

MANITOBA HYDRO 2008/2009 POWER RESOURCE PLAN

The objectives of the 2008/09 Power Resource Plan are as follows:

- Provide a recommended development plan including the WPS and MP sales.
- Provide an alternative long-term development plan, which does not include the WPS and MP sales.

2008/09 Development plan including the WPS and MP sales

The recommended development plan for major infrastructure and resources to facilitate the WPS and MP sales is as follows:

- Near-term (pre 2015) deficits to be filled with contracted imports.
- Keeyask for a 2018 ISD (In-Service Date)
- Conawapa for a 2022 ISD.
- Bipole III as well as any additional north-south transmission beyond 2000 MW sufficient for new northern generation.

In addition to these resources, Manitoba Hydro has been authorized to enter into negotiations for the purchase of 300 MW of wind power.

This development plan reflects signed term sheets with Northern States Power (NSP) for 375/500 MW starting in 2015, Wisconsin Public Service (WPS) for 500 MW starting in 2018, and Minnesota Power (MP) for 250 MW starting in 2022. These Sales provide economic and other strategic benefits. In order to fulfill the terms of these proposed sales, the following are required:

- a new interconnection to Minnesota and Wisconsin by 2018,
- new hydraulic generation in Manitoba, and
- sufficient transmission from the new hydraulic generation to southern Manitoba.

The following summarizes major planned infrastructure and identifies additional planned supply initiatives:

Supply-Side Enhancement Projects (SSE)

Planned Additional:	Total: 226 MW/ 273 GW.h by Mar 2018
Kelsey Rerunning	77 MW/ 0 GW.h by 2012/13
HVDC Bipole III Line (West)	89 MW/ 243 GW.h by 2017/18
Winnipeg River Plants	30 MW/ 30 GW.h
License Review and Continued Operation:	Total: 357 MW/ 2517 GW.h
Selkirk #1-2	132 MW/ 1060 GW.h *
Brandon #5 Licence Review	105 MW/ 837 GW.h to 2018/19
Pointe du Bois (Rebuild)	120 MW/ 620 GW.h 2016/17 (total plant)

*Generation at Selkirk is assumed to be available on a continuous basis throughout the planning time frame due to expected infrequent operation.

Demand Side Management Program (DSM)

Planned additional (by Mar 2018)

180 MW/ 837 GW.h

New Generation

Hydro:

Wuskwatim	200 MW gross	200 MW net	2011/12
Keeyask	695 MW gross	630 MW net	2018/19
Conawapa	1485 MW gross	1300 MW net	2022/23

Wind:

Wind Farm	300 MW		2010/11
-----------	--------	--	---------

Uncommitted projects in the plan are subject to corporate approval based on individual project evaluations prior to each stage in the development process. The definitive agreements being negotiated in good faith from the Sales Term Sheets are subject to Manitoba Hydro approval.

Tables A1.a at the end of this document details the annual energy supply and demand values of this plan. Table A1.b details the annual capacity supply and demand values of this plan.

2008/09 Alternative development plan without the WPS and MP sales

The alternative development plan for major infrastructure and resources to meet Manitoba requirements without the MP or WPS Sales is as follows:

- Near-term (pre 2015) deficits to be filled with contracted imports.
- 400 MW Combined Cycle Gas Turbine for 2019 ISD
- Conawapa for a 2021 ISD.
- Bipole III

In addition to these resources, Manitoba Hydro has been authorized to enter into negotiations for the purchase of 300 MW of wind power.

Further studies are required to fully develop this alternative plan.

Tables A.2a at the end of this document details the annual energy supply and demand values of this plan. Table A2.b details the annual capacity supply and demand values of this plan.

SUPPLY ASSUMPTIONS:

The supply assumptions in this section cover the resources that are evaluated in this plan. The major assumptions associated with each resource are described, focusing on those assumptions that have changed from the 2007/08 Power Resource Plan.

Conawapa:

Conawapa nominal rating (system incremental capacity) has changed from 1250 MW to 1300 MW to reflect the net system addition during peak Manitoba loading conditions (winter). This change is due to a variety of refinements in the plant design. The plant will be rated for 1485 MW during open water conditions. Initial impoundment of the forebay will reduce Limestone output by 90 MW, providing a net increase in summer capacity of 1395 MW. Downstream ice conditions will reduce Conawapa output by about 55 MW and similarly ice conditions will further reduce Limestone by 35 MW during winter peak conditions resulting in the 1300 MW nominal net addition rating.

The increased discharge of Conawapa is not anticipated to significantly change the estimate of energy produced from previous estimates. The increased discharge will make Conawapa better suited to shift energy from off-peak to on-peak periods. This has been reflected in this study.

In this study, the earliest in-service date assumed for Conawapa, if it is constructed in conjunction with Keeyask, is 2022. It is assumed that there must be at least four years between the in-service dates of these two plants. Otherwise Conawapa's earliest ISD is assumed to be 2021.

Keeyask:

Keeyask nominal rating has changed from 620 MW to 630 MW to reflect more efficient turbines. The plant will be rated for a maximum output of 695 MW, which has changed from previous values of 675 MW. This reflects the maximum generation potential when Stephens Lake is drawn down. Keeyask will not impact the capacity of any other plants and is not significantly affected by ice conditions. Therefore, the nominal capacity and net system addition are both 630 MW.

Keeyask earliest in-service date is assumed to be 2018 for this resource plan.

Wuskwatim:

The infrastructure portion of the Wuskwatim project is near completion and remains on schedule. The Wuskwatim General Civil Contract, signed on November 12, 2008, anticipates a September, 2011 ISD.

Kelsey:

The 2008/09 Power Resource Plan continues to include Kelsey rerunning which is projected to provide 77 MW of incremental capacity, increasing plant capability to 315 MW. There will be an increase the average annual energy but no increase in dependable energy.

To date two units have been rerun: Unit no. 5 was taken out of service in the fall of 2006 and was returned to service in August 2007, with an incremental gain in capacity of 10.7 MW. Unit 2 was taken out of service in January 2008 and returned to service in August 2008, with an incremental gain in capacity of 13 MW. The plan has all seven units rerun by March, 2012.

Pointe du Bois:

The 2008/09 Power Resource Plan includes the rebuilding of Pointe du Bois, at a rating of 120 MW and 621 GW.h of dependable energy with an in-service date of July 2016, one year later than assumed in the 2007 Power Resource Plan. This is an increase of 43 MW and 150 GW.h over the existing plant. The Rebuild alternative for Pointe du Bois includes the construction of a new powerhouse, new spillway, and the decommissioning of the existing structures. Manitoba Hydro is now formally commencing the regulatory process and is undertaking engineering design, environmental studies, and public consultation.

The Pointe du Bois project schedule is currently under review, however, it is anticipated that the Environmental Impact Statement (EIS) will not be submitted before 2009. Allowing for a five to six year construction schedule, this would mean that the earliest in-service date for an upgraded Pointe du Bois is expected to be July 2016. The resource plan has therefore included a “rebuilt” Pointe du Bois with a 2016/17 ISD.

Other Rerunning:

Evaluations are ongoing on Pine Falls, Great Falls and Slave Falls for supply-side improvements. It is expected that the Great Falls Unit 4 rerunning project will proceed and add about 10 MW in 2010. It is also expected that Pine Falls Units 1 and 2 will be rerunned for a capacity increase of 10 MW in 2010 and 2011, and possibly Units 3 and 4 for a further 10 MW. The entire 30 MW of increased capacity is included in this report.

Existing Thermal Resources:

The License Review process for Brandon Unit 5 is ongoing but progress will remain at a standstill until the regulations are written implementing the provincial government's Climate Change and Emissions Reduction Act that proposes restricting Unit 5 operation to support of emergency operations. For this resource plan it is assumed that Unit 5 will continue to be available for drought and limited system support until March 2019, therefore, no changes to dependable energy ratings have been made for the 2008/09 Power Resource Plan.

No changes to Brandon Unit 6&7 operating characteristics have been made for the 2008/09 Power Resource Plan.

Manitoba Hydro received a revised Environment Act Licence for Selkirk G.S. in May of 2008. The Licence does not stipulate an expiry date. Due to the good physical condition of the units, the low anticipated levels of operation, and continuation of regular maintenance activities, Units 1&2 are expected to be serviceable well beyond 2019/20, which was the assumed license expiry date in the 2007/08 Power Resource Plan. For the purposes of this study, it has been assumed that Selkirk G.S. will remain operational until the end of the study period.

Potential New Thermal Resources:

In this year's Power Resource Plan, a 400 MW Combined Cycle Gas Turbine (CCGT) has been included as a resource option. In addition, a 43 MW Simple Cycle Gas Turbine (SCGT) has replaced the 120 MW SCGT option used in 2007/08. The 43 MW SCGT can be installed with short lead times in increments that more closely match growth in Manitoba load. The 43 MW unit has an estimated installed cost of \$57 million. For this reason, it is a more suitable SCGT option and complements the large CCGT option that has been included in this year's studies.

The 400 MW CCGT produces about 3100 GW.h of dependable energy, which is about the same dependable output of Keeyask. Its capital cost is estimated at \$471 million and because of its high efficiency it can produce energy at an operating cost of \$55/MWh with \$8/mmBtu gas. A \$30/tonne carbon cost adds less than \$10/MWh to the cost of operation.

Wind Generation:

Manitoba Hydro has been authorized to negotiate a Power Purchase Agreement for 300 MW of new wind power. As a result, 300 MW of wind has been included as a new resource in this year's plan with an ISD of 2010. Finalization of the Power Purchase Agreement is subject to Manitoba Hydro Electric Board approval.

Status of Bipole III (West):

Bipole III continues to be needed to meet reliability levels. To achieve an in-service date of 2017, Manitoba Hydro conducted an introductory round of community meetings with the elected officials and leadership of communities in the northern and southern parts of the Province from March to August 2008. These meetings provided opportunities to receive information about the need for Bipole III, the Bipole III concept, the Site Selection and Environmental Assessment (SSEA) process for selecting a route for the line, SSEA timelines and regulatory requirements, and to provide input into the Bipole III Project. Regional Public Open Houses were also held in September and October 2008 to share information about the project with interested parties.

Following Round One, the SSEA process commenced with the definition of a project study area which is large enough to identify several routes for Bipole III. Manitoba Hydro is currently holding Public Open Houses in Aboriginal communities potentially affected by the Bipole III Project. As well, Manitoba Hydro has initiated second round meetings with municipal officials within the project study area. Round two consultation activities will also include a series of Public Open Houses in the study area in agro Manitoba and in northern municipalities. Round two consultation activities are anticipated to be completed by the summer of 2009. A third round of consultation to present an evaluation and comparison of alternative routes for Bipole III will begin late this year and continue into 2010.

The 2017 ISD requires four years of SSEA studies, one year for project licensing and five winter construction seasons for both the line and converters. A final route will be determined through the application of Manitoba Hydro's SSEA process. A comprehensive community and public consultation program is critical to the success of the SSEA program, particularly a respectful and thorough process of Aboriginal community consultations.

For the western routed Bipole III HVDC line to be functional, the installation of both north and south converter stations are required. Bipole III is required for reliability, and therefore the costs of the converter stations have not been attributed to the new northern generating stations included in this analysis.

Additional North-South Transmission Requirements:

A 2000 MW Bipole III may not provide sufficient transmission to address potential reliability issues. Several options to increase the north-south transmission are being considered. These include increasing the size of Bipole III beyond 2000MW, upgrading the existing AC system, or building a new AC link. An allowance for additional transmission facilities has been included in this resource plan.

Demand Assumptions:

Demand Side Management:

The 2008/09 Power Resource Plan includes incremental DSM savings from the 2007 POWER SMART Plan.

The 2007 POWER SMART Plan outlines a detailed plan to achieve the Corporate target of electricity savings of 807 MW / 2759 GW.h by 2017/18. The Corporate target includes the savings to date of 465 MW / 1269 GW.h already achieved by March 31, 2007.

Base Load Forecast:

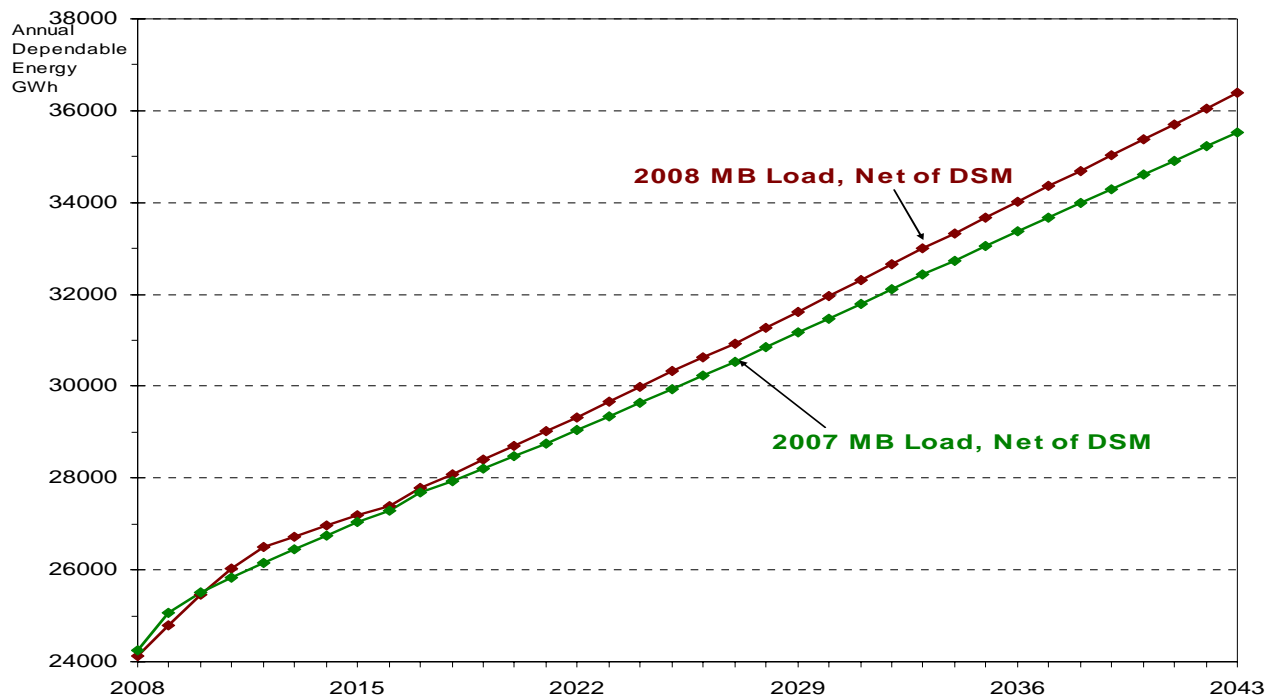
The 2008/09 load forecast is about 230 GW.h higher than in the 2007/08 Power Resource Plan by 2020 (net of DSM). For further details refer to the Electric Load Forecast 2008/09 to 2028/29 report.

The changes from the 2007/08 to the 2008/09 Base Load Forecast are primarily due to:

1. Increases in the Residential forecast as a result of a higher Manitoba population growth caused by higher immigration levels.
2. Increases in the Primary Metal sector load as a result of additional ore deposits discovery.
3. Decreases in the General Service forecast mainly due to an expected lower energy consumption in the Chemical and Potential Large Industrial Load classification.

Figure 1 below, compares the 2007 and 2008 Base Load Forecasts (net of DSM).

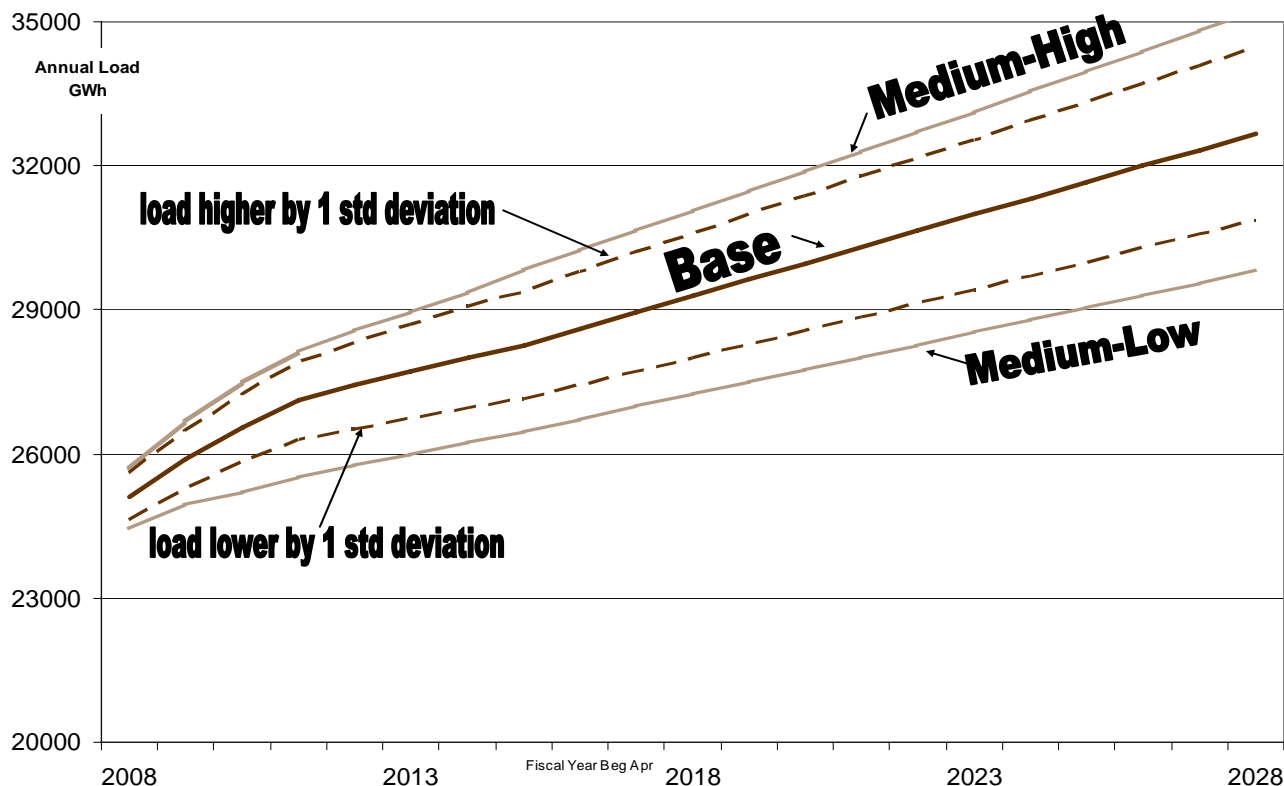
Figure 1
Comparison of 2007 and 2008 Load Forecasts (Net of DSM)



Impact of Higher and Lower Load Forecasts on Timing of New Resources

The 2008 Base, Medium-High, Medium-Low Electric Load Forecasts as well as the base load forecast plus and minus one standard deviation are compared below in Figure 2.

Figure 2
2008 Base, Medium High & Medium Low Load Forecasts
And +/- 1 Standard Deviation



Using the expected load forecast, the 2008/09 Integrated Financial Forecast Development Sequence shows a deficit of 224 GW.h in 2010 under dependable conditions. It is recommended that this deficit be met with contracted purchases. The plan includes 2700 GW.h/yr of energy guarantees associated with the NSP/UPA diversities, resulting in a total import of almost 3000 GW.h.

If the load approaches the Medium-High load forecast, then near-term dependable energy deficits increase to a maximum of about 1000 GW.h. Dependable energy deficits occur from 2010 through 2017, and again in 2020 to 2021 but are at a maximum in 2010. Winter peak capacity deficits also exist between 2018 and 2022.

Export and Import Assumptions

The 2008/09 Export Price Forecast was incorporated in the 2008/09 Power Resource Plan. Details of major export sales are described below.

Northern States Power (NSP) 375/500 MW Sale

The NSP 375/500 MW Sale is included for the first time in the 2008 Power Resource Plan. The contract is considered likely to proceed, as it replaces the existing contract with NSP, and requires no

new infrastructure. The sale is nearly neutral with respect to dependable energy, as a result of the terms included in it related to Manitoba Hydro experiencing adverse water conditions.

The term of the NSP sale is from May 1, 2015 through April 30, 2025. The Term Sheet, signed October 2006, includes a System Participation Sale for 375 MW ramping up to 500 MW in 2021. The sale also includes a 350 MW System Participation Diversity Sale for the seasonal exchange of energy.

Wisconsin Public Service (WPS) and Minnesota Power (MP) Sales

The term of the WPS sale is from June 1, 2018 through May 31, 2032. The Term Sheet, signed March 2008, is for a 500 MW System Participation Sale. The capacity of the sale ramps up from; 150 MW in 2018, to 300 MW in 2019, to 500 MW in 2020, ramps down to 250 MW in 2030, and terminates in 2032.

The firm portion of the MP sale is from May 1, 2022 through April 30 2035. Non-firm energy is to be sold, as it is available, beginning May 1, 2008. The Term Sheet, signed December 2007, is for a 250 MW System Participation Sale (throughout 2022 to 2035).

The WPS and MP Term Sheets require the development of definitive agreements for 500 MW and 250 MW of imports, respectively. Imports are available off-peak which is 8 hours every night of the week (7 x 8) plus all day Saturday and Sunday (2 x 16). For dependable energy calculations, imports were limited to the 7 x 8 hours.

These sales to Minnesota and Wisconsin will require a new interconnection to Minnesota/Wisconsin. These sales have no impact on near term deficits or the date that new generation would be needed to serve domestic load.

New Interconnection

The WPS and MP sales are contingent on having transmission interconnection with transfer capability of at least 750 MW north and south. Design of the line, including route location, voltage, and line capability has not yet begun. For planning purposes, new interconnection capability of 1000 MW for export and 750 MW for import was assumed with an ISD of 2018. An allowance of \$150 M 2008\$ was used to cover the capital, service and market costs of the portion of the new transmission line in Manitoba.

Near-Term Deficits

In this resource plan there is a dependable energy deficit in the 2010 of 224 GWh. This is less than the dependable energy deficits identified in the 2007/08 Power Resource Plan. There are 2700 GW.h of imports available under existing contracts included in the plan. An additional import requirement of 224 GWh would bring the total import to almost 3000 GW.h.

As imports have the lowest cost and risk of the available near-term options, it is recommended that firm contracts be secured, and there be no reliance on opportunity imports. It should be noted that the probability of drought conditions which will necessitate the imports beyond the existing diversity agreements is less than 3%.

Long-term Dependable Energy Deficits

Without new generation or new sales, the Manitoba load is expected to exceed dependable supply in 2019/20, one year earlier than last year's Power Resource Plan, at which time persistent and growing deficits in dependable energy would occur without new resources. Over the past several decades, capacity requirements in planning studies have occurred many years after dependable energy requirements due to a surplus of capacity in the system. In recent years the requirement for new capacity has continued to become closer to the timing of the energy need. Sufficient capacity now exists until 2022/23, only three years later than the requirement for dependable energy.

Previous studies have indicated that Conawapa is the most economic plant to meet dependable energy deficits in the longer term. However, Conawapa is not available until 2021 at the earliest. The advancement of Keeyask to 2018 in the recommended development plan eliminates dependable energy deficits after 2018. Similarly, the installation of a Combined Cycle Gas Turbine in 2019 in the alternative development plan eliminates these dependable energy deficits.

Financial Evaluation

The financial evaluation compares the year by year impacts of alternative generation sequences on Manitoba Hydro's projected financial statements and customer rates. Annual rate increases are consistent with those projected in the 20 Year Financial Forecast (Electricity Operations) approved by the Manitoba Hydro-Electric Board in January 2009. The financial evaluation was prepared comparing the recommended 2008/09 Integrated Financial Forecast Development Sequence or "Sale" sequence to the 2008/09 Alternative Development Sequence or "No-Sale" sequence. The evaluation shows that under expected export prices, the debt ratio is expected to increase by a maximum of 4.4% in the Sale case. Without any change in rate increases and assuming no change in any other financial conditions, the debt ratio will recover to the same level as in the No-Sale case by 2035/36. This increase is expected to cause the absolute level of the debt ratio to rise to less than 80% during the construction period and provides the potential for significant customer savings in the longer term as a result of profitable export sales.

Potential New Hydro Resources in Manitoba

Table 3 at the end of this document, summarizes the potential new hydro options in Manitoba. The table includes options considered in this resource plan as well as the most viable other sites on the Nelson, Churchill and Burntwood River systems.

Table A.1a
IFF Sequence - Energy Supply/Demand Table

Table A.1a
System Firm Energy Demand and Dependable Resources (GW.h)
2008 Base Load Forecast
2008/09 IFF Sequence

Fiscal Year	2009/10	2010/11	2011/12	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		
POWER RESOURCES																			
Manitoba Hydro Plants																			
Existing	21110	21090	21080	21060	21040	21030	20920	20900	20880	20870	20850	20840	20830	20820	20820	20810	20560		
Wuskwatim			550	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	
Conawapa																		4550	
Keeyask																		2900	
Bipole III HVDC LINE									243	243	258	258	258	258	162	162		162	
Manitoba Thermal Plants																			
Brandon Unit 5 License Review	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837	837	1060
Selkirk License Review	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060
Brandon Units 6-7 SCCT SCCT's	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
Wind Power: 400 MW	320	462	770	1069	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229
Demand Side Management	317	425	527	616	696	762	823	887	837	870	898	926	958	989	993	994	999	999	999
Refurbishment of Hydro Plants																			
Kelsey/Rerunning																			
Pointe du Bois								60	150	150	150	150	150	150	150	150	150	150	150
Imports																			
Total Contracted	2796	2796	2796	2796	2705	2705	1063	800	800	800	800	800	800	800	800	800	800	800	1174
NSP/ Xcel Sale Extension							2060	2468	2468	2468	2468	2468	2468	2706	2753	2753	2753	2753	456
WPS 500/MP 250 Proposed Sale												1432	1534	2238	2301	2301	2301	2301	2301
TOTAL POWER RESOURCES	28841	29070	30020	31089	31218	31273	31642	31891	32154	33931	35108	35714	35838	38952	41368	41359	39191		
DEMAND																			
2008 Base Load Forecast	25109	25891	26554	27137	27483	27811	28119	28392	28739	29055	29375	29715	30073	30401	30677	30988	31323		
Exports																			
Total Contract Sales	3626	3404	3385	3259	3156	3156	353	145	145	145	145	145	145	145	145	145	145	145	145
NSP/ Xcel Sale Extension							1920	2062	2062	2062	2062	2062	2062	2589	2636	2636	2636	2636	189
WPS 500/MP 250 Proposed Sale										574	1262	2142	2296	3350	3444	3444	3444	3444	3444
TOTAL DEMAND	28735	29295	29939	30396	30639	30967	30392	30599	30946	31836	32844	34064	34576	36485	36902	37213	35101		
SURPLUS	106	-224	81	692	578	307	1250	1293	1208	2095	2263	1650	1262	2467	4466	4146	4091		

Table A.1a
IFF Sequence - Energy Supply/Demand Table

Table A.1a
2008 Base Load Forecast
2008/09 IFF Sequence
System Firm Energy Demand and Dependable Resources (GW.h)

Fiscal Year	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43
POWER RESOURCES																	
Manitoba Hydro Plants																	
Existing	20560	20550	20540	20540	20530	20530	20520	20510	20510	20500	20490	20490	20480	20480	20470	20460	20460
Wuskwatim	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Conawapa	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550
Keeyask	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900
Bipole III HVDC LINE	162	162	162	162	162	162	162	162	162	162	162	162	162	162	162	162	162
Manitoba Thermal Plants																	
Brandon Unit 5 License Review	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060
Selkirk License Review	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
Brandon Units 6-7 SCCT																	
Wind Power: 400 MW	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229
Demand Side Management	1031	1070	1063	1057	1051	1043	1035	1030	1027	1023	1016	1015	1015	1015	1015	1015	1015
Refurbishment of Hydro Plants																	
Kelsey Rerunning	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Pointe du Bois																	
Imports																	
Total Contracted	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
NSP/ Xcel Sale Extension	2301	2301	2301	2301	1662	1534	895	767	767	767	767	767	767	767	767	767	767
WPS 500/MP 250 Proposed Sale																	
TOTAL POWER RESOURCES	39168	39197	39181	39175	38519	38383	37727	37583	37580	37586	37549	37549	37538	37538	37528	37518	37518
DEMAND																	
2008 Base Load Forecast	31660	31998	32335	32673	33010	33348	33686	34023	34361	34698	35036	35373	35711	36048	36386	36724	37061
Exports																	
Total Contract Sales	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145
NSP/ Xcel Sale Extension	3444	3444	3444	3444	2488	2296	1340	1148	1148	94							
WPS 500/MP 250 Proposed Sale																	
TOTAL DEMAND	35249	35587	35924	36262	35643	35789	35171	35316	35654	34937	35181	35518	35856	36193	36531	36869	37206
SURPLUS	3919	3610	3256	2913	2876	2594	2556	2267	1927	2629	2369	2030	1682	1344	997	649	312

Table A.1b
IFF Sequence - Capacity Supply/Demand Table

Table A.1b
System Firm Capacity (Winter Peak) Demand and Resources (MW)
2008 Base Load Forecast
2008/09 IFF Sequence

Fiscal Year	2009/10	2010/11	2011/12	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
POWER RESOURCES																	
Manitoba Hydro Plants	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900
Existing																	
Wuskwatim		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Conawapa											463	648	648	518	1035	1294	1294
Keeyask							89	89	89	89	79	79	79	648	648	648	648
Bipole III HVDC LINE															10	10	10
Manitoba Thermal Plants																	
Brandon Unit 5 License Review	105	105	105	105	105	105	105	105	105	105	132	132	132	132	132	132	132
Selkirk License Review	132	132	132	132	132	132	132	132	132	132	298	298	298	298	298	298	298
Brandon Units 6-7 SCCT	298	298	298	298	298	298	298	298	298	298	195	202	209	216	219	222	224
Wind Power: 400 MW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demand Side Management	46	68	90	109	125	139	153	167	181	189	195	202	209	216	219	222	224
Refurbishment of Hydro Plants																	
Kelsey Rerunning		11	34	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Pointe du Bois								43	43	43	43	43	43	43	43	43	43
Imports																	
Total Contracted	616	616	616	616	550	550	385	385	385	385	385	385	385	385	385	385	385
NSP/ Xcel Sale Extension																	
WPS 500/MP 250 Proposed Sale																	
TOTAL POWER RESOURCES	6097	6130	6375	6435	6385	6399	6248	6305	6408	6508	6771	6963	6970	7494	7946	8207	7824
PEAK DEMAND																	
2008 Base Load Forecast	4515	4636	4745	4838	4883	4927	4972	5009	5062	5122	5182	5242	5302	5362	5421	5481	5541
Exports																	
Total Contract Sales	693	638	638	605	605	605	413	413	413	413	413	413	413	413	413	413	413
NSP/ Xcel Sale Extension																	
WPS 500/MP 250 Proposed Sale																	
Total Load	5208	5274	5383	5443	5488	5532	5384	5421	5474	5699	5925	6205	6265	6737	6796	6856	6366
Reserve	462	474	485	493	505	509	532	535	540	546	552	559	565	571	578	585	638
TOTAL PEAK DEMAND	5670	5749	5868	5936	5993	6040	5916	5956	6014	6245	6477	6763	6830	7308	7374	7441	7004
SURPLUS	427	382	507	500	392	359	331	349	394	263	294	199	140	186	571	766	821

Table A.1b
IFF Sequence - Capacity Supply/Demand Table

Table A.1b
System Firm Capacity (Winter Peak) Demand and Resources (MW)
2008 Base Load Forecast
2008/09 IFF Sequence

Fiscal Year	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43
POWER RESOURCES																	
Manitoba Hydro Plants																	
Existing	4900	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	200
Conawapa	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294
Keeyask	648	648	648	648	648	648	648	648	648	648	648	648	648	648	648	648	648
Bipole III HVDC LINE	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Manitoba Thermal Plants																	
Brandon Unit 5 License Review	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Selkirk License Review	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298
Brandon Units 6-7 SCCT																	
Wind Power: 400 MW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demand Side Management	234	244	244	243	243	242	240	239	237	236	233	233	232	232	232	232	232
Refurbishment of Hydro Plants																	
Kelsey Rerunning	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Pointe du Bois	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Imports																	
Total Contracted																	
NSP/Xcel Sale Extension																	
WPS 500/MP 250 Proposed Sale																	
TOTAL POWER RESOURCES	7834	7844	7844	7843	7843	7842	7840	7839	7837	7836	7833	7833	7832	7832	7832	7832	7832
PEAK DEMAND																	
2008 Base Load Forecast	5601	5660	5720	5780	5839	5899	5959	6018	6078	6138	6198	6257	6317	6377	6436	6496	6556
Exports																	
Total Contract Sales																	
NSP/Xcel Sale Extension																	
WPS 500/MP 250 Proposed Sale	825	825	825	825	550	550	275	275	275	6138	6198	6257	6317	6377	6436	6496	6556
Total Load	6426	6485	6545	6605	6389	6449	6234	6293	6353	6138	6198	6257	6317	6377	6436	6496	6556
Reserve	644	650	657	664	672	679	686	694	701	708	716	723	730	737	745	752	759
TOTAL PEAK DEMAND	7070	7135	7202	7269	7061	7128	6920	6987	7054	6846	6913	6980	7047	7114	7181	7248	7315
SURPLUS	764	709	642	574	782	714	920	852	783	989	920	852	785	718	651	584	517

Table A.2a
No Sale Sequence - Energy Supply/Demand Table

Appendix A Energy and Capacity Balances: Tables A.2a - A.2b – Alternate Sequence

Table A.2a

System Firm Energy Demand and Dependable Resources (GW.h)
2008 Base Load Forecast

2008/09 Alternate Development Sequence

Fiscal Year	2009/10	2010/11	2011/12	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
POWER RESOURCES																	
Manitoba Hydro Plants																	
Existing	21110	21090	21080	21060	21040	21030	20920	20900	20880	20870	20850	20840	20830	20820	20820	20810	20560
Wuskwatim			550	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Conawapa													2151	4550	4550	4550	4550
Bipole III HVDC LINE									243	243	243	243	243	228	228	228	228
Manitoba Thermal Plants																	
Brandon Unit 5 License Review	837	837	837	837	837	837	837	837	837	837	1060	1060	1060	1060	1060	1060	1060
Selkirk License Review	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	2400	2400	2400	2400	2400	2400	2400
Brandon Units 6-7 SCCT	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	3738	3738	3738	3738	3738	3738	3738
CCGT																	
Wind Power: 400 MW	320	462	770	1069	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229
Demand Side Management	317	425	527	616	696	762	823	887	837	870	898	926	958	989	993	994	999
Refurbishment of Hydro Plants																	
Kelsey Rerunning								60	150	150	150	150	150	150	150	150	150
Pointe du Bois																	
Imports																	
Total Contracted	2796	2796	2796	2796	2705	2705	1063	800	800	800	800	800	800	800	800	800	1174
NSP/ Xcel Sale Extension							2060	2468	2468	2468	2468	2468	2706	2753	2753	2753	456
TOTAL POWER RESOURCES	28841	29070	30020	31089	31218	31273	31642	31891	32154	32177	35086	35104	37515	39968	39971	39963	37794
DEMAND																	
2008 Base Load Forecast	25109	25891	26554	27127	27468	27766	28074	28332	28674	29010	29375	29735	30063	30341	30652	30963	31323
Exports																	
Total Contract Sales	3626	3404	3385	3259	3156	3156	353	145	145	145	145	145	145	145	145	145	145
NSP/ Xcel Sale Extension							1920	2062	2062	2062	2062	2062	2589	2636	2636	2636	189
TOTAL DEMAND	28735	29295	29939	30386	30624	30922	30347	30539	30881	31217	31582	31942	32797	33122	33433	33764	31657
SURPLUS	106	-224	81	702	593	352	1295	1353	1273	960	3504	3162	4718	6846	6538	6198	6138

Table A.2a
No Sale Sequence - Energy Supply/Demand Table

Table A.2a

System Firm Energy Demand and Dependable Resources (GW.h)
2008 Base Load Forecast

2008/09 Alternate Development Sequence

pg 2 of 2

Fiscal Year	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43
POWER RESOURCES																	
Manitoba Hydro Plants																	
Existing	20560	20550	20540	20540	20530	20530	20520	20510	20510	20500	20490	20490	20480	20480	20470	20460	20460
Wuskwatim	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Conawapa	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550	4550
Bipole III HVDC LINE	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228
Manitoba Thermal Plants																	
Brandon Unit 5 License Review																	
Selkirk License Review	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060	1060
Brandon Units 6-7 SCCT	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
CCGT	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738	3738
Wind Power: 400 MW	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229
Demand Side Management	1031	1070	1063	1057	1051	1043	1035	1030	1027	1023	1016	1015	1015	1015	1015	1015	1015
Refurbishment of Hydro Plants																	
Kelsey Rerunning	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Pointe du Bois																	
Imports																	
Total Contracted	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
NSP/ Xcel Sale Extension																	
TOTAL POWER RESOURCES	37772	37800	37784	37778	37761	37753	37736	37721	37718	37703	37687	37686	37675	37675	37665	37655	37655
DEMAND																	
2008 Base Load Forecast	31660	31998	32335	32873	33010	33348	33686	34023	34361	34698	35036	35373	35711	36048	36386	36724	37061
Exports																	
Total Contract Sales	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145
NSP/ Xcel Sale Extension																	
TOTAL DEMAND	31805	32143	32480	32818	33155	33493	33831	34168	34506	34843	35181	35518	35856	36193	36531	36869	37206
SURPLUS	5966	5657	5303	4960	4606	4260	3905	3553	3212	2860	2506	2168	1819	1482	1134	787	449

Table A.2b
No Sale Sequence - Capacity Supply/Demand Table

Table A.2b

System Firm Capacity (Winter Peak) Demand and Resources (MW)
2008 Base Load Forecast

2008/09 Alternate Development Sequence

pg 1 of 2

Fiscal Year	2009/10	2010/11	2011/12	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
POWER RESOURCES																	
Manitoba Hydro Plants																	
Existing	4900	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												518	1035	1294	1294	1294	1294
Bipole III HVDC LINE								89	89	89	89	89	89	48	48	48	48
Manitoba Thermal Plants																	
Brandon Unit 5 License Review	105	105	105	105	105	105	105	105	105	105	132	132	132	132	132	132	132
Selkirk License Review	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Brandon Units 6-7 SCCT	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298
CCGT											426	426	426	426	426	426	426
Wind Power: 400 MW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demand Side Management	46	68	90	109	125	139	153	167	181	189	195	202	209	216	219	222	224
Refurbishment of Hydro Plants																	
Kelsey Rerunning		11	34	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Pointe du Bois																	
Imports																	
Total Contracted	616	616	616	616	550	550	385	385	385	385	385	385	385	385	385	385	385
NSP/Xcel Sale Extension																	
TOTAL POWER RESOURCES	6097	6130	6375	6435	6385	6399	6248	6305	6408	6416	6744	6750	7275	7758	8020	8023	7640
PEAK DEMAND																	
2008 Base Load Forecast	4515	4636	4745	4838	4883	4927	4972	5009	5062	5122	5182	5242	5302	5362	5421	5481	5541
Exports																	
Total Contract Sales	693	638	638	605	605	605	413	413	413	413	413	413	550	550	550	550	550
NSP/Xcel Sale Extension																	
Total Load	5208	5274	5383	5443	5488	5532	5384	5421	5474	5534	5595	5655	5852	5912	5971	6031	5541
Reserve	462	474	485	493	505	509	532	535	540	546	552	559	565	571	578	585	638
TOTAL PEAK DEMAND	5670	5749	5868	5936	5993	6040	5916	5956	6014	6080	6147	6213	6417	6483	6549	6616	6179
SURPLUS	427	382	507	499	392	359	331	349	394	336	597	537	858	1275	1471	1407	1461

Table A.2b
No Sale Sequence - Capacity Supply/Demand Table

Table A.2b

System Firm Capacity (Winter Peak) Demand and Resources (MW)
2008 Base Load Forecast

Fiscal Year	2008/09 Alternate Development Sequence												2042/43			
	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38		2038/39	2039/40	2040/41
POWER RESOURCES																
Manitoba Hydro Plants	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900
Existing	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Wuskwatim	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294
Conawapa	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Bipole III HVDC LINE																
Manitoba Thermal Plants																
Brandon Unit 5 License Review	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Selkirk License Review	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298
Brandon Units 6-7 SCCT	426	426	426	426	426	426	426	426	426	426	426	426	426	426	426	426
CCGT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wind Power: 400 MW																
Demand Side Management	234	244	244	243	243	242	240	239	237	236	233	232	232	232	232	232
Refurbishment of Hydro Plants																
Kelsey Renunning	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Pointe du Bois	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
Imports																
Total Contracted																
NSP/ Xcel Sale Extension																
TOTAL POWER RESOURCES	7650	7660	7660	7659	7659	7658	7656	7655	7653	7652	7649	7648	7648	7648	7648	7648
PEAK DEMAND																
2008 Base Load Forecast	5601	5660	5720	5780	5839	5899	5959	6018	6078	6138	6198	6257	6317	6377	6436	6496
Exports																
Total Contract Sales																
NSP/ Xcel Sale Extension																
Total Load	5601	5660	5720	5780	5839	5899	5959	6018	6078	6138	6198	6257	6317	6377	6436	6496
Reserve	644	650	657	664	672	679	686	694	701	708	716	723	730	737	745	752
TOTAL PEAK DEMAND	6245	6310	6377	6444	6511	6578	6645	6712	6779	6846	6913	6980	7047	7114	7181	7248
SURPLUS	1405	1350	1283	1215	1148	1080	1011	943	874	805	735	668	601	534	467	400

Table 3
Potential New Resources

Project	Capacity	Avg Energy	Dep Energy	Earliest ISD
New additions in Recommended Plan				
Keyask	695 MW	4430 GW.h	2900 GW.h	2018
Conawapa	1485 MW	7000 GW.h	4550 GW.h	2021
Pointe du Bois	120 MW	805 GW.h	621 GW.h	2016
Kelsey Rerunning	77 MW (new)	400 GW.h	0 GW.h	2015
CRD Stations				
Notigi	100 MW	750 GW.h	625 GW.h	>2030
First Rapids	225 MW	1600 GW.h	1400 GW.h	>2030
Manasan	200 MW	1400 GW.h	1250 GW.h	>2030
Lower Nelson Stations				
Birthday	460 MW	2600 GW.h	1900 GW.h	>2030
Gillam Island	820 MW	5040 GW.h	3500 GW.h	>2030
Upper Nelson Stations				
White Mud	300 MW	2000 GW.h	1450 GW.h	>2030
Red Rock	250 MW	2250 GW.h	1700 GW.h	>2030
Upper Churchill Stations				
Bonald	120 MW	650 GW.h	400 GW.h	>2030
Granville Falls	125 MW	670 GW.h	410 GW.h	>2030