

ATTACHMENT B

# 2012 ELECTRIC LOAD FORECAST

(For External Use)

MARKET FORECAST  
MAY 2012

APPROVED JULY 2012

 Manitoba  
Hydro

## EXECUTIVE SUMMARY

### Overview

The actual Gross Firm Energy was 23,605 GW.h in 2011/12. Gross Firm Energy has grown 371 GW.h (1.7%) per year for the past 10 years. It is forecast to grow to 33,425 GW.h by 2031/32 at an average growth of 453 GW.h or 1.6% per year.

Most of the forecast growth is expected to occur in General Service Mass Market, growing 172 GW.h (1.9%) per year over the next ten years, followed by Residential Basic at 118 GW.h (1.5%) and Top Consumers at 116 (1.9%) per year.

During the last 10 years, Residential Basic customers have grown at an average of 3909 (0.9%) per year. Manitoba Hydro's 2012 Economic Outlook provides the forecast of Residential Basic customers, and this document uses that forecast. It calls for a growth of 6,301 (1.3%) per year over the next ten years and 6,290 (1.2%) per year over the next 20 years. The primary reason for the increase is an expectation of increased population growth in Manitoba due to government immigration initiatives which will impact both the Residential and Commercial Sectors.

Gross Total Peak is forecast to grow from a weather adjusted peak of 4,380 MW in 2011/12 to 6,032 MW at 83 MW (1.6%) per year by 2031/32.

### Comparison with the 2011 Forecast

The Gross Firm Energy forecast is down 212 GW.h in 2012/13 due to initial-year decreases to the GS Mass Market and GS Top Consumers forecasts. This difference narrows due to the increased forecast of customers and by 2020/21 the forecast is down only 61 GW.h. By 2030/31, the Gross Firm Energy forecast is up 359 GW.h (1.1%) which is equivalent to 3/4 of a year of load growth (1 year = approximately 450 GW.h).

Changes made (and the 2030/31 effect):

1. Residential Basic forecast (+222 GW.h), primarily due to the increase in the forecast of customers (+283 GW.h).

2. General Service Mass Market forecast (+39 GW.h), affected by the increase in the forecast of customers (+340 GW.h) but largely offset by decreases due to GDP, modeling, Codes and Standards and Electric Vehicles.
3. General Service Top Consumers forecast (+48 GW.h). This is the net change of the 17 consumers individually forecast.
4. Other Sales and Losses (+50 GW.h)

The Gross Total Peak forecast is down 158 MW in 2012/13 which is a significant drop of 2 years of peak growth (1 year = approximately 80 MW). The reason for the large drop was a correction to the Distribution Losses calculation for the peak. This resulted in a decrease to the peak forecast of 135 MW in 2012/13, 151 MW in 2020/21 and 171 MW in 2030/31. After modifying the peak to reflect changes in the energy forecast, final changes to the peak forecast were down 158 MW in 2012/13, down 184 MW by 2020/21 and down 134 MW by 2030/31.

**Load Variability and Possible Events**

The forecast presented in this document is Manitoba Hydro’s best estimate of Manitoba’s future electricity requirements. Recognizing the potential for variation, load variability is analyzed using a probabilistic-based approach to determine how future actual loads may vary from the forecast. Using the 10% and 90% confidence bands as a proxy for the Low and High scenarios, by 2031/32 the Load Forecast could vary by ±2,555 GW.h or ±7.6%.

In addition, Manitoba Hydro examines possible events of interest for their potential impact on system load requirements. These events are deemed to be captured within the overall load variability analysis of the forecast. Although not specifically identified within the analysis, they are presented so their individual effects may be considered from a sensitivity perspective if the need arises. These events are summarized in the following table.

	Energy Effect (GW.h)	Peak Effect (MW)
Climate Change per Degree Celsius Warmer	+100	-40
One New Very Large Industrial Customer	+1,500	+180
One Less Very Large Industrial Customer	-1,500	-180
Additional Load if Electric Vehicles Grow to 70%	+1,666	+208
10% of all Res Customers switch to Electric Heat	+746	+243
10% of all Res Customers switch to Electric Water Heaters	+202	+23

Table 1 - Gross Energy and Peak

<b>GROSS FIRM ENERGY AND GROSS TOTAL PEAK</b>					
<b>History and Forecast</b>					
<b>2001/02 - 2031/32</b>					
<b>Fiscal Year</b>	<b>Gross Firm Energy</b>		<b>Gross Total Peak</b>		<b>Load Factor</b>
	<b>(GW.h)</b>	<b>Growth (%)</b>	<b>(MW)</b>	<b>Growth (%)</b>	
2001/02	20656		3797		62.1%
2002/03	22110	7.0%	3948	4.0%	63.9%
2003/04	22069	-0.2%	3994	1.2%	63.1%
2004/05	22589	2.4%	4201	5.2%	61.4%
2005/06	22757	0.7%	4085	-2.8%	63.6%
2006/07	23464	3.1%	4208	3.0%	63.7%
2007/08	24122	2.8%	4304	2.3%	64.0%
2008/09	24417	1.2%	4509	4.8%	61.8%
2009/10	23412	-4.1%	4393	-2.6%	60.8%
2010/11	23892	2.1%	4286	-2.4%	63.6%
2011/12	23605	-1.2%	4367	1.9%	61.7%
2011/12 Wadj	24367	3.2%	4380	0.3%	63.5%
10 Year Avg Gr.	371	1.7%	58	1.4%	
2012/13	24961	2.4%	4491	2.5%	63.5%
2013/14	25734	3.1%	4609	2.6%	63.7%
2014/15	26071	1.3%	4677	1.5%	63.6%
2015/16	26393	1.2%	4738	1.3%	63.6%
2016/17	26677	1.1%	4794	1.2%	63.5%
2017/18	27128	1.7%	4874	1.7%	63.5%
2018/19	27616	1.8%	4959	1.8%	63.6%
2019/20	27919	1.1%	5024	1.3%	63.4%
2020/21	28400	1.7%	5109	1.7%	63.5%
2021/22	28859	1.6%	5192	1.6%	63.5%
10 Year Avg Gr.	449	1.7%	81	1.7%	
2022/23	29322	1.6%	5276	1.6%	63.4%
2023/24	29779	1.6%	5360	1.6%	63.4%
2024/25	30239	1.5%	5445	1.6%	63.4%
2025/26	30691	1.5%	5528	1.5%	63.4%
2026/27	31138	1.5%	5611	1.5%	63.4%
2027/28	31594	1.5%	5695	1.5%	63.3%
2028/29	32053	1.5%	5779	1.5%	63.3%
2029/30	32511	1.4%	5863	1.5%	63.3%
2030/31	32967	1.4%	5947	1.4%	63.3%
2031/32	33425	1.4%	6032	1.4%	63.3%
20 Year Avg Gr.	453	1.6%	83	1.6%	

Table 2 - Change in Energy and Peak

<b>GROSS FIRM ENERGY AND GROSS TOTAL PEAK</b>						
<b>Change from Previous Forecast</b>						
<b>2012/13 - 2031/32</b>						
<b>Fiscal Year</b>	<b>Gross Firm Energy</b>			<b>Gross Total Peak</b>		
	<b>2012 Forecast (GW.h)</b>	<b>2011 Forecast (GW.h)</b>	<b>Change (GW.h)</b>	<b>2012 Forecast (MW)</b>	<b>2011 Forecast (MW)</b>	<b>Change (MW)</b>
<b>2011/12 Act</b>	23605			4367		
<b>Weather Adj.</b>	763			13		
<b>2011/12 Wadj</b>	24367	24615	(248)	4380	4557	(177)
<b>2012/13</b>	24961	25173	(212)	4491	4649	(158)
<b>2013/14</b>	25734	25930	(196)	4609	4767	(158)
<b>2014/15</b>	26071	26284	(213)	4677	4840	(164)
<b>2015/16</b>	26393	26406	(13)	4738	4888	(150)
<b>2016/17</b>	26677	26794	(117)	4794	4967	(173)
<b>2017/18</b>	27128	27205	(77)	4874	5050	(176)
<b>2018/19</b>	27616	27481	135	4959	5115	(156)
<b>2019/20</b>	27919	27966	(47)	5024	5203	(179)
<b>2020/21</b>	28400	28462	(61)	5109	5293	(184)
<b>2021/22</b>	28859	28887	(29)	5192	5374	(182)
<b>10 Year Avg Gr.</b>	449 1.7%	427 1.6%		81 1.7%	82 1.7%	
<b>2022/23</b>	29322	29311	11	5276	5455	(179)
<b>2023/24</b>	29779	29733	46	5360	5535	(175)
<b>2024/25</b>	30239	30153	86	5445	5615	(170)
<b>2025/26</b>	30691	30570	121	5528	5695	(167)
<b>2026/27</b>	31138	30984	155	5611	5773	(162)
<b>2027/28</b>	31594	31396	198	5695	5851	(156)
<b>2028/29</b>	32053	31801	252	5779	5928	(149)
<b>2029/30</b>	32511	32208	303	5863	6005	(142)
<b>2030/31</b>	32967	32608	359	5947	6081	(134)
<b>19 Year Avg Gr.</b>	453 1.6%	421 1.5%	32 0.1%	82 1.6%	80 1.5%	2 0.1%