MANITOBA HYDRO

2012/13 & 2013/14 GENERAL RATE APPLICATION

VOLUME II

ENERGY SUPPLY

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9.0 OVERVIEW OF TAB 9

Tab 9 provides information on energy supply planning as well as an estimate of energy generation based on prevailing water conditions. Section 9.1 provides highlights of the 2011/12 Power Resource Plan for the Manitoba Hydro system; Section 9.2 describes Manitoba Hydro's criteria that are utilized to ensure an adequate supply of capacity and dependable energy; Section 9.3 provides supply and demand tables that summarize the capacity and dependable energy for each year up to 2027/28; Section 9.4 provides information on the following major projects and initiatives: Wuskwatim GS, wind generation, Bipole III transmission, Pointe du Bois GS, Kelsey GS Upgrade, Conawapa GS, Keeyask GS, Demand Side Management, and thermal resources; Section 9.5 provides a description of export market conditions and Manitoba Hydro's export sales activities; Section 9.6 provides an update on system operations, energy in reservoir storage, water conditions and hydraulic generation for 2011/12 based on water conditions as of March 31, 2012; and, Section 9.7 provides information related to the loss of revenues due to the risk of an extended drought period commencing in 2013/14 with a duration of five years.

9.1 ENERGY SUPPLY

The 2011/12 Power Resource Plan is the most recent corporately approved update of energy supply and demand for the Manitoba Hydro system and is based on information available prior to August 2011. The 2011/12 plan incorporates the 2011 Electric Load Forecast and the 2011 Power Smart Plan for demand side management.

The 2011/12 plan assessed various alternative development plans. The recommended development plan includes the construction of major new resources, Keeyask GS (in-service 2019) and Conawapa GS (in-service 2024). The construction of Keeyask and Conawapa in close succession meets the demand of Manitoba domestic load and facilitates the new export sales to Wisconsin Public Service and Minnesota Power and the construction of a new U.S. interconnection. The 2011/12 plan also includes new sales agreements with Northern States Power ("NSP") to extend the export sale and diversity contacts for an additional ten years to 2025 over the existing interconnection.

The 2011/12 plan includes a number of other major generation projects. The next hydroelectric resource is the Wuskwatim project for which construction began in August 2006 with first power expected in 2012. The plan also includes the purchase of a total of 253.5 MW of wind generation from the St. Leon and St. Joseph wind farms.

The 2011/12 plan assumes that the existing Pointe du Bois Generating Station will continue to operate until 2030, and a new spillway and new concrete and earth dams will be completed by 2015.

The 2011/12 plan includes the Bipole III transmission line for system reliability requirements and also for transmitting existing and future northern generation. The Bipole is to be routed from the Keewatinoow station, located near the proposed Conawapa generating station, to the Riel converter station east of Winnipeg, with an in-service date of 2017. Final design for the west-side route is being completed.

9.2 POWER RESOURCE PLANNING CRITERIA

In planning for a reliable supply of electric power for Manitobans, Manitoba Hydro has established the following criteria:

Capacity Criterion

The capacity criterion for the Manitoba Hydro system requires that planned generation capacity (MW) must not be less than forecast firm annual peak demand plus a reserve requirement of 12% of forecast firm loads.

Reserves are intended to protect against capacity shortfalls resulting from three types of contingencies: breakdown of generation equipment, increases in peak load due to extreme weather, and deviation from the peak load forecast due to higher than projected provincial economic growth in the short term.

Reserve margins of 12% are adequate in Manitoba Hydro's predominately hydraulic system because of the relatively low outage rates of hydro generating units combined with relatively small size of units. For comparison, reserve margins on thermal systems are typically required to be in the 15% to 20% range.

Dependable Energy Criterion

Manitoba Hydro has adopted an energy supply (GW.h) planning criterion that recognizes the limitation of hydroelectric generation during drought conditions. This energy criterion requires that the Manitoba Hydro System shall be capable of a dependable supply of energy to meet forecast firm load demand. Specifically, there must be sufficient firm energy sources to meet firm energy demand in the event of a repeat of the lowest historic river flow conditions. It should be noted that the dependable flow has been determined by adjusting historic flows to represent present use conditions and accounting for expected withdrawals of water upstream of Manitoba.

The dependable supply includes energy from hydro-electric and thermal stations, purchases from wind farms, as well as contracted imports from neighbouring utilities and non-contracted imports from organized markets. The quantity of dependable imports should not exceed 10% of Manitoba Hydro's domestic energy requirement. Imports that are associated with a firm export sale are not included in the 10% limit.

9.3 SUPPLY AND DEMAND SUMMARY

The firm electric supply and demand summary during the winter peak (MW) for the Manitoba system between fiscal years 2012/13 and 2027/28 is provided in Table 1. Demand includes the 2011 forecast of Manitoba load plus contracted extraprovincial exports and capacity reserve requirements. Table 2 provides a similar summary for firm energy (GW.h) supply and demand during each year between fiscal years 2012/13 and 2027/28.

Table 1

System Firm Winter Peak Demand and Resources (MW)

2011 Base Load Forecast

Fiscal Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Power Resources																
Manitoba Hydro Plants																
Existing	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900
Wuskwatim	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Conawapa													520	1040	1300	1300
Keeyask								90	450	630	630	630	630	630	630	630
Kelsey Rerunnering (Net)	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
Bipole III HVDC Line NET						89	89	89	79	79	79	79	79	10	10	10
Manitoba Thermal Plants																
Brandon Unit 5	105	105	105	105	105	105	105									
Selkirk Gas	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Brandon Units 6-7 SCGT	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280
Committed Wind																
Demand Side Management	47	72	99	127	150	169	186	200	214	222	231	240	249	256	241	241
Contracted Imports	550	550	550	385	385	385	385	385	385	385	385	385	385			
Total Power Resources	6291	6316	6343	6206	6229	6337	6354	6353	6717	6905	6914	6923	7452	7525	7770	7770
Peak Demand																
2011 Base Load Forecast	4649	4767	4840	4888	4967	5050	5115	5203	5293	5374	5455	5535	5615	5695	5773	5851
Contracted Exports	605	605	605	358	358	358	358	358	633	743	743	743	743	385	385	275
Proposed Exports														440	440	550
Less Adverse Water	-66															
Total Peak Demand	5188	5372	5445	5246	5325	5408	5472	5561	5926	6117	6198	6278	6358	6520	6598	6676
Reserves	478	497	503	571	578	586	591	600	609	618	627	635	644	653	664	673
Total Peak Demand	**5666**	**5870**	**5948**	**5817**	**5903**	**5993**	**6063**	**6161**	**6535**	**6735**	**6825**	**6913**	**7002**	**7172**	**7262**	**7350**
System Surplus	**625**	**447**	**395**	**389**	**327**	**343**	**291**	**192**	**182**	**170**	**89**	**9**	**450**	**353**	**507**	**420**
Less : Brandon Unit 5	105	105	105	105	105	105	105									
Adverse Water	66															
Exportable Surplus	**454**	**342**	**290**	**284**	**222**	**238**	**186**	**192**	**182**	**170**	**89**	**9**	**450**	**353**	**507**	**420**

Table 2

System Firm Energy Demand and Dependable Resources (GW.h)

2011 Base Load Forecast

Fiscal Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Power Resources																
Manitoba Hydro Plant																
Existing	21060	21040	21030	20920	20900	20880	20870	20850	20840	20830	20820	20820	20810	20560	20560	20550
Wuskwatim	1205	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Conawapa													2151	4550	4550	4550
Keeyask								677	2898	2903	2903	2903	2903	2903	2903	2903
Kelsey Rerunnering																
Bipole III HVDC Line NET						243	243	243	258	258	258	258	258	162	162	162
Manitoba Thermal Plants																
Brandon Unit 5	811	811	811	811	811	811	811									
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953
Brandon Units 6-7 SCGT	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354	2354
Committed Wind	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819
Demand Side Management	293	411	508	608	696	699	774	830	882	911	944	971	996	1009	967	947
Imports																
Contracted Energy Imports	2705	2705	2705	1609	1614	1614	1614	1614	2527	2710	2710	2710	2710	1363	1096	1096
Proposed Energy Imports														1460	1753	2118
Non-Contracted Energy Imports				1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1446	1575	1575
Total Power Resources	**30200**	**30343**	**30430**	**30424**	**30497**	**30723**	**30788**	**30690**	**33881**	**34088**	**34111**	**34138**	**36304**	**38830**	**38942**	**39277**
Demand																
2011 Base Load Forecast	25173	25930	26284	26406	26794	27205	27481	27966	28462	28887	29311	29733	30153	30570	30984	31396
Non-Committed Construction Power		10	25	50	60	85	105	80	75	55	80	100	90	40	25	30
Exports																
Current Exports	3293	3156	3156	2115	2012	2012	2012	2012	3064	3695	3780	3780	3780	2017	1913	1492
Proposed Exports														1683	2020	2441
Less Adverse Water	-91			-309	-370	-370	-370	-370	-370	-370	-370	-370	-370	-61		
Total Demand	**28374**	**29096**	**29465**	**28263**	**28495**	**28931**	**29227**	**29687**	**31230**	**32267**	**32801**	**33242**	**33653**	**34249**	**34942**	**35359**
System Surplus	**1826**	**1246**	**965**	**2162**	**2002**	**1792**	**1561**	**1003**	**2651**	**1821**	**1310**	**895**	**2651**	**4581**	**4000**	**3918**
Less: Brandon Unit 5	811	811	811	811	811	811	811									
Adverse Water Energy	91			309	370	370	370	370	370	370	370	370	370	61		
Exportable Surplus	**924**	**435**	**154**	**1042**	**821**	**610**	**380**	**633**	**2281**	**1451**	**939**	**525**	**2280**	**4520**	**4000**	**3918**

9.4 MAJOR PROJECTS

The 2011/12 Power Resource Plan includes several major projects to which Manitoba Hydro has committed or for which there is a reasonable expectation that Manitoba Hydro will commit. Demand Side Management is treated as a supply-side resource for purposes of resource planning. The characteristics of these supply-side initiatives are summarized below.

Wuskwatim Generating Station

The Wuskwatim Generating Station is a 200 MW hydroelectric development on the Burntwood River and is scheduled for an in-service date of 2012 with a currently estimated in-service cost of $1.3 billion.

Wind Generation

The 2011/12 Power Resource Plan includes the purchase of power from the 99 MW St. Leon Wind Energy wind farm and the 138 MW St. Joseph Wind Farm. In July 2011 Manitoba Hydro entered into a power purchase agreement with Algonquin Power to purchase the output from the planned 16.5 MW St. Leon II Wind Energy wind farm. The additional wind turbines will be physically located within the footprint of the existing St. Leon Wind Energy wind farm and are expected to begin operation in 2012.

Bipole III Project

The 2011/12 Power Resource Plan includes the Bipole III transmission line for reliability requirements and also for transmitting existing and future northern generation. Bipole III is being routed down the west side of Lakes Winnipegosis and Manitoba. Manitoba Hydro completed the fourth round of community consultations and the final preferred route selection is nearly complete.

The bipole is expected to extend from the Keewatinoow station, located near the proposed Conawapa generating station, to the Riel converter station east of Winnipeg, with an in-service date of 2017. Final design of Bipole III is in progress with an estimated in-service cost of $3.28 billion.

Pointe du Bois Generating Station

The 2011/12 Power Resource Plan assumes that the existing Pointe du Bois Generating Station will continue to operate until 2030/31 and a new spillway and new concrete and earth dams (Spillway Replacement Project) will be completed over the 2010/11 to 2015/16 time frame. Until Pointe du Bois is rebuilt, it is assumed that the existing facility will be maintained so that it will continue to operate at or near full capacity.

Kelsey Generating Station Upgrade

The 2011/12 Power Resource Plan continues to include a major upgrade of the Kelsey GS which consists of the replacement of all seven turbines resulting in greater utilization of water flow at the site. This upgrade is expected to be fully in-service in 2012/13 with the potential to increase the plant rating from 224 MW to approximately 300 MW. The project is proceeding on a unit by unit basis, with a review being conducted before undertaking each additional unit replacement. Therefore, the program for remaining units can be deferred at any time.

Upgraded turbines will be able to pass more water and thus capture more of the energy during higher flow periods. While this does not increase dependable energy, there will be an increase in average energy of about 350 GWh per year. There are seven units at Kelsey GS and each unit is expected to gain about 11 MW. To date, five units have been replaced resulting in a 55 MW increase in capacity.

Conawapa Generating Station

The 2011/12 Power Resource Plan includes the Conawapa GS (in-service in 2024/25) following the construction of Keeyask . Conawapa is located downstream of Limestone GS on the Nelson River. The current design rating for Conawapa is 1485 MW under ideal operating conditions with a winter peak rating of 1300 MW that is utilized in resource planning work as the net addition to the system.

The Conawapa GS will be located within the Fox Lake Resource Management Area. The provincial government and Manitoba Hydro have signed a Memorandum of Understanding with Fox Lake First Nations related to the Conawapa GS.

The corporation has also entered into Process Agreements with First Nations in vicinity of Conawapa including Fox Lake Cree Nation, York Factory First Nation, Tataskweyak Cree Nation and War Lake First Nation working together as the Cree Nations Partners. In addition, Manitoba Hydro has signed a Letter of Agreement with the Shamattawa First Nation. A comprehensive framework for local First Nation participation in project benefits remains to be determined.

Conawapa GS concept engineering is ongoing. Some plant design parameters have been finalized including forebay elevation and plant discharge capacity while other design parameters have yet to be finalized. The access road to the site is in place as it was built before the original Conawapa GS project was suspended in 1992.

<u>Keeyask Generating Station</u>

The 2011/12 Power resource Plan includes the Keeyask GS with the first unit in service in 2019 which is its earliest possible in-service date. Keeyask can be brought in to service approximately five years earlier than Conawapa due to a shorter construction schedule and advanced environmental assessment work. Keeyask is located upstream of the Kettle generating station on the Nelson River. The current design rating for Keeyask is 695 MW under ideal operating conditions with a winter peak rating of 630 MW that is utilized in resource planning work.

The four in-vicinity Keeyask Cree Nation ("KCN") communities all voted to ratify the Joint Keeyask Development Agreement ("JKDA"). A JKDA signing ceremony was held on May 29, 2009.

The Environmental Act License for the Keeyask Infrastructure Project (KIP) was issued in March 2011 and the environmental field work for the Keeyask Generating Station and related works is essentially complete. The Manitoba Hydro Electric Board authorized the Corporation to commence construction of KIP in the summer of 2011 to preserve the 2019 in service date.

<u>Demand Side Management</u>

The 2011/12 Power Resource Plan includes Demand Side Management Programs which target a 906 MW reduction in peak load and a 3,283 GWh reduction in annual energy consumption by 2025/26. As of March 31, 2011 these programs have achieved a

309 MW reduction of peak load and a 1,339 GWh reduction in annual energy consumption. Anticipated changes to Codes and Standards for new equipment (e.g. refrigerators, electric motors and lighting) are expected to result in reductions of 157 MW and 935 GWh which are reflected in Manitoba Hydro's load forecast. Also included in the load forecast are savings due to customer self generation (10 MW) and the Curtailable Rate Program (173 MW). The remaining reduction of 256 MW and 1009 GWh is treated as a resource option in the 2011/12 plan.

Thermal Resources

The Environment Act License for Selkirk GS was received in 2008. The Selkirk GS is in good physical condition and is expected to remain serviceable well beyond 2027/28.

As of January 1, 2010 Brandon Unit 5 has been governed by *The Climate Change and Emissions Reductions Act* and the associated regulation *MR 186/2009, the Coal-Fired Emergency Operations Regulation*. The operation of Brandon Unit 5 can occur for two main purposes: mitigation of adverse water condition commonly referred to as "drought", and to provide system reliability support. Under emergency conditions Brandon Unit 5 can continue to operate to its maximum capability of 811 GWh/year. The 2011/12 Power Resource Plan includes operation of Brandon Unit 5 until March 2019.

9.5 EXPORT MARKETS AND EXPORT SALES

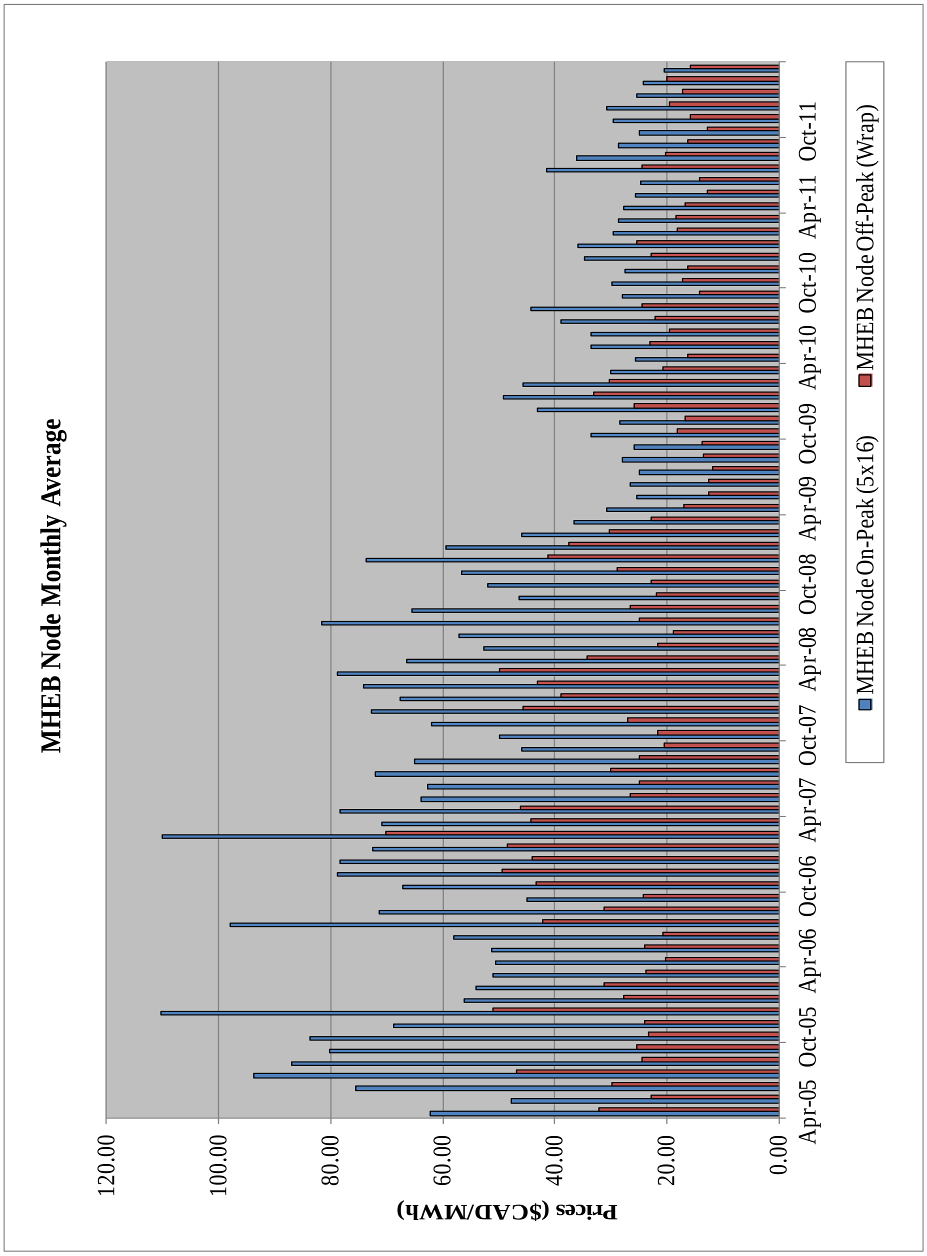
Current Market Conditions

Manitoba Hydro's US export customers' load forecasts continue to reflect the reduction in demand that resulted from the recession and the slow economic recovery that is being experienced in the US. Their load forecasts remain relatively flat in the short term and then grow modestly in the mid to long term. Given the long-term potential for high and volatile natural gas costs for new natural gas-fired generation, environmental uncertainties associated with existing and new coal generation, and little public support for nuclear generation, there is continued interest in long-term, dependable hydraulic supply from Manitoba as a carbon and price hedge to new thermal generating stations. Energy from hydro is also recognized as a complementary partner to new intermittent renewable generation resources such as wind.

Customers continue to be interested in securing low carbon resources given the potential for new carbon legislation in the United States. However, the uncertainty surrounding potential carbon legislation has increased as US political attention is focused on stimulating the recovery of the US economy. In the long term, uncertainty regarding the impact that greenhouse gas requirements will have on future power prices is a significant issue for customers when evaluating and developing their resource plans. Coal continues to dominate the supply of energy in the Midwest Independent Transmission System Operator ("MISO") region as coal generation supplied approximately 75% of the energy requirements during the summer of 2011. This high reliance on coal generation by utilities in the MISO market makes Manitoba Hydro's renewable and clean hydraulic energy a strategic asset.

Prices for Manitoba Hydro's export energy increased significantly in the ten years prior to 2009 as a result of US electricity market restructuring, a general tightening of supply, increased demand for low emitting resources, and a general rise in natural gas prices. However, spot and short-term energy prices decreased by approximately 50% in 2009 and have remained low due to a soft US economy and very low natural gas prices. In addition, the establishment of the MISO Ancillary Services Market and development of new wind resources in North Dakota and Minnesota have further contributed to lower prices. Figure 9.5.1 shows the monthly average on-peak (5 days × 16 hours) and off-peak (balance of hours) energy prices as posted at the MISO's Manitoba Hydro Commercial Pricing Node.

Figure 9.5.1. Monthly Average On-Peak and Off-peak Pricing at MHEB Commercial Pricing Node



Manitoba Hydro currently has good access to open electricity markets, both in the US operated by the MISO and in Ontario operated by the Independent Electricity System Operator (IESO). The design of these markets allows Manitoba Hydro to compete, as an external market participant, on a relatively level playing field with generators located within the markets. However, market rules continue to evolve, and are designed for the benefit of the load within the market footprint as served by generation located within the market footprint, and it is a continual challenge for Manitoba Hydro to maintain non-discriminatory access to these open electricity markets. From an overall perspective, open transmission access in the US and open energy markets have been very beneficial to Manitoba Hydro.

Manitoba Hydro's recent average pricing experience of long-term dependable sales versus on-peak 5×16 opportunity sales is depicted in Figure 9.5.2. The vast majority of dependable sales are for on-peak (5×16) energy which makes a price comparison to 5×16 opportunity sales appropriate. Demand charges have been included in the dependable sale prices. Since 2005, 5×16 opportunity sales prices exceeded dependable prices until the spring of 2009 when the relationship dramatically changed as load reduced and natural gas prices decreased. A portion of the variability for both sales types is due to variations in the US-CAD exchange rate. As shown in Figure 9.5.3, long-term dependable sales are even more stable when expressed in terms of US dollars per MWh. Long-term dependable sales provide export revenue stability to Manitoba Hydro compared to the much more volatile opportunity market.

Figure 9.5.2. Monthly Average On-Peak Pricing (Dependable vs. Opportunity)

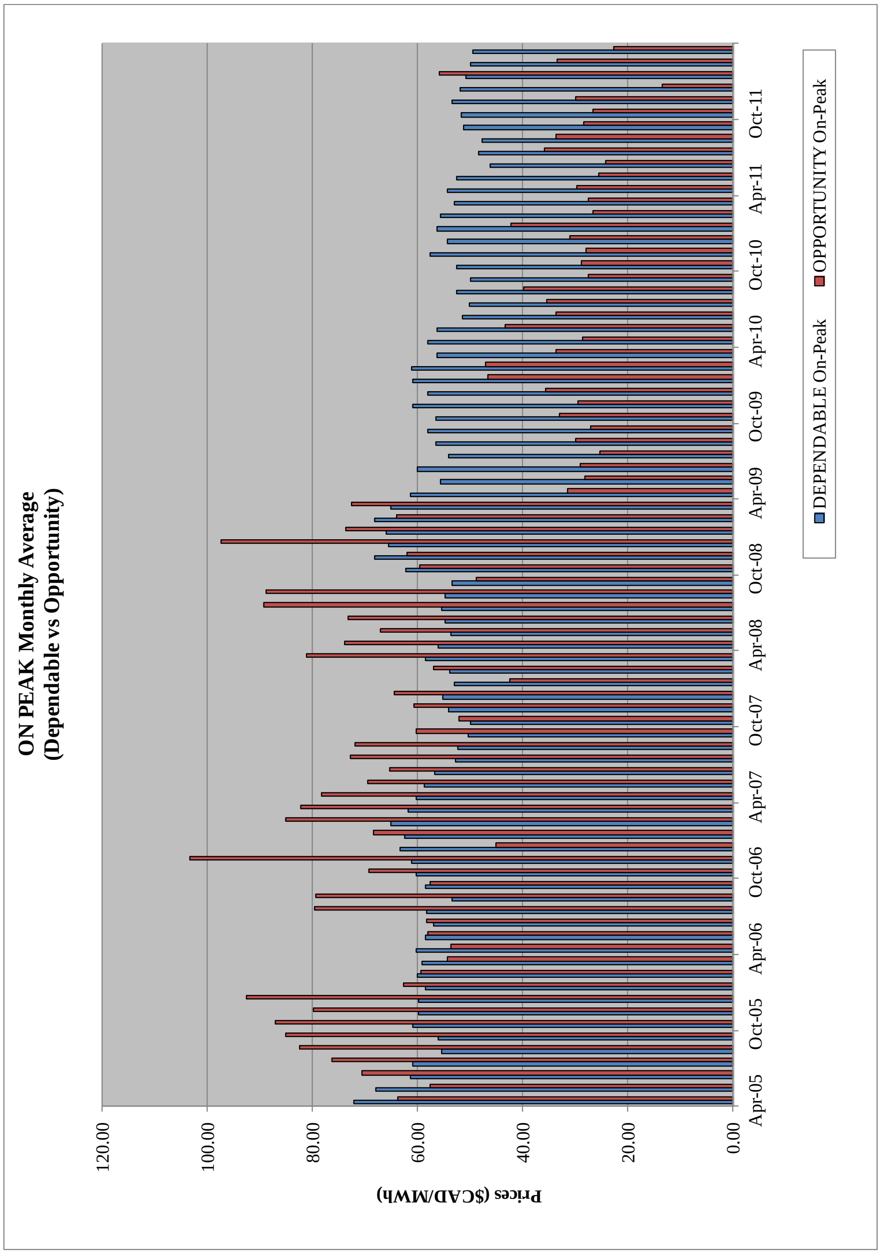


Figure 9.5.3. Monthly Average On-Peak Dependable Pricing (US vs. CAD Currency)

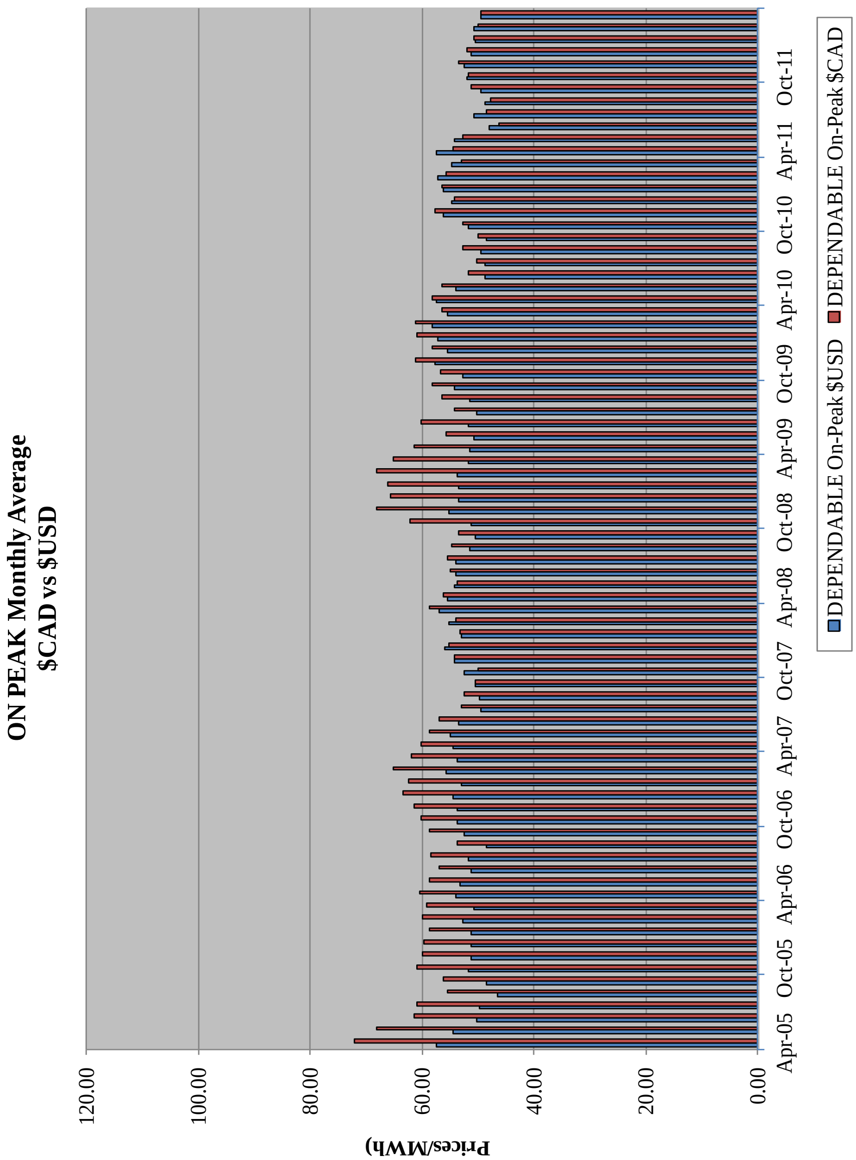
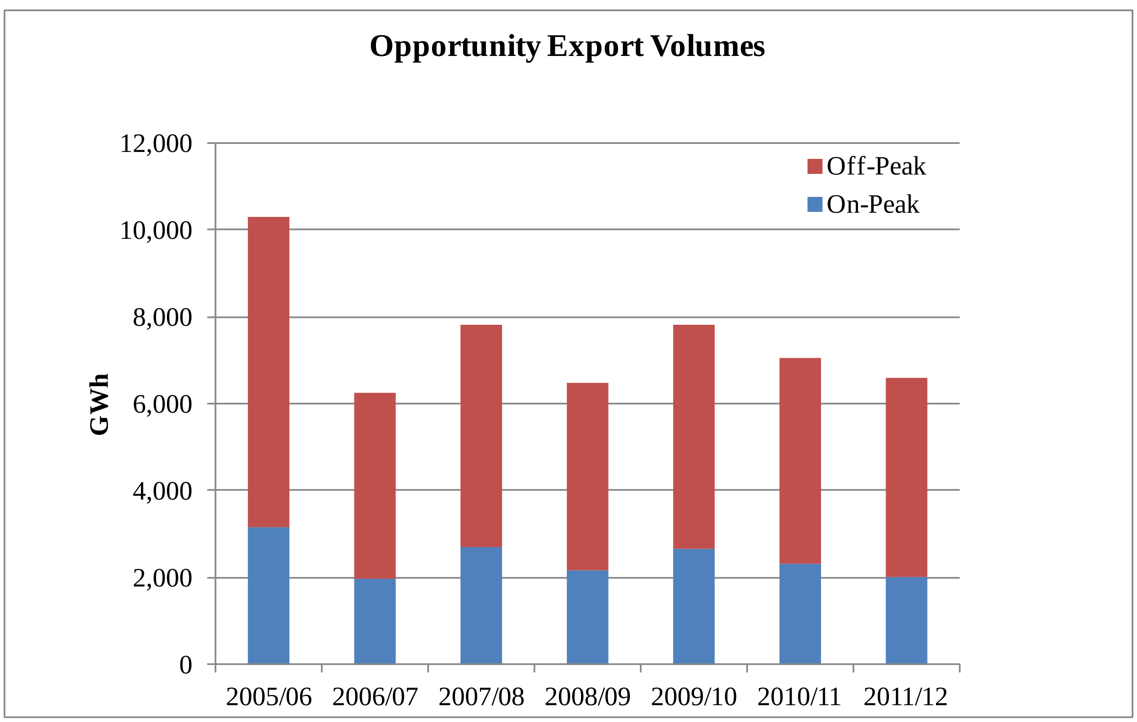


Table 3 indicates opportunity export volumes and average prices from the start of the MISO Day 2 Energy Market in April 2005 through to the end of 2011/12. Figure 9.5.4 charts these opportunity export volumes for both on-peak (5×16) and off-peak periods. Opportunity export volumes are positively correlated to water supply conditions and negatively correlated to Manitoba load requirements, hence this class of exports shows significant variability year-to-year.

Table 3 Opportunity Export Sales

	OPPORTUNITY EXPORTS			
	On-Peak GWh	Off-Peak GWh	On-Peak Avg. Price ($CAD/MWh)	Off-Peak Avg. Price ($CAD/MWh)
2005/06	3,142	7,161	72.73	36.75
2006/07	1,972	4,278	66.26	37.44
2007/08	2,212	4,887	66.19	32.97
2008/09	1,802	4,237	71.78	29.37
2009/10	2,497	5,100	31.14	18.74
2010/11	2,268	4,699	31.90	21.23
2011/12	1,952	4,550	28.76	22.51

Figure 9.5.4. Opportunity Export Volumes



Opportunity prices softened considerably in 2009/10 and, as shown in Table 3, on-peak prices dropped more in relative and absolute terms than off-peak prices. This is largely explained by three factors: reduced load due to the economic downturn, the dramatic decline in the price of natural gas and increased wind generation in Manitoba Hydro's pricing region. This decreased load has reduced the duration of time that more costly resources, such as inefficient gas-fired generation, were on the margin in the on-peak periods. This resulted in lower marginal clearing prices. Even though off-peak load may have also fallen off, the off-peak marginal resource 'type' didn't change to the same degree, resulting in less impact on the marginal clearing price. The second influence on the greater decline in on-peak prices was the dramatic collapse in natural gas prices. The duration that natural gas fired generation is marginal in the on-peak is greater than in the off-peak, hence the effect of softer gas prices is more pronounced in the on-peak periods. The third factor is the addition of over 9,000 MW of wind resources since 2007 which, because of their very low marginal costs, depress the market price for electricity in Manitoba Hydro's pricing region.

Tables 4, 5, and 6 provide more detail on export volumes, revenues and transaction types. Table 4 summarizes annual total exports volumes and revenues in the Dependable, Opportunity and Merchant classes. Table 5 shows the same information for the US market only. Table 6 provides further detail on opportunity sales for fiscal year 2008/09 through 2011/12.

Table 4 Total Export Sales

	TOTAL SALES					
	DEPENDABLE SALES		OPPORTUNITY SALES		MERCHANT SALES	
	GWh	$CAD (millions)	GWh	$CAD (millions)	GWh	$CAD (millions)
2000/01	6,352	258	5,801	217	0	0
2001/02	6,277	322	6,022	281	0	0
2002/03	6,544	339	3,191	137	0	0
2003/04	6,231	295	735	52	11	0.5
2004/05	5,633	290	4,798	239	315	11
2005/06	4,044	240	10,303	510	919	63
2006/07	3,654	218	6,250	295	1,206	60
2007/08	3,921	209	7,099	328	1,262	72
2008/09	4,087	233	6,039	287	1,598	86
2009/10	3,263	186	7,597	184	775	26
2010/11	3,377	172	6,967	181	712	28
2011/12	3,742	175	6,502	152	436	17

Table 5 Total U.S. Export Sales

	TOTAL U.S. SALES					
	U.S. DEPENDABLE SALES		U.S. OPPORTUNITY SALES		U.S. MERCHANT SALES	
	GWh	$CAD (Millions)	GWh	$CAD (Millions)	GWh	$CAD (millions)
2000/01	4,895	199	4,511	167	0	0
2001/02	4,767	263	5,083	247	0	0
2002/03	4,947	277	2,713	115	0	0
2003/04	5,245	259	507	35	0	0
2004/05	5,633	290	3,218	171	109	1
2005/06	4,044	240	8,879	401	0	0
2006/07	3,654	218	5,877	270	0	0
2007/08	3,921	209	6,618	289	0	0
2008/09	4,087	233	5,622	237	0	0
2009/10	3,263	186	7,224	160	33	2
2010/11	3,377	172	6,062	146	5	0.3
2011/12	3,742	175	5,616	117	80	3

Table 6 Opportunity Export Transactions

	EXPORT REVENUES							
	2008/09		2009/10		2010/11		2011/12	
	GWh	$CAD (millions)	GWh	$CAD (millions)	GWh	$CAD (millions)	GWh	$CAD (millions)
Opportunity								
Bilateral	1305	101	2628	60	1851	52	1923	50
Market								
Day Ahead	4040	122	3111	59	3233	69	2720	52
Real Time	690	60	1858	71	1883	60	1859	50
Merchant	1598	86	775	26	712	27	436	17

Long-Term Sales – New Agreements and Sales under Negotiation

Manitoba Hydro has a number of long-term power sales agreements and, Term Sheets. With the exception of the Xcel 375/325 MW System Power Sale Agreement, which is fully backed by energy guarantees from Xcel, all other agreements and terms sheets are conditional on the construction of major new hydro-electric generating facilities and new transmission in Manitoba and the US. Even with the construction of the 200 MW Wuskwatim station, new resources will be required to provide dependable energy for Manitoba load by approximately 2020/21. All export sales made by Manitoba Hydro have a lower degree of firmness compared to the firm load of domestic customers in Manitoba, and therefore, export sales can be curtailed if required to maintain service to Manitoba domestic firm load.

All long-term sales agreements, term sheets, discussions and confidential information are protected by confidentiality provisions and mutual non-disclosure agreements signed by Manitoba Hydro and the respective counterparty. Therefore, specific pricing and terms and conditions cannot be provided in a public forum.

Xcel Energy Power Sale Agreements

On May 27, 2010, Manitoba Hydro and Xcel Energy entered into three agreements providing for (i) the sale to Northern States Power of 375 megawatts of system power in the summer seasons and 325 megawatts of system power in the winter seasons for May 2015 through April 2025, (ii) the sale to Northern States Power of 125 megawatts of system power for May 2021 to April 30 2025 conditional on the construction by

Manitoba Hydro of major new hydro-electric generating facilities and new transmission in Manitoba and the US, (iii) a 350 megawatt seasonal diversity agreement with Northern States Power where capacity and energy is exported from Manitoba in the summer months and capacity and energy (if required by Manitoba Hydro) is returned to Manitoba in the winter months for the period May 2015 through April 2025.

Minnesota Power

On May 19, 2011 Manitoba Hydro and Minnesota Power entered two agreements providing for (i) a 250 megawatt system power sale to Minnesota Power from June 2020 to May 2035, (ii) an Energy Exchange Agreement to provide Manitoba Hydro with firm transmission service to import energy during the period June 2020 to May 2035. The 250 megawatt System Power Sale Agreement is conditional upon the construction by Manitoba Hydro of major new hydro-electric generating facilities and new transmission in Manitoba and US.

Wisconsin Public Service

In March 2008, Manitoba Hydro and Wisconsin Public Service signed a Term Sheet that set out the significant terms for a 500 megawatt system power sale. Based on this Term Sheet, Manitoba Hydro and Wisconsin Public Service entered a 100 megawatt System Power Sale Agreement for the period June 2021 to May 2027 on May 19, 2011. The 100 megawatt System Power Sale is contingent on the construction of new hydraulic generation in Manitoba. Negotiations are continuing to expand the Wisconsin power sale up to 500 megawatts which will require the construction of the Conawapa Generating Station and new transmission in Manitoba and the United States.

Manitoba Hydro, Minnesota Power and Wisconsin Public Service continue to negotiate and work with the MISO and other US transmission owners on evaluating the costs and benefits of various US transmission alternatives required for the 250 megawatt System Power Sale Agreement with Minnesota Power and for the expanded Wisconsin Public Service sale.

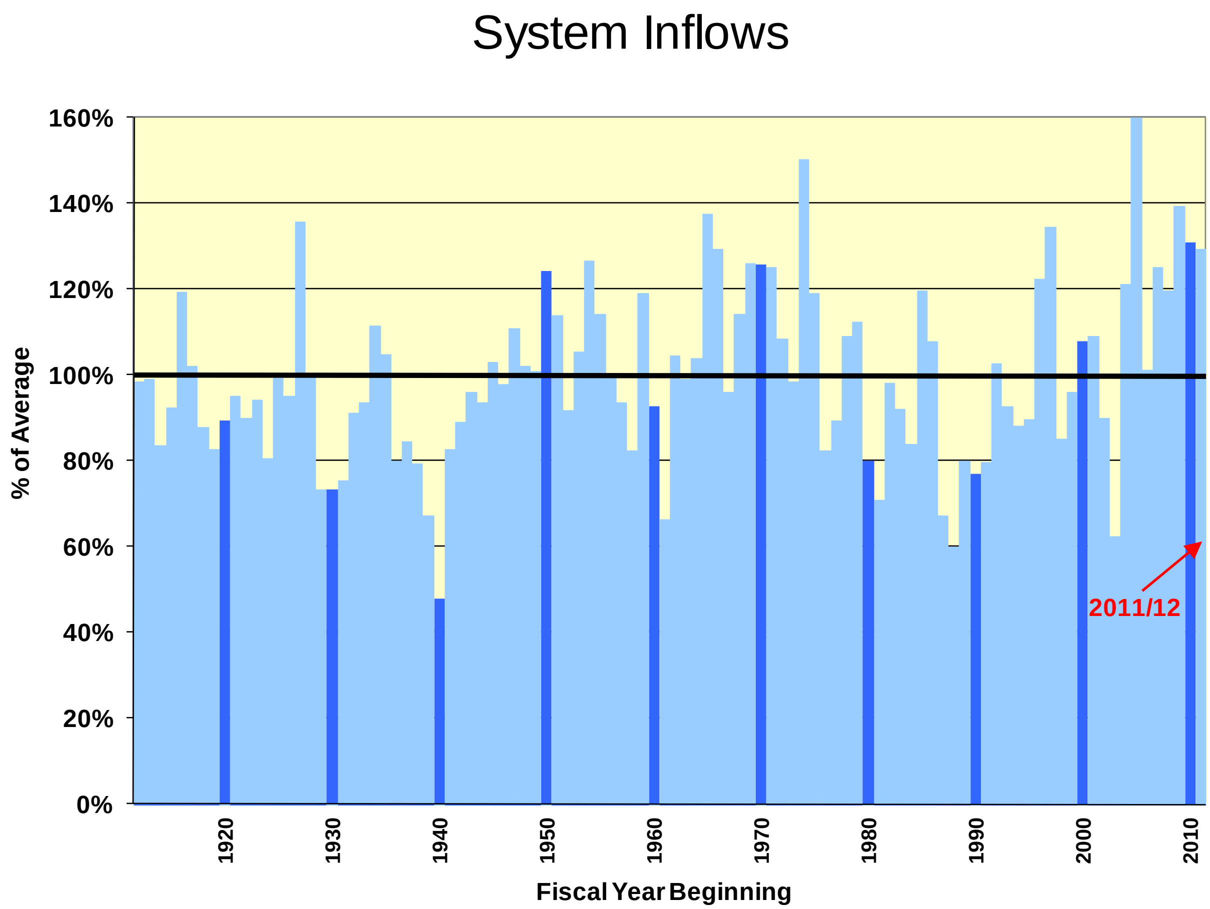
9.6 WATER CONDITIONS

2011 System Operations

The 2011/12 water year was the 8th highest on record (see Figure 9.6.1). As a result of excessively high soil moisture conditions in the fall of 2010 and winter snow conditions, the 2011 spring runoff was much above average. The Red, Assiniboine, Saskatchewan and Winnipeg rivers all experienced major floods. Overall the flow volume into Lake Winnipeg was the highest on record for the period between April 1 and August 31. The very wet spring was followed by a summer and fall of much below average precipitation, especially over the Winnipeg River Basin. As a result reservoir inflows rapidly transitioned to near record lows by the end of September and remained at or below normal though the winter of 2011/12.

Accumulated precipitation for the entire Nelson-Churchill for the period April 1, 2011 to March 31, 2012 was 90% of normal (or 56 mm below the 34-year average of 570 mm). This corresponds to a 10th percentile condition.

Figure 9.6.1. Historical Water Supply



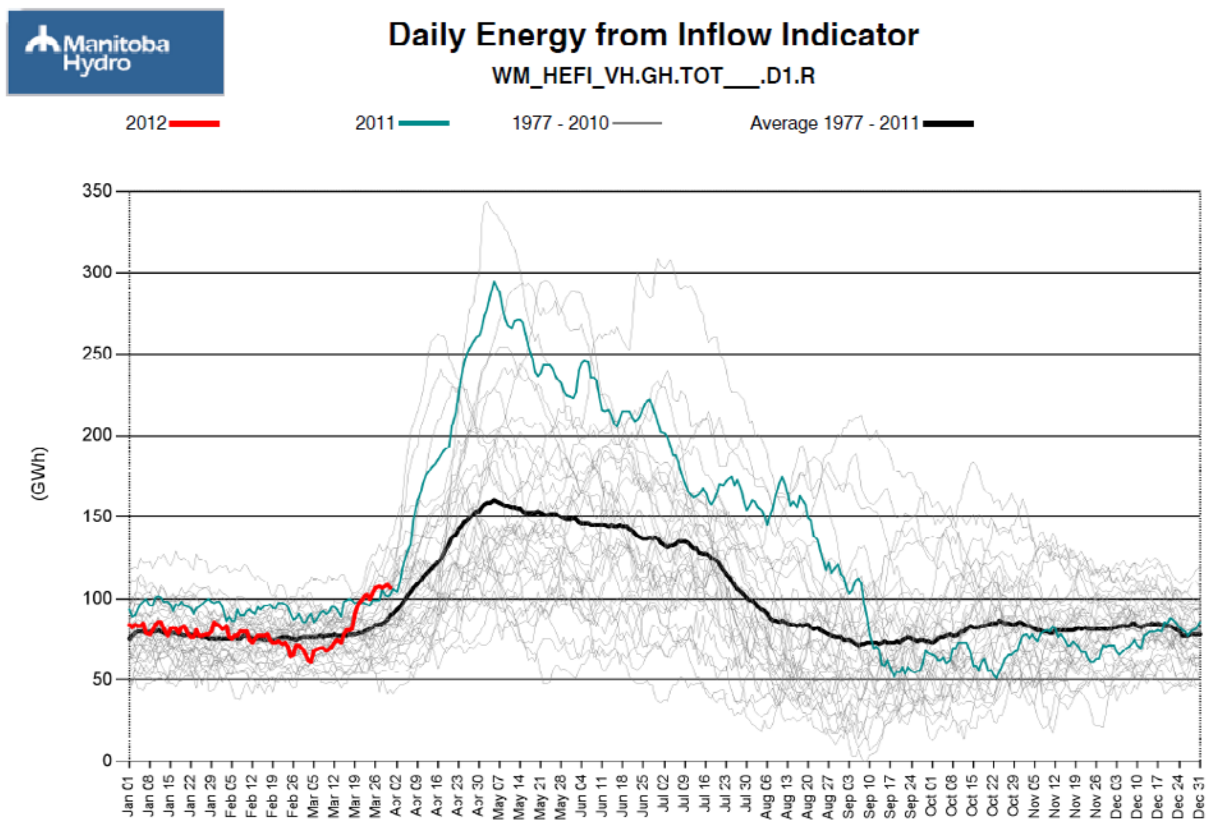
In 2011 Manitoba Hydro's reservoir operations were focused on managing the high flood flows into Lake Winnipeg and Cedar Lake. Due to high lake levels, Lake Winnipeg outflows had been at maximum since July 2010 and this operation continued through to October 2011. Once the level receded below the upper limit of the power production range (715 feet), as defined in the Lake Winnipeg Regulation Water Power Act Licence, outflows were reduced in order to provide flood relief to downstream communities and to reduce spillage at the Nelson River generating stations.

Flood inflows on the Saskatchewan River required spillage at the Grand Rapids station in order to maintain Cedar Lake below its license maximum elevation. Grand Rapids total outflows exceeded 100,000 cubic feet per second for a period in July - a record high.

The Nelson River experienced flood flows as a result of the high water conditions at Lake Winnipeg. In order to minimize flood levels in the lower reaches of the Nelson River, the Churchill River Diversion flow was minimized. However this required spillage down the Lower Churchill River from the Missi Falls Control Structure. High Nelson River flows resulted in spillage at the Nelson River plants from May through November and the sale of large volumes of energy in the off-peak markets.

Figure 9.6.2 is a chart of daily energy from inflows to the Manitoba Hydro system compared to the 30 previous years of data.

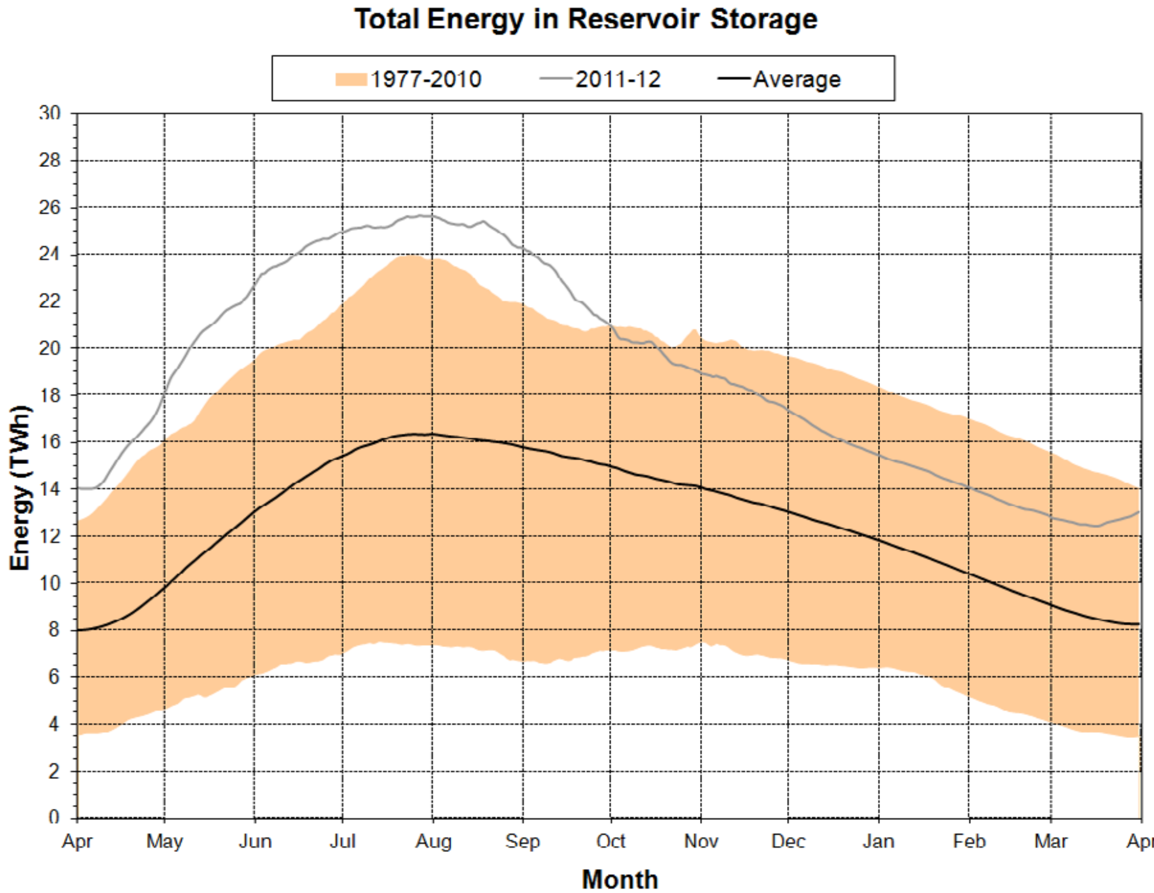
Figure 9.6.2. Daily Gross Energy from Inflow Indicator



Energy in Reservoir Storage

Energy in reservoir storage is shown in Figure 9.6.3. This indicator is for the eighteen major reservoirs in Manitoba Hydro's watersheds including 14 reservoirs regulated by other agencies. Storage levels were at record levels (approximately 6 TWh above average) on April 1, 2011 and rose rapidly through the spring in response to flood flows on many of the major rivers. On October 31, 2011 storage amounts were 4.5 TWh above the 30-year average, and remained between 3.5 and 4.5 TWh above average through the winter of 2011/12.

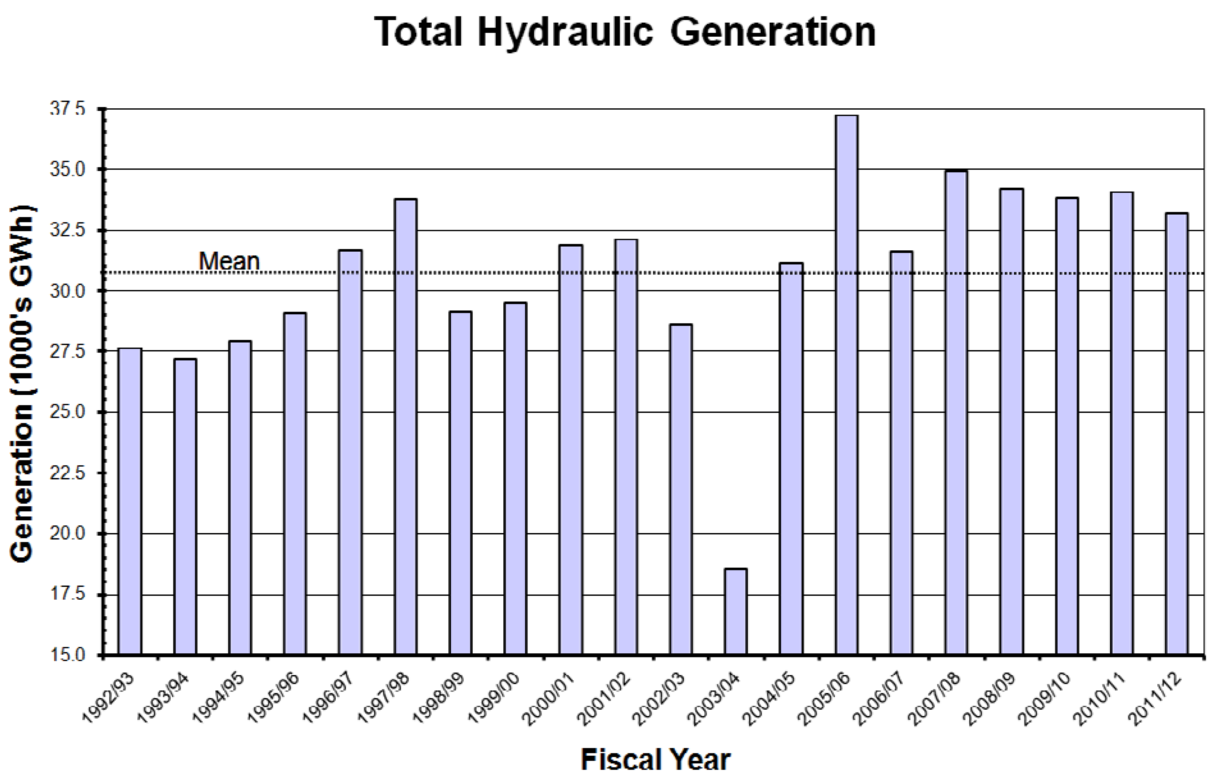
Figure 9.6.3. Total Energy in Reservoir Storage



Total Hydraulic Generation

Total Hydraulic Generation since the in-service of Limestone GS is shown in Figure 9.6.4. Total hydraulic generation for fiscal year 2011/12 was the 7th highest during the period of record since 1992/93.

Figure 9.6.4. Total Hydraulic Generation



9.7 FINANCIAL IMPACT OF DROUGHT

The reduction in hydroelectric energy supply during periods of extended low flow conditions can have a significant negative impact on Manitoba Hydro's financial situation. For example, the difference in net revenue between the extremely low water year 2003/04 and the forecast was more than $480 million. The reduction in revenue would have been much greater if the drought conditions had persisted for several consecutive years similar to the low flow period between 1987 and 1992. Based on the 2011/12 update, if a 5 year drought occurred from 2013/14 to 2017/18 net revenues would be about $1.4 billion less than expected over the same five year period. This impact on net revenues would increase to $1.6 billion with consideration of financing costs associated with additional borrowing requirements up to the year 2017/18.

The estimate of $1.6 billion for the financial impact of a five-year drought is due to a significant reduction in export revenue combined with the requirement to operate high-cost Manitoba Hydro thermal generation facilities for long time periods and to import significant quantities of high-cost energy. There is a significant risk that this estimate could be greater if a series of adverse conditions occurred coincident with this time period. It is possible that natural gas prices, and consequently electricity prices in the export market, could be exceptionally high resulting not only in additional cost to operate Manitoba Hydro's gas-fired generation but also resulting in increased cost of import energy, especially during peak periods. Based on a price scenario 15% higher than expected for export energy, thermal fuel and import energy, the financial impact of a five-year drought would increase by $0.2 billion compared to the expected price scenario.

Another factor that has similar impacts as electricity prices in the export and import market is the currency exchange rate for the US dollar. A low Canadian dollar relative to the US dollar increases the export revenue that is lost in a drought and increases the cost of import energy and cost of operating thermal generation in Manitoba. This would be offset to some degree by reductions in finance expense denominated in USD.

A further factor that could increase the cost of drought is the occurrence of a more extreme drought compared to that which occurred during the five year period between 1987 and 1992. For example, the seven-year drought representing flows from the period 1936/37 to 1942/43 would result in costs $0.7 billion higher than the cost of the five-year drought under expected market prices for electricity.