective energy intensive customers. Integration of these operational considerations into the planning process for new facilities will support enhanced firm export opportunities for Manitoba Hydro and reduced operating costs for energy-intensive customers, benefiting both parties.

GAC/MH I-22

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 2:

b) Would the proposed time-of-use rates charge new energy-intensive base-load industrial operations as much as Hydro could earn on firm export contracts?

ANSWER:

Time-of-Use rates are intended to provide an on-peak price signal that is reasonably correlated to the rates obtained from current firm export contracts in the on-peak period. The rate structure proposed provides for greater flexibility in adjusting future Time-of-Use rates to continue sending a price signal that is comparable to anticipated firm export contracts that may be negotiated going forward.

GAC/MH I-22

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 2:

c) Please explain how time-of-use rates would "Promote conservation" in the off-peak period.

ANSWER:

Manitoba Hydro anticipates that higher on-peak Time-of-Use rates would encourage conservation in critical on-peak periods when capacity constraints for both demand and energy are most pronounced and costly to address. In general, it is anticipated that measures implemented to support improved energy efficiency and conservation in the on-peak period would have residual benefits in the off-peak period as well.

GAC/MH I-23

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 4:

a. Please describe in detail the "Problem with two-tier rate design for industrial loads."

b. Please describe in detail the "Challenge when applied to new and/or expanding loads."

c. Please explain how time-of-use rates would "Greater incentive for conservation activities" in the off-peak period.

d. Please explain how time-of-use rates would "support economics for renewable energy initiatives," including

i. Explaining whether this assertion refers to customer decisions to install renewable energy generation behind the meter, Hydro's renewable energy initiatives, or something else.

ii. Providing any analysis Hydro has conducted (or reviewed) of the economics of solar, wind, biomass or other renewable energy options under Hydro's standard rate designs and the proposed time-of-use rates.

e. Please explain how an energy-intensive customer would shift on-peak load into Manitoba without shifting off-peak load as well.

ANSWER:

a. The problem with two-tiered rate design for industrial customers is that a separate baseline must be determined for each customer served on this rate. Baseline determination is particularly complicated in an industrial environment where facility loads are significantly influenced by production levels that are driven by global and regional economic conditions, intra-company competition for production allocations, and inter-company competition for market share.

b. Manitoba Hydro's EIIR contemplated a mechanism that addressed new load growth arising from expansion of existing industrial facilities and load growth from "New-to-Manitoba" industrial facilities. Application of two-tier rates creates an inequity between these two sources of load growth. The application of a baseline with a second higher-priced tier will generally result in any incremental load from an existing customer being charged at a higher rate, while a "New-to-Manitoba" customer will have the majority of their new load charged at the lower baseline rate, despite the fact that both customers contribute incremental load growth. The customer may perceive an inequity as a result of in the relative economic advantages and disadvantages for customers competing within the same sector that are purely related to the application of energy rates.

c. Please see Manitoba Hydro's response to GAC/MH I-22(c).

d. Higher on-peak rates may encourage industrial customers to implement peak-shaving systems that utilize resources such as renewable biomass, waste streams, and other fuel sources to reduce facility demand and consumption during higher-priced periods. Such applications may include behind-the-meter generation, process and/or space heating with alternative renewable fuels, etc.

   Manitoba Hydro has not undertaken an in-depth analysis of the economics of solar, wind, biomass or other renewable energy options relative to the proposed on-peak Time-of-Use rates, other than having subjective discussions with customers on the relative costs of renewable energy sources.

e. Some large energy intensive companies have regionally or globally distributed production facilities that share similar processes and operations. In some instances, excess capacity may be utilized with minimal lead-time or additional costs. Low uniform rates may encourage customers with facilities in Manitoba to shift load to the Province during higher-priced periods in other jurisdictions, creating additional and unexpected demand levels in Manitoba. That load may then be returned to other jurisdictions during lower-priced periods in those locales.

GAC/MH I-24

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 5:

a. Other than the convenience of using the MISO periods, is there any basis for selecting the 6 AM to 10 PM on-peak period?

b. Please provide Hydro's estimate of the hourly export price by hour, historically and forecast, that it used in selecting the on-peak period.

c. If Hydro has reviewed the hourly average prices by month or averaged over the year, please provide that analysis.

d. Did Hydro consider different peak hours for the summer, when the highest MISO prices for the Manitoba Hydro interface occur in the afternoon, than for the winter, when the highest prices occur in the morning and evening? If so, please explain why Hydro rejected that option.

e. Did Hydro consider three price blocks, to reflect the differences among hours during the 16-hour on-peak period? If so, please explain why Hydro rejected that option.

f. Did Hydro review export prices during the Saturday 6 AM to 10 PM period, to determine whether those hours (or a subset) should be included in the on-peak period?

g. Please provide the analysis from which Hydro determined that March should be a winter month.

h. Please provide the analysis from which Hydro determined that July and August do not merit on-peak prices comparable to the designated winter months.

ANSWER:

a. The MISO on-peak period of 6:00 am to 10:00 pm, Monday – Friday, reflects a time period that is highly relevant to time-of-use valuation of energy for purposes related to the management of extra-provincial market exports and imports. The intention of the time-of-use rate was to provide a price-signal to domestic industrial customers that clearly indicated the relative time-value of energy to Manitoba Hydro.

b. Historical market prices were applied to industrial load shapes and aggregated over the applicable seasonal and on-off peak periods for the purposes of analysis and comparison to prospective time-of-use rates. Manitoba Hydro did not develop estimates or forecasts of hourly export prices for the purposes of this comparison,

rather relied upon historical MISO market prices. Please see Manitoba Hydro's response to part c of this response.

c. The average of aggregated MISO market prices for seasonal and on-off peak periods at the Manitoba Hydro delivery point (not including transmission charges) applied to Manitoba industrial load shapes were provided in Slides 7 to 9 of the stakeholder presentation provided on August 15, 2012. Please find a copy of the presentation attached to this response.

d. Manitoba Hydro chose not to apply different on-off peak hours during the summer months for reasons related to simplicity of rate design, ease of rate application and the desire to send a consistent on-off peak price signal that customers can respond to in a consistent and material fashion. It is Manitoba Hydro's view that the on-peak summer period time-of-use rate represents a reasonable price signal for the spring/fall shoulder and summer periods.

Response to parts (e) and (f):

The 6:00 am to 10:00 pm, Monday to Friday on-peak period was chosen based on Manitoba Hydro's desire to provide a price signal to domestic customers that reflected Manitoba Hydro's historic 5 x 16 export contracts, which provide an important indication of on-peak energy valuation to the Corporation.

g. March is generally considered to be a winter month in both the MISO and Manitoba Hydro jurisdictions. Manitoba Hydro designated its winter and non-winter (summer) time-of-use periods based on water flow conditions. During December to March, ice limits Manitoba Hydro's ability to generate hydraulic energy in northern Manitoba.

h. Simplicity is an important objective in the design of the Time-of-Use rate structure, as it allows customers to respond to price signals in a reasonable fashion. Additional time periods and seasonality may make a Time-of-Use rate more representative of a market rate, but this increases the complexity of the price signal being provided to customers. The Time-of-Use rate is not based exclusively on market behavior. It is Manitoba Hydro's view that the on-peak summer period time-of-use rate represents a reasonable price signal for the spring/fall shoulder and summer periods.

Time-of-Use Rates

Stakeholder Conference

August 15, 2012

Rate Design Objectives

- Mitigate the Impact of Low Domestic Industrial Rates
  - Low energy rates attract energy-intensive load to Manitoba
  - On-peak load growth reduces energy available for export
  - Lower domestic rate decreases general utility revenues
- Ability to Secure High-Value Firm Export Contracts
  - Uncertainty regarding potential industrial load growth
  - Large incremental growth in on-peak period has strong influence
  - Lack of a market representative price signal to customers
- Address PUB Directives
  - Board Order 112/09 on Energy Intensive Industrial Rates
  - Evaluation of alternative proposals and rate designs
  - Promote conservation through rate design options

Time-of-Use Rate Design

- Broad-Based Applicability Across Rate Class
  - All load growth contributes to loss of profitable export revenue
- Revenue Neutral across each Rate Class
  - Maintains economic advantage of favorable Manitoba rates
- Provides Equity for all Accounts within Rate Class
  - Expanding loads and New-to-Manitoba loads treated similarly
  - Eliminates discriminatory aspect of formula-based rates
- Time-of-Use Price Signal Related to Market Price
  - Reflects value to Manitoba Hydro in the on-peak period
- Removes Impediments for Load Shifting to Off-Peak
  - Reduces demand charges for peak demand billings
  - Eliminates off-peak demand charge (capped by contract)

Time-of-Use Rate Design

- Eliminates Difficulty of Baseline Determination
  - Problem with two-tier rate design for industrial loads
  - Challenge when applied to new and/or expanding loads
- Communicates Value of Energy in the On-Peak Period
  - Discourages excessive energy consumption in peak periods
  - Greater incentive for conservation activities
  - Supports economics for renewable energy initiatives
  - Provides degree of on-peak export revenue protection
- Addresses Issues of Capacity Constraints in Delivery
  - Minimum billing demands related to contract capacity
- Commonly Applied Rate Structure in Other Jurisdictions
  - Multi-national customers operating across North America
  - Mitigates against on-peak load shifting into Manitoba

Time-of-Use Definition

- Corresponds with MISO Market On/Off Peak Periods
- Relates to Seasonal Periods of Energy Constraint
- Daily On-Peak Period
  - Monday to Friday - 6:00 AM to 10:00 PM
  - Excluding statutory holidays
- Daily Off-Peak Period
  - Monday to Friday - 10:00 PM to 6:00 AM
  - 24 hours – weekends and statutory holidays
- Seasonal Aspect
  - Winter Period (Dec to Mar)
  - Summer Period (Apr to Nov)

Indicative Time-of-Use Rate

	Time-of-Use	Current Structure
General Service Large (> 100 kV)		
Winter On-Peak Energy per kW.h	$0.0519	$.0298
Summer On-Peak Energy per kWh	$0.0419	$.0298
Off-Peak Energy per kWh	$0.0255	$.0298
On-Peak Demand per kVA	$2.70	$5.40
General Service Large (30 – 100 kV)		
Winter On-Peak Energy per kWh	$0.0550	$.0312
Summer On-Peak Energy per kWh	$0.0450	$.0312
Off-Peak Energy per kWh	$0.0285	$.0312
On-Peak Demand per kVA	$3.03	$6.06

MISO On/Off Peak Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (CDN$)

Fiscal	Average ($/kWh)	On-Peak ($/kWh)	Off-Peak ($/kWh)	Ratio (On/Off)
2006/07	$ 0.0541	$ 0.0720	$ 0.0393	1.83
2007/08	$ 0.0490	$ 0.0663	$ 0.0349	1.90
2008/09	$ 0.0409	$ 0.0564	$ 0.0279	2.02
2009/10	$ 0.0256	$ 0.0330	$ 0.0195	1.69
2010/11	$ 0.0257	$ 0.0324	$ 0.0202	1.60
2011/12	$ 0.0220	$ 0.0278	$0.0174	1.60
Proposed Industrial Time-of-Use Rate (CDN$)				
Energy Only	$ 0.0345	$ 0.0454	$ 0.0255	1.78
Demand & Energy	$ 0.0395	$ 0.0560	$ 0.0255	2.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO Seasonal Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (CDN$)

Fiscal	Average ($/kWh)	Winter ($/kWh)	Summer ($/kWh)	Ratio (Win/Sum)
2006/07	$ 0.0541	$ 0.0658	$ 0.0477	1.38
2007/08	$ 0.0490	$ 0.0575	$ 0.0444	1.30
2008/09	$ 0.0409	$ 0.0427	$ 0.0400	1.07
2009/10	$ 0.0256	$ 0.0345	$ 0.0211	1.64
2010/11	$ 0.0257	$ 0.0268	$ 0.0250	1.07
2011/12	$ 0.0220	$ 0.0216	$0.0223	0.97
Proposed Industrial Time-of-Use Rate (CDN$)				
Energy Only	$ 0.0345	$ 0.0375	$ 0.0329	1.14
Demand / Energy	$ 0.0395	$ 0.0420	$ 0.0378	1.11

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO On-Peak Behaviour

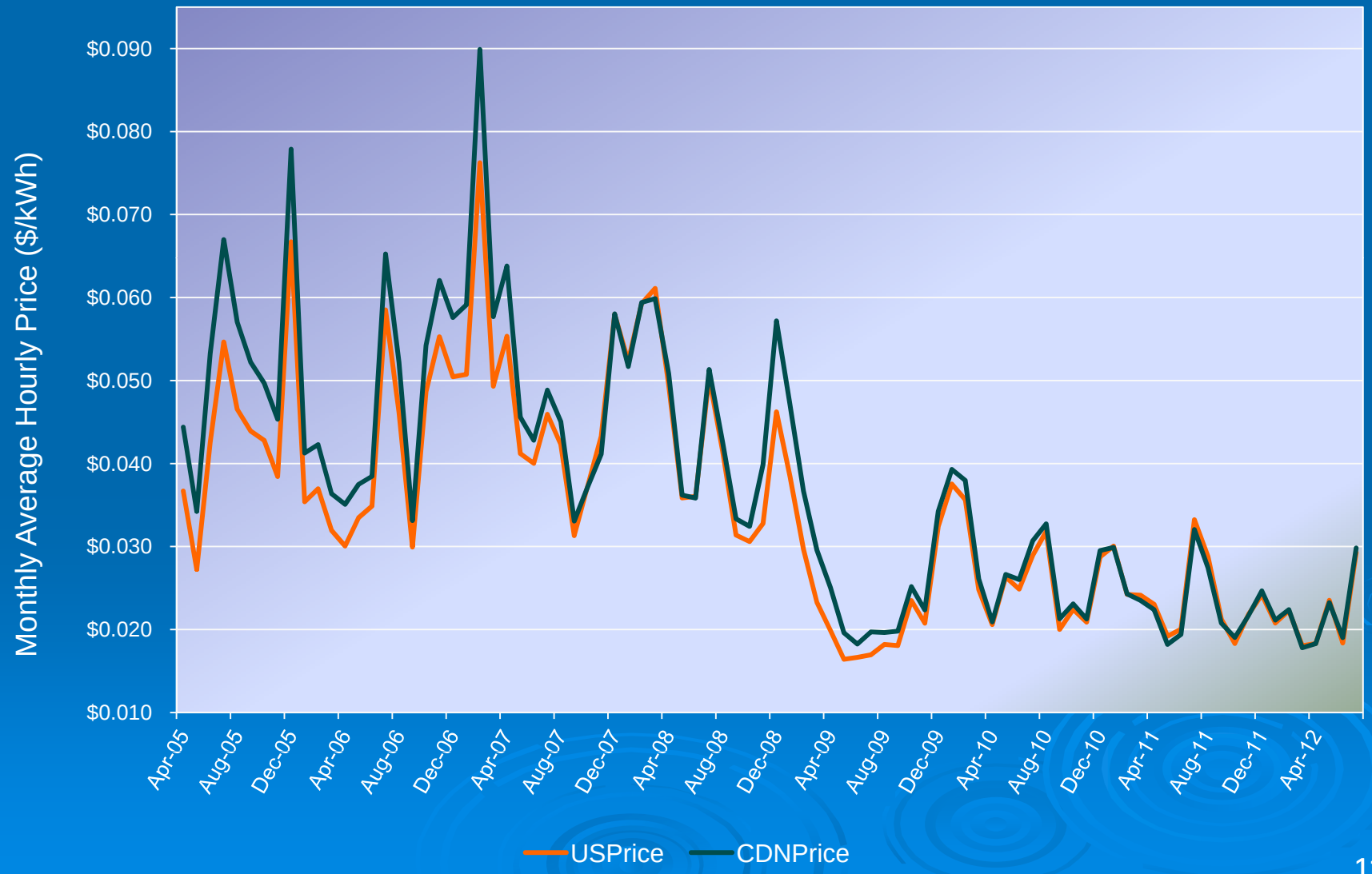
GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (CDN$)

Fiscal	Average ($/kWh)	Winter ($/kWh)	Summer ($/kWh)	Ratio (Win/Sum)
2006/07	$ 0.0720	$ 0.0834	$ 0.0658	1.27
2007/08	$ 0.0663	$ 0.0736	$ 0.0625	1.18
2008/09	$ 0.0564	$ 0.0540	$ 0.0576	0.94
2009/10	$ 0.0330	$ 0.0420	$ 0.0283	1.48
2010/11	$ 0.0324	$ 0.0328	$ 0.0321	1.02
2011/12	$ 0.0278	$ 0.0255	$0.0290	0.88
Proposed Industrial Time-of-Use Rate (CDN$)				
Energy Only	$ 0.0454	$ 0.0519	$ 0.0419	1.24
Demand & Energy	$ 0.0557	$ 0.0625	$ 0.0525	1.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

US-CDN Exchange Rate Impact

Monthly MISO Average Price



MISO On/Off Peak Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (US$)

Fiscal	Average ($/kWh)	On-Peak ($/kWh)	Off-Peak ($/kWh)	Ratio (On/Off)
2006/07	$ 0.0474	$ 0.0632	$ 0.0345	1.83 (1.83)
2007/08	$ 0.0474	$ 0.0642	$ 0.0338	1.90 (1.90)
2008/09	$ 0.0370	$ 0.0513	$ 0.0249	2.06 (2.02)
2009/10	$ 0.0234	$ 0.0301	$ 0.0179	1.68 (1.69)
2010/11	$ 0.0251	$ 0.0317	$ 0.0198	1.60 (1.60)
2011/12	$ 0.0223	$ 0.0281	$0.0176	1.60 (1.60)
Proposed Industrial Time-of-Use Rate (CDN$)				
Energy Only	$ 0.0345	$ 0.0454	$ 0.0255	1.78
Demand & Energy	$ 0.0395	$ 0.0560	$ 0.0255	2.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO Seasonal Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (US$)

Fiscal	Average ($/kWh)	Winter ($/kWh)	Summer ($/kWh)	Ratio (Win/Sum)
2006/07	$ 0.0474	$ 0.0564	$ 0.0425	1.33 (1.38)
2007/08	$ 0.0474	$ 0.0579	$ 0.0418	1.39 (1.30)
2008/09	$ 0.0370	$ 0.0345	$ 0.0382	0.90 (1.07)
2009/10	$ 0.0234	$ 0.0327	$ 0.0187	1.75 (1.64)
2010/11	$ 0.0251	$ 0.0268	$ 0.0242	1.11 (1.07)
2011/12	$ 0.0223	$ 0.0214	$0.0229	0.93 (0.97)
Proposed Industrial Time-of-Use Rate (CDN$)				
Energy Only	$ 0.0345	$ 0.0375	$ 0.0329	1.14
Demand / Energy	$ 0.0395	$ 0.0420	$ 0.0378	1.11

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

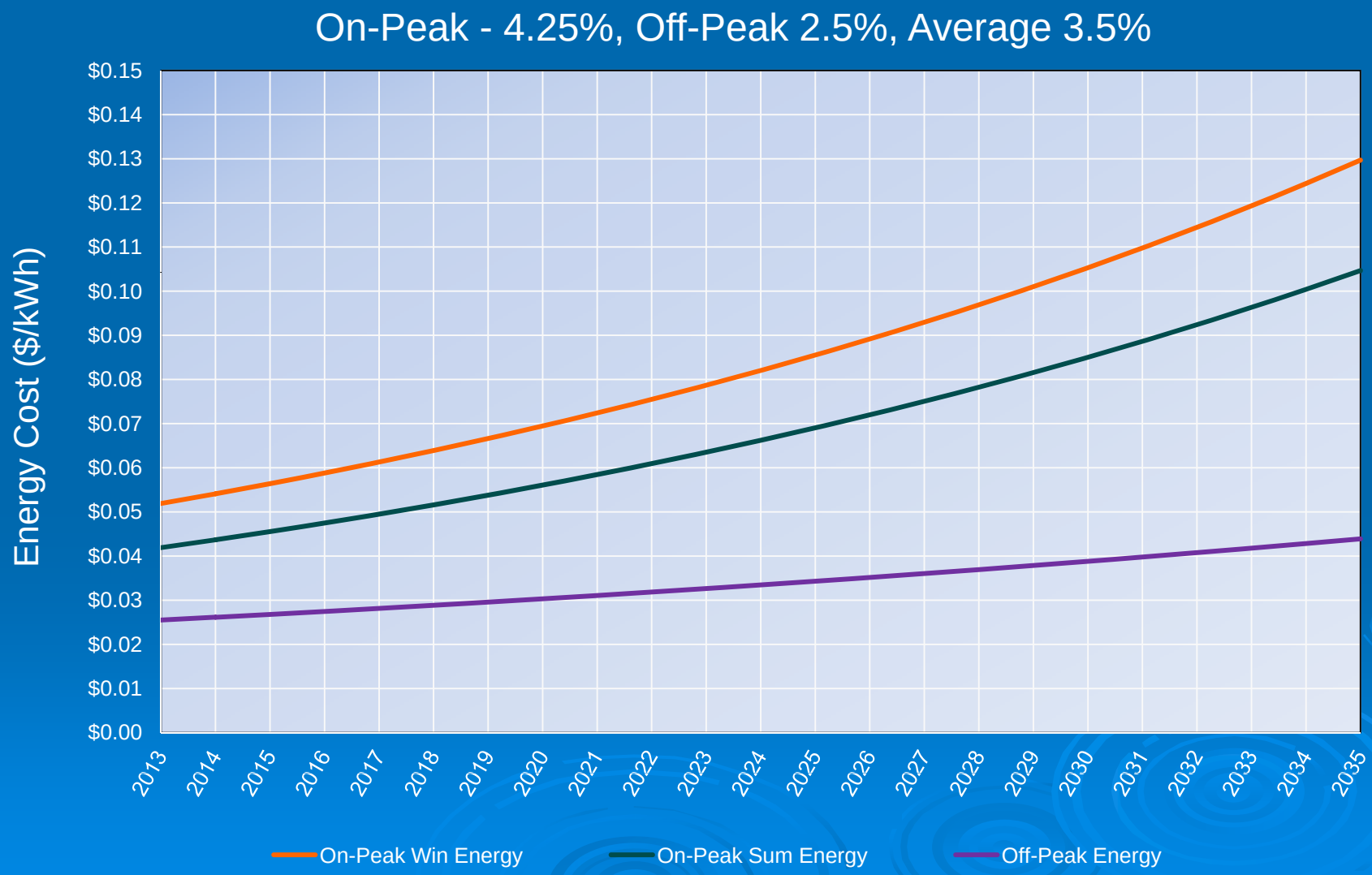
MISO On-Peak Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (US$)

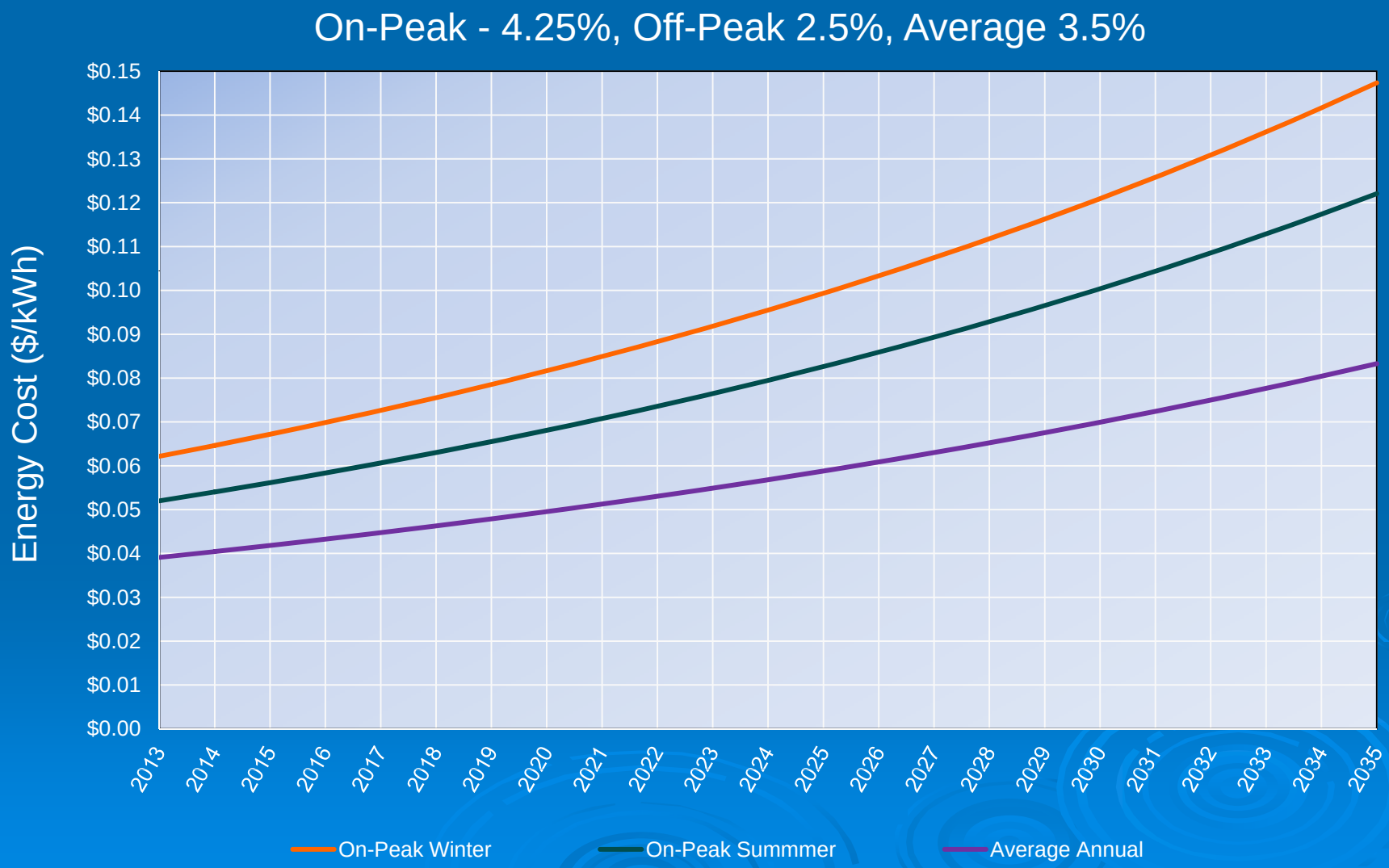
Fiscal	Average ($/kWh)	Winter ($/kWh)	Summer ($/kWh)	Ratio (Win/Sum)
2006/07	$ 0.0632	$ 0.0715	$ 0.0586	1.22 (1.27)
2007/08	$ 0.0642	$ 0.0741	$ 0.0591	1.25 (1.18)
2008/09	$ 0.0513	$ 0.0436	$ 0.0552	0.80 (0.94)
2009/10	$ 0.0301	$ 0.0398	$ 0.0251	1.59 (1.48)
2010/11	$ 0.0317	$ 0.0328	$ 0.0310	1.06 (1.02)
2011/12	$ 0.0281	$ 0.0253	$0.0297	0.85 (0.88)
Proposed Industrial Time-of-Use Rate (CDN$)				
Energy Only	$ 0.0454	$ 0.0519	$ 0.0419	1.24
Demand & Energy	$ 0.0557	$ 0.0625	$ 0.0525	1.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

Rate Strategy (Energy)



Rate Strategy (Energy/Demand)



Customer TOU Impacts

- Bill Impacts are Related to Consumption Behavior
  - Consumption load factor (more energy-centric rate design)
  - On-Peak to Off-Peak energy consumption ratios
  - Seasonal Winter to Summer energy consumption ratios
- Contracts May Impact Minimum Billing Demand
  - 50 percent minimum demand bill relates to contracted capacity
  - Addresses transmission and distribution capacity constraints
  - Relates to reserved transmission and distribution capacity
- Larger Bill Impacts Addressed by Contract Revisions
  - Contracted capacity levels relative to actual consumption levels
  - Opportunity for customer to reserved capacity (at a known cost)
  - Addresses changing economy and constraints in MH system

Customer TOU Impacts

(Standard Rates .vs. Indicative April 1, 2013 TOU Rates)

	Number of Customers	
	Large 30 – 100kV	Large >100kV
Decrease > 5%	2	2
Decrease 3% – 5%	5	2
Decrease 1% – 3%%	11	2
Increase or Decrease <1%	5	4
Increase 1% – 3%	5	1
Increase 3% - 5%	6	0
Increase > 5%	3	1
Total Customers	**37**	**12**

Time-of-Use Conclusions

- Time-of-Use Addresses Many Rate Design Concerns
  - Provides broad applicability to all customers within rate class
  - Eliminates challenge of baseline determination (industrial)
  - Ensures equitable treatment of all consumption and growth
  - Enables customers to load-shift with minimal rate impediment
  - Provides strong on-peak conservation stimulus for industry
- Reduces Impediments to Industrial Economic Growth
  - Provides for revenue neutral implementation of new structure
  - Preserves Manitoba's favorable average industrial power rates
  - Provides reasonable access to lower cost off-peak energy
  - Accommodates customers with favorable load profiles
  - Addresses impact of high load-factor, energy-intensive growth

Time-of-Use Conclusions

- Short-Term MISO Market Has Changed Since 2008
  - Reduced demand for energy coupled with low natural gas rates
  - US-CDN exchange rates have decreased and stabilized
  - On/off peak price ratios have remained relatively constant
  - Seasonal ratios have fluctuated due to economic conditions
  - Time-of-Use rate design is reflective of market price signals
- Provides a Market Relative On-Peak Price Signal
  - Representative of higher-value energy during on-peak periods
  - Provides flexibility in future rate design for market changes
  - Provides some degree of on-peak export revenue protection

GAC/MH I-25

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 6:

a. Please provide the derivation of the proposed demand charges.

ANSWER:

The proposed demand charges reflect 50% of the current demand charges with the remaining revenue to be collected in on-peak energy charges. The proposed demand charge was selected to reduce impediments to load shifting and to increase the energy price signal in the on-peak period to better reflect current export contract levels applicable in the on-peak period.

GAC/MH I-25

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 6:

b. Please demonstrate that 50% of these charges times the contract demand "Addresses transmission and distribution capacity constraints," and "Relates to transmission and distribution capacity reserved by customers." (slide 16)

ANSWER:

Current General Service Large rates presently provide for a minimum monthly billing demand of 25 percent of a customer's contract demand or peak monthly demand in the previous 12 months. This price signal has proven to be inadequate to persuade customers with very low monthly demand levels (relative to their reserved contract demand) to restate their contract demand despite maintaining these low demand levels for sustained periods of time .

Manitoba Hydro is concerned that unused capacity reserved by customers through their specified contract demand levels may impede the Corporation's ability to serve new and/or expanding load with existing transmission infrastructure, resulting in potential costs for new infrastructure that would not be required if unused capacity was released. Contractually, customers have historically not been required to release unused capacity in order for Manitoba Hydro to serve other load (i.e. new/expanding customers, firm export sales, etc).

The intent of the revised minimum monthly billing demand is to send a stronger price signal to customers in regards to the cost of unused capacity to Manitoba Hydro.

The 50 percent minimum monthly billing demand ratchets may result in billing increases ranging from 5 to 15 percent for customers that operate at very low demand levels relative to their specified contract demand. This proposed change to the demand ratchet creates an incentive for customers to restate contract demands to levels to be more proportional to their actual demand levels, which would serve to mitigate the potential billing increase.

GAC/MH I-26

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slides 7–9 and 11–13:

a. Please provide the hourly data underlying the top portions of the slides, in Excel-readable format.

b. Please explain whether Hydro believes that time-of-use pricing should be based on historical pattern in US$ or CDN$.

ANSWER:

a. The hourly data used to develop the aggregated energy prices shown in slides 7-9 and 11-13 reflects the application of hourly market pricing at the Manitoba Hydro delivery point (without transmission charges). Given the file size of the data set requested, Manitoba Hydro will provide an Excel spreadsheet only, and will not prepare hard copies.

b. The MISO pricing was stated in USD, while the Time of Use rates were quoted in CAD. The intent of the representation was to remove the impact of currency fluctuation and show that the proposed Time of Use rates exhibited similar on-off peak price ratios and seasonal price ratios to those historically present in the market.

GAC/MH I-27

a) With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 10:

a. Please provide the data underlying the graph, and the computation of the US$ prices from CDN$ prices.

ANSWER:

The exchange rates used to develop the graph in Slide 10 of the stakeholder presentation on August 15th were based on the noon-day exchange rate on the final day of the preceding month. The MISO USD hourly day-ahead prices for the following month were then multiplied by the noon-day exchange rate to determine the equivalent CAD hourly day-ahead price.

Please see the attachment to this response.

US-CDN Exchange Rates

Noon-Day	US$toCDN$
31-Mar-05	1.20960
30-Apr-05	1.25690
31-May-05	1.25100
30-Jun-05	1.22560
31-Jul-05	1.22590
31-Aug-05	1.18890
30-Sep-05	1.16110
31-Oct-05	1.18010
30-Nov-05	1.16740
31-Dec-05	1.16590
31-Jan-06	1.14390
28-Feb-06	1.13800
31-Mar-06	1.16710
30-Apr-06	1.12030
31-May-06	1.10280
30-Jun-06	1.11500
31-Jul-06	1.13090
31-Aug-06	1.10660
30-Sep-06	1.11530
31-Oct-06	1.12270
30-Nov-06	1.14150
31-Dec-06	1.16530
31-Jan-07	1.17920
28-Feb-07	1.17000
31-Mar-07	1.15290
30-Apr-07	1.10670
31-May-07	1.06990
30-Jun-07	1.06340
31-Jul-07	1.06570
31-Aug-07	1.05640
30-Sep-07	0.99630
31-Oct-07	0.94990
30-Nov-07	1.00080
31-Dec-07	0.98810
31-Jan-08	1.00220
29-Feb-08	0.97980
31-Mar-08	1.02790
30-Apr-08	1.00950
31-May-08	0.99420
30-Jun-08	1.01860
31-Jul-08	1.02570
31-Aug-08	1.06260
30-Sep-08	1.05990
31-Oct-08	1.21650
30-Nov-08	1.23720

US-CDN Exchange Rates

Noon-Day	US$toCDN$
31-Dec-08	1.22460
31-Jan-09	1.23640
28-Feb-09	1.27070
31-Mar-09	1.26020
30-Apr-09	1.19400
31-May-09	1.09610
30-Jun-09	1.16250
31-Jul-09	1.07900
31-Aug-09	1.09670
30-Sep-09	1.07220
31-Oct-09	1.07740
30-Nov-09	1.05740
31-Dec-09	1.04660
31-Jan-10	1.06500
28-Feb-10	1.05260
31-Mar-10	1.01560
30-Apr-10	1.01160
31-May-10	1.04620
30-Jun-10	1.06060
31-Jul-10	1.02900
31-Aug-10	1.06390
30-Sep-10	1.02980
31-Oct-10	1.01880
30-Nov-10	1.02640
31-Dec-10	0.99460
31-Jan-11	1.00220
28-Feb-11	0.97390
31-Mar-11	0.97180
30-Apr-11	0.94860
31-May-11	0.96880
30-Jun-11	0.96430
31-Jul-11	0.95380
31-Aug-11	0.97840
30-Sep-11	1.03890
31-Oct-11	0.99350
30-Nov-11	1.01970
31-Dec-11	1.01700
31-Jan-12	1.00520
29-Feb-12	0.98660
31-Mar-12	0.99910
30-Apr-12	0.98840
31-May-12	1.03490
30-Jun-12	1.01910

GAC/MH I-28

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 16:

a. Please explain how frequently each customer would be allowed to revise its contract demand level.

b. Please explain the meaning of "Opportunity for customer to reserved capacity (at a known cost)."

c. Please explain how contract revisions "Address changing economic conditions…in MH system."

d. Please explain how contract revisions "Address changing… constraints in MH system."

e. Would Hydro be able to decline to revise contracts if the excess transmission and distribution capacity created by a customer's demand reduction would not be used by other customers?

ANSWER:

a) Contracted demand levels are specified in Manitoba Hydro's Supply Agreement with large customers. The duration of this Agreement is negotiated when the customer initially obtains service and at subsequent renewals thereafter. Customers have the right to approach Manitoba Hydro at any time after a negotiated period with a request to renegotiate the terms of their Supply Agreement. Clause 4 a) from the Supply Agreement is included below as reference :

> *4. (a) The Customer may at any time after a date which is ____ billing year(s) calculated from the 30th day of November next following the commencement date, by notice to Manitoba Hydro, decrease the amount of contracted power. The effective date of the decrease shall be the 1st day of December of the billing year next following the date of the notice, provided that notice is given to Manitoba Hydro at least 60 days prior to the start of the billing year, otherwise the effective date shall be the 1st day of December of the second billing year following the date of the notice.*

Customers may also request increases to their contracted demand level at any time as specified in Clause 3 of the Supply Agreement, which is provide below for reference:

> *3. The Customer may by notice to Manitoba Hydro request an increase in the amount of Contracted Power together with the energy supplied with such excess power, at any time, and Manitoba Hydro will use its best endeavours to supply the increased amount of power and energy requested by the date it is required by the Customer, on terms and conditions applicable to Customers in the rate classification in which the Customer will be following such increase.*

Customers may however incur significant costs for access to higher contracted demand levels based on the costs for providing that capacity from Manitoba Hydro's generation and transmission system.

b) Manitoba Hydro is contractually obligated to provide power up to a customer's contract demand. Manitoba Hydro's current General Service Large rate structure includes a minimum monthly demand charge that is defined as the highest of actual recorded demand, 25% of contract demand or 25% of the highest recorded demand in the past 12 months. This billing threshold provides minimal incentive for most large customers to reduce their contracted demand levels if significant contracted capacity remains unused. The change in the demand ratchets from 25% to 50% proposed in the Application would result in some customers paying a contribution toward the unused capacity specified in their Supply Agreement.

Based on historic demand levels, these customers may choose to reduce their contracted demand in order to reduce their demand charges, or they may choose to retain their contracted demand level and reserve this capacity on Manitoba Hydro's generation and transmission system at a known cost based on the monthly demand charge.

c) Changing economic conditions in the market may have long term implications for customer operations, positively or negatively impacting usage requirements relative to contracted demand levels. The present General Service Large rate structure provides no premium for unused capacity above 25 percent of contracted demand levels, so customer may continue to retain their contracted demand levels even if there is no expectation to utilize that capacity in the future. The time-of-use rate proposal increases that threshold to 50 percent of contracted demand, providing some return to Manitoba Hydro for committed capacity that is not utilized.

d) Manitoba Hydro is facing increasing capacity constraints in its generation and transmission system. Capacity reserved by customers in their Supply Agreements is considered to be a firm capacity commitment that must be met under all conditions. Unused capacity therefore places a requirement on Manitoba Hydro to provide for firm supply at a time when capacity constraints may be forcing the Corporation to incur significant expenditures to meet new load growth. Increasing the minimum monthly demand charge to 50% of a customer's contract demand, provides an incentive for customers to release unused capacity.

e) Under the present terms of the Supply Agreement such a request could not be denied after the negotiated period specified in Clause 4. (a) as noted in the response to item a) of this question.

For the reasons noted in response to part (d), Manitoba Hydro encourages customers with unused capacity, to reduce their contracted demand.

GAC/MH I-29

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 18:

a. Would "Manitoba's favorable average industrial power rates" continue to "attract energy-intensive load to Manitoba" (slide 2)? If so, how would time-of-use rates solve the problems described on slide 2?

b. Please explain how the proposed time-of-use rates would "Addresses impact of high load-factor, energy-intensive growth."

ANSWER:

a) The introduction of Time-of-Use rates will not entirely eliminate the risk that Manitoba Hydro's favorable average industrial power rates will continue to attract energy intensive load to Manitoba. Time-of-Use rates do however provide a clearer price signal to prospective energy-intensive loads regarding the value that firm export sales of on-peak energy provides to Manitoba Hydro and its domestic ratepayers.

b) It is anticipated that a strong on-peak Time-of-Use price signal will support load shifting and off-peak operation as key considerations for existing and prospective energy intensive customers, which will support enhanced firm export opportunities for Manitoba Hydro. Integrating Time-of-Use considerations into the planning process for new industrial facilities will support the potential for load shifting, enhancing firm export opportunities for Manitoba Hydro in the long term.

GAC/MH I-30

With regard to Hydro's August 15, 2012 stakeholder presentation on General Service Large time-of-use rates, slide 19:

a. Please provide Hydro's projection of natural gas prices for 2013–2030.
b. Please provide Hydro's projection of export prices for 2013–2030.

ANSWER:

Please see Manitoba Hydro's response to CAC/MH I-113 (all parts).

GAC/MH I-31

Subject: Fuel switching

Please file Manitoba Hydro's Report on the Environmental and Economic Impacts of Fuel Switching in response to Directive 17 of PUB Orders 116/08 and 150/08.

ANSWER:

Manitoba Hydro filed the report "Economic, Load, and Environmental Impacts of Fuel Switching in Manitoba" in response to Directive 17 of Orders 116/08 and 150/08, with the Public Utilities Board on September 11, 2012. Please find a copy of the report in Appendix 26.

GAC/MH I-32

Subject: Fuel switching

Please consider the following technology and fuel choice scenarios (1) at time of furnace replacement in an existing home and (2) for new home construction.

i. **High-efficiency natural gas furnace vs. conventional electric furnace.**
ii. **High-efficiency natural gas furnace vs. geothermal SCOP 2.5 heating system**
iii. **High-efficiency natural gas furnace vs. geothermal SCOP 3.5 heating system**
iv. **Side-vent gas hot water tank vs. conventional electric hot water tank**
v. **Conventional gas hot water tank vs. conventional electric hot water tank**
vi. **Conventional electric furnace vs. geothermal SCOP 3.5 heating system**

1. **For an average Manitoba home, please provide the following data for each of the above technologies.**

    a. **installed capital costs**
    b. **annual fuel consumption**
    c. **annual operating (fuel) and maintenance costs**

2. **For each choice of the right-hand technology over the left-hand technology in the above pairs in each of the existing and new house scenarios, please calculate the following.**

    a. **Impact on GHGs in Manitoba**
    b. **Impact on GHGs in the MISO market**
    c. **Incremental capital costs**
    d. **Levelized incremental costs (benefits) to the electric utility**
    e. **Levelized incremental costs (benefits) to the gas utility**
    f. **Levelized incremental costs (benefits) to the customer**
    g. **Combined cost (benefit) impact**
    h. **Net provincial gain (leakage) from change in electric export revenues from MISO and change in natural gas payments to Alberta**

3. **Please detail all assumptions and calculations for the above derivations and provide live spreadsheets for the calculations with formulas intact.**

4. Please calculate the following sensitivities, one at a time, for the above calculations.

a. The homes are weatherized to Power Smart standards
b. Natural gas prices increase by 50%
c. Geothermal installation capital costs are reduced 20%
d. GHG emissions displaced by Manitoba's hydropower exports are equivalent to those produced from combined cycle natural gas generation in the MISO market

ANSWER:

Please see the report filed in Appendix 26 in response to GAC/MH I-31.

GAC/MH I-33

Subject: **Residential rate comparisons with other cities.**

Reference: **Appendix 10.10 - Survey of Canadian Electricity Bills Effective May 1, 2012**

Please add two more rows to each of the residential rates comparison tables for the following two tariffs from Seattle City Light

Rates Effective January 1, 2012
(http://www.ci.seattle.wa.us/light/Accounts/Rates/ac5_rt2k24.htm)

Seattle City Light Rate Schedules – Effective January 1, 2012

Rate Class	All Months

Residential: City [RSC]

First Block *	$ 0.0476	kWh
End Block **	$ 0.0987	kWh
Base Service Charge per Day	$ 0.1192	X30 = $3.576 per month

Residential Elderly/Disabled & Low-Income: City [REC/RLC]

First Block *	$0 .0200	kWh
End Block **	$ 0.0366	kWh
Base Service Charge per Day	$ 0.0597	X30 = $1.791 per month

***$/kWh: first 10 kWh/day in Summer (April-September); first 16 kWh/day in Winter (October-March)**

= first 300 kWh/month in Summer; first 480 kWh/month in Winter

****$/kWh: all additional kWh/day**

ANSWER:

Manitoba Hydro does not perform or warrant bill calculations for other utilities' rate classes. The bill comparisons in Manitoba Hydro's survey are provided by the surveyed utilities, who maintain the expertise regarding the structure and application rules for their respective rate schedules. Therefore Manitoba Hydro declines to provide the requested calculations or to adopt such as its evidence in this proceeding.

GAC/MH I-34

Subject: **MISO GHG profile**

Reference: **In Order 5/12 at pp. 51-52, the PUB finds "that MH may be routinely selling hydraulic energy and purchasing mostly coal-generated energy in the same year. When MH accesses the MISO market for the lowest-price energy, coal energy would, in off-peak periods, be the most likely source. This effectively negates the benefits of restricting the operation of the Brandon Coal Plant. The Board understands that under the WCC initiatives, the coal-fired imports would be assigned to MH. In these circumstances a natural gas CCCT could in effect, reduce, MH's GHG footprint."**

Please provide the most current data and analyses that Manitoba Hydro has or knows of regarding time-differentiated GHG emissions in the MISO generation pool.

ANSWER:

Manitoba Hydro does not have an analysis of marginal GHG emission rates for market electricity that is focused on the differences between on-peak and off-peak periods. Further, the electricity market operator in the Midwest (MISO) does not publish data regarding time-differentiated GHG emissions.

GAC/MH I-35

Subject: **Integrated low-income strategy**

Reference: **In Order 5/12 at p. 167, the PUB says, "The Board is firmly of the view that MH should participate in an integrated strategy with respect to low-income programs. This could, and likely would, include a defined role in education, promotion, monitoring and perhaps delivery of such a program in conjunction with CBOs."**

Please indicate any responses Manitoba Hydro has taken or intends to take with respect to this view of the PUB.

ANSWER:

Manitoba Hydro participates in the following committees to ensure energy efficiency programming is effectively integrated within various program initiatives targeting the lower income market sector:

- **ALL Aboard Inter-Departmental Working Group (IDWG):** ALL Aboard is the Province of Manitoba's poverty reduction and social inclusion strategy. The ALL Aboard Committee, comprised of ministers responsible for policies, programs and services that affect poverty reduction and social inclusion, was established in June 2011 when *The Poverty Reduction Strategy Act* came into force. In support of the Committee, an IDWG was developed, and Manitoba Hydro actively participates in IDWG meetings sharing information about its Power Smart Lower Income Program and opportunities for increasing participation.

- **LiveSafe:** The LiveSafe! Working Group was established to develop and implement a Community Safety and Wellness plan within a 21 block area of Winnipeg in the William Whyte and Dufferin neighbourhoods. Manitoba Hydro was invited to speak with the LiveSafe! Working Group about its Power Smart programs; specifically, the Lower Income Energy Efficiency Program. As a result of that presentation, Manitoba Hydro has been invited to participate on a sub-committee established to examine strategies for the improvement of housing in the area.

- **Residential Rehabilitation Assistance Program for Homeowners (RRAP):** RRAP is a program offered by the Province of Manitoba where a forgivable loan is provided to pay for eligible repairs to their home. Manitoba Hydro and RRAP work together to cross promote programs.

- **Neighbourhoods Alive! and Community Renewal Corporations:** Manitoba Hydro has built relationships with many community renewal organizations since the inception of LIEEP. Manitoba Hydro has worked with staff at Neighbourhoods Alive! to generate ideas on how community renewal organizations can increase community participation in the LIEEP.

- **Seniors and Healthy Aging Secretariat:** Manitoba Hydro works with the Seniors and Healthy Aging Secretariat to promote the LIEEP.

- **Manitoba Housing and Non-Profit Social Housing Organizations:** Manitoba Hydro works with both Manitoba Housing as well as non-profit social housing organizations to retrofit rental homes designated for customers with lower incomes. Social enterprises, such as Brandon Energy Efficiency Program (BEEP) or Building Urban Industries for Local Development (BUILD), are primarily engaged to perform these energy efficient retrofits.

- **Salvation Army- Neighbours Helping Neighbours (NHN):** The NHN program, offered in partnership with The Salvation Army, connects customers facing personal hardships with government and social programs in their community to aid in finding long term solutions and providing one-time emergency funding to assist with energy bills in the short term. In addition, customers experiencing financial difficulties are advised of the social agencies that might be able to help (i.e.Employment and Income Assistance or Community Financial Counseling Services).

- **"Neighborhood Approach":** Manitoba Hydro is currently developing a "Neighborhood Approach" to enable Community Based Organizations and neighbourhood groups to deliver energy efficiency programming within lower income neighbourhoods, and to integrate energy efficiency into their overall strategic planning. Manitoba Hydro is working with non-profit community organizations such as Brandon Neighborhood Renewal Corporation and North End Community Renewal Corporation to develop and deliver the proposed "Neighborhood Approach".