

NEEDS FOR AND ALTERNATIVES TO (NFAT)

Manitoba Hydro Undertaking #139

Manitoba Hydro to confirm when, if the diversity agreements were extended beyond 2024/25, the earliest required in-service date for Keeyask would be, both from an energy and capacity perspective.

Response:

Table 1 identifies the need for New Resources based on 2013 planning assumptions with Level 2 DSM and increased pipeline load and no new resources, which by definition does not include Keeyask, the US 750MW Interconnection, or new export power sales contingent on new generation (i.e. WPS 250MW Sale, WPS 308MW Sale, NSP 125MW Sale, WPS 100MW Sale). The table indicates that, should the NSP and GRE Diversity Agreements be extended to the end of the planning horizon, the need for new dependable energy resources is extended by 1 year to 2028 and the need for new capacity resources is extended by 7 years to 2037.

When assuming that the NSP Diversity Agreement is extended to the end of the planning horizon, it is also reasonable to assume that the NSP 325/375MW Sale Agreement will also be extended. Extending the NSP Sale Agreement results in a need for new dependable energy resources 3 years earlier in 2024 and defers the need for new winter peak capacity resources by 1 year when compared to the base assumptions.

Need For New Resources
 2013 Assumptions with Level 2 DSM and Increased Pipeline Load

	Dependable Energy	Winter Peak Capacity
Base Assumptions	2027	2030
Diversity Agreement Extension	2028	2037
Diversity Agreement Extension with NSP 375/325 MW Sale Extension	2024	2031

Table 2 identifies the need for New Resources based on a hypothetical development plan where Keeyask G.S. is not in service for 2019, but the 750 MW US Interconnection is assumed to be built for 2020. Although Keeyask G.S. is not assumed, the sales contracts which are contingent on new generation including the MP 250MW Sale, WPS 308MW Sale

NSP 125MW Sale and WPS 100MW Sale are also included based on the contract terms in the Preferred Development Plan. The GRE and NSP Diversity Agreements are extended to the end of the planning horizon. The development plan is based on 2013 planning assumptions with Level 2 DSM, with and without the pipeline load.

As noted above, when assuming that the NSP Diversity Agreement is extended to the end of the planning horizon, it is also reasonable to assume that the NSP 500 MW Sale Agreement will also be extended.

Table 2: Hypothetical Development Plan*
 Need For New Resources
 750 MW US Interconnection (2020), MP 250MW Sale, WPS 308MW Sale,
 125MW NSP Sale, 100MW WPS Sale, Diversity Agreements Extended, 2013 Assumptions

	Dependable Energy	Winter Peak Capacity
Level 2 DSM	2029	2030
Level 2 DSM, NSP Sale Extension	2025	2025
Level 2 DSM with Pipeline Load	2023	2021
Level 2 DSM with Pipeline Load, 500MW NSP Sale Extension	2023	2021

* Assumes Keeyask G.S. is not in service for 2019, but the 750 MW US Interconnection is assumed to be built for 2020. The Sales contracts contingent on new generation including the MP 250MW Sale, WPS 308MW Sale, NSP 125MW Sale and WPS 100MW Sale are included without Keeyask G.S. making this plan hypothetical. The MP, WPS and NSP Sales are based on the contract terms in the Preferred Development Plan and the GRE and NSP Diversity Agreements are extended to the end of the planning horizon.

Based on this hypothetical development plan with Level 2 DSM and the Pipeline load, new resources are required in 2021 for winter peak capacity and 2023 for dependable energy, regardless of whether the Diversity Agreements or NSP 500MW sale are extended.

Manitoba Hydro Supply and Demand Tables

Need for New Resources

Hypothetical Development Plan

750MW US Interconnection (2020), MP 250 MW Sale, WPS 308 MW Sale

1. Diversity Contract Extension, Level 2 DSM
2. Diversity Contract Extension, NSP Sale Extension, Level 2 DSM
3. Diversity Contract Extension, Level 2 DSM with Pipeline Load
4. Diversity Contract Extension, NSP Sale Extension, Level 2 DSM with Pipeline Load

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Energy Demand and Dependable Resources (GWh) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31	
Power Resources																			
New Power Resources																			
New Hydro																			
Conawapa																			
Keeyask																			
1 Total New Hydro																			
New Thermal																			
SCGT																			
CCGT																			
2 Total New Thermal																			
New Imports																			
Contracted																			
Proposed																			
3 Total New Imports								928	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	
4 New Wind																			
5 Total New Power Resources 1+2+3+4								928	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	
Base Supply Power Resources																			
Existing Hydro	21 914	21 912	21 911	21 899	21 888	21 880	21 862	21 854	21 846	21 838	21 838	21 828	21 818	21 818	21 808	21 798	21 798	21 788	
Existing Thermal																			
Brandon Coal - Unit 5	811	811	811	811	811	811	592												
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	
Brandon Units 6-7 SCGT	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	
Contracted Imports	2 705	1 949	1 549	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	
Proposed Imports		781	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	
Hydro Adjustment	340	373	784	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	
Market Purchases	363	338	583	493	493	493	493	957	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	2 164	
Existing Wind	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	
Pointe du Bois Rebuild																		60	
Bipole III Reduced Losses					190	190	190	190	190	190	190	190	190	190	190	190	190	190	
6 Total Base Supply Power Resources	30 211	30 242	30 652	30 700	30 879	30 871	30 634	30 498	30 583	30 575	30 575	30 565	30 555	30 555	30 545	30 535	30 535	31 699	
7 Total Power Resources 5+6	30 211	30 242	30 652	30 700	30 879	30 871	30 634	31 426	31 696	31 688	31 688	31 678	31 668	31 668	31 658	31 648	31 648	31 699	
Manitoba Domestic Load																			
2013 Base Load Forecast	25 239	25 676	26 013	26 322	26 606	27 003	27 398	27 789	28 197	28 605	29 013	29 418	29 822	30 225	30 625	31 041	31 453	31 863	
Construction Power - Hydro														4	12	16	28	8	
Less: Level 2 DSM Forecast	- 138	- 382	- 637	- 1 196	- 1 475	- 1 840	- 2 062	- 2 217	- 2 325	- 2 459	- 2 552	- 2 653	- 2 751	- 2 858	- 2 961	- 3 032	- 3 099	- 3 166	
8 Manitoba Net Load	25 101	25 294	25 376	25 126	25 131	25 163	25 336	25 572	25 872	26 146	26 461	26 765	27 071	27 371	27 676	28 025	28 382	28 705	
Contracted Exports	3 156	3 156	2 115	2 012	2 012	2 012	2 012	3 048	4 191	4 314	4 314	4 314	2 314	2 170	1 756	1 672	1 672	1 672	
Proposed Exports		448	931	952	952	952	952	742	252	162	162	162	162	671	1 695	1 695	1 695	1 695	
Less: Adverse Water			- 309	- 370	- 370	- 370	- 370	- 370	- 489	- 513	- 513	- 513	- 85						
9 Total Net Exports	3 156	3 604	2 737	2 594	2 594	2 594	2 594	3 420	3 954	3 963	3 963	3 963	2 391	2 841	3 451	3 367	3 367	3 367	
10 Total Energy Demand 8+9	28 257	28 898	28 113	27 720	27 725	27 757	27 930	28 992	29 826	30 109	30 424	30 728	29 462	30 212	31 127	31 392	31 749	32 072	
11 System Surplus/(Deficit) 7-10	1 954	1 344	2 539	2 980	3 154	3 114	2 704	2 434	1 870	1 579	1 264	950	2 206	1 456	531	256	(101)	(373)	
12 Less : Brandon Unit 5	- 811	- 811	- 811	- 811	- 811	- 811	- 592												
13 Adverse Water			- 309	- 370	- 370	- 370	- 370	- 370	- 489	- 513	- 513	- 513	- 85						
Exportable Surplus 11+12+13	1 143	533	1 419	1 799	1 973	1 933	1 742	2 064	1 381	1 066	751	437	2 121	1 456	531	256			

Date: May 2014

System Firm Energy Demand and Dependable Resources (GWh) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1 Total New Hydro																		
New Thermal																		
SCGT																		
CCGT																		
2 Total New Thermal																		
New Imports																		
Contracted																		
Proposed																		
3 Total New Imports																		
4 New Wind																		
5 Total New Power Resources	1+2+3+4																	
Base Supply Power Resources																		
Existing Hydro	21 788	21 778	21 768	21 768	21 758	21 748	21 748	21 738	21 738	21 728	21 718	21 718	21 708	21 698	21 698	21 688	21 678	21 678
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953
Brandon Units 6-7 SCGT	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354
Contracted Imports	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639
Proposed Imports	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936
Hydro Adjustment	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844
Market Purchases	2 164	2 164	2 164	2 164	2 164	1 215	994	1 030	1 067	1 104	1 141	1 178	1 219	1 259	1 299	1 339	1 379	1 419
Existing Wind	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771
Pointe du Bois Rebuild	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Bipole III Reduced Losses	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190
6 Total Base Supply Power Resources	31 789	31 779	31 769	31 769	31 759	30 800	30 579	30 605	30 642	30 669	30 696	30 733	30 764	30 794	30 834	30 864	30 894	30 934
7 Total Power Resources	5+6																	
Manitoba Domestic Load																		
2013 Base Load Forecast	32 265	32 667	33 069	33 471	33 873	34 274	34 676	35 078	35 480	35 882	36 283	36 685	37 087	37 489	37 890	38 292	38 694	39 096
Construction Power - Hydro	8	4																
Less: Level 2 DSM Forecast	-3 230	-3 292	-3 352	-3 412	-3 472	-3 534	-3 582	-3 631	-3 661	-3 691	-3 722	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752
8 Manitoba Net Load	29 043	29 379	29 717	30 059	30 401	30 740	31 094	31 447	31 819	32 191	32 561	32 933	33 335	33 737	34 138	34 540	34 942	35 344
Contracted Exports	428	428	428	428	428	428	428	428	428	428	428	428	428	428	428	428	428	428
Proposed Exports	1 695	1 695	1 695	1 695	1 695	418	162	162	162	162	162	162	162	162	162	162	162	162
Less: Adverse Water																		
9 Total Net Exports	2 123	2 123	2 123	2 123	2 123	846	590	590	590	590	590	590	590	590	590	590	590	590
10 Total Energy Demand	8+9																	
	31 166	31 502	31 840	32 182	32 524	31 586	31 684	32 037	32 409	32 781	33 151	33 523	33 925	34 327	34 728	35 130	35 532	35 934
11 System Surplus/(Deficit)	7-10																	
	623	277	(71)	(413)	(765)	(786)	(1 105)	(1 432)	(1 767)	(2 112)	(2 455)	(2 790)	(3 161)	(3 533)	(3 894)	(4 266)	(4 638)	(5 000)
12 Less : Brandon Unit 5																		
13 Adverse Water																		
Exportable Surplus	11+12+13																	
	623	277																

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, NSP Sale Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, NSP Sale Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Energy Demand and Dependable Resources (GWh) @ generation
NFAT 2013 Update with Diversity Contract Extension, NSP Sale Extension, Level 2 DSM
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31	
Power Resources																			
New Power Resources																			
New Hydro																			
Conawapa																			
Keeyask																			
1 Total New Hydro																			
New Thermal																			
SCGT																			
CCGT																			
2 Total New Thermal																			
New Imports																			
Contracted																			
Proposed																			
3 Total New Imports								928	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113
4 New Wind																			
5 Total New Power Resources 1+2+3+4								928	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113
Base Supply Power Resources																			
Existing Hydro	21 914	21 912	21 911	21 899	21 888	21 880	21 862	21 854	21 846	21 838	21 838	21 828	21 818	21 818	21 808	21 798	21 798	21 788	
Existing Thermal																			
Brandon Coal - Unit 5	811	811	811	811	811	811	592												
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953
Brandon Units 6-7 SCGT	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354
Contracted Imports	2 705	1 949	1 549	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639
Proposed Imports		781	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936
Hydro Adjustment	340	373	784	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844
Market Purchases	363	338	583	493	493	493	493	957	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	2 164
Existing Wind	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771
Pointe du Bois Rebuild																			60
Bipole III Reduced Losses					190	190	190	190	190	190	190	190	190	190	190	190	190	190	190
6 Total Base Supply Power Resources	30 211	30 242	30 652	30 700	30 879	30 871	30 634	30 498	30 583	30 575	30 575	30 565	30 555	30 555	30 545	30 535	30 535	30 535	31 699
7 Total Power Resources 5+6	30 211	30 242	30 652	30 700	30 879	30 871	30 634	31 426	31 696	31 688	31 688	31 678	31 668	31 668	31 658	31 648	31 648	31 648	31 699
Manitoba Domestic Load																			
2013 Base Load Forecast	25 239	25 676	26 013	26 322	26 606	27 003	27 398	27 789	28 197	28 605	29 013	29 418	29 822	30 225	30 625	31 041	31 453	31 863	
Construction Power - Hydro														4	12	16	28	8	
Less: Level 2 DSM Forecast	- 138	- 382	- 637	- 1 196	- 1 475	- 1 840	- 2 062	- 2 217	- 2 325	- 2 459	- 2 552	- 2 653	- 2 751	- 2 858	- 2 961	- 3 032	- 3 099	- 3 166	
8 Manitoba Net Load	25 101	25 294	25 376	25 126	25 131	25 163	25 336	25 572	25 872	26 146	26 461	26 765	27 071	27 371	27 676	28 025	28 382	28 705	
Contracted Exports	3 156	3 156	2 115	2 012	2 012	2 012	2 012	3 048	4 191	4 314	4 314	4 314	4 632	4 696	4 281	4 198	4 198	4 198	
Proposed Exports		448	931	952	952	952	952	742	252	162	162	162	162	671	1 695	1 695	1 695	1 695	
Less: Adverse Water			- 309	- 370	- 370	- 370	- 370	- 370	- 489	- 513	- 513	- 513	- 85						
9 Total Net Exports	3 156	3 604	2 737	2 594	2 594	2 594	2 594	3 420	3 954	3 963	3 963	3 963	4 709	5 367	5 976	5 893	5 893	5 893	
10 Total Energy Demand 8+9	28 257	28 898	28 113	27 720	27 725	27 757	27 930	28 992	29 826	30 109	30 424	30 728	31 780	32 738	33 652	33 918	34 275	34 598	
11 System Surplus/(Deficit) 7-10	1 954	1 344	2 539	2 980	3 154	3 114	2 704	2 434	1 870	1 579	1 264	950	(112)	(1070)	(1994)	(2 270)	(2 627)	(2 899)	
12 Less : Brandon Unit 5	- 811	- 811	- 811	- 811	- 811	- 811	- 592												
13 Adverse Water			- 309	- 370	- 370	- 370	- 370	- 370	- 489	- 513	- 513	- 513	- 85						
Exportable Surplus 11+12+13	1 143	533	1 419	1 799	1 973	1 933	1 742	2 064	1 381	1 066	751	437							

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources																	
	1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209	5 209
Existing Thermal																		
Brandon Coal - Unit 5																		
	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Selkirk Gas																		
	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280
Brandon Units 6-7 SCGT																		
	385	385	385	385	385	385	385	385	385	385	385	385	385	385	385	385	385	385
Contracted Imports																		
	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
Proposed Imports																		
	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
Pointe du Bois Rebuild																		
	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357	6 357
6	Total Power Resources																	
	4+5																	
Peak Demand																		
2013 Base Load Forecast																		
	6 089	6 162	6 235	6 307	6 380	6 453	6 526	6 599	6 672	6 745	6 818	6 890	6 963	7 036	7 109	7 182	7 255	7 328
Less: Level 2 DSM Forecast																		
	- 701	- 720	- 738	- 757	- 776	- 794	- 810	- 825	- 839	- 852	- 866	- 879	- 879	- 879	- 879	- 879	- 879	- 879
7	Manitoba Net Load																	
	5 388	5 442	5 497	5 550	5 604	5 659	5 716	5 774	5 833	5 893	5 952	6 011	6 084	6 157	6 230	6 303	6 376	6 449
Contracted Exports																		
	275	275	275	275														
Proposed Exports																		
	339	339	339	339	339													
8	Total Exports																	
	614	614	614	614	339													
9	Total Peak Demand																	
	6 002	6 056	6 111	6 164	5 943	5 659	5 716	5 774	5 833	5 893	5 952	6 011	6 084	6 157	6 230	6 303	6 376	6 449
10	Reserves																	
	646	653	660	666	673	679	686	693	700	707	714	721	730	739	748	756	765	774
11	System Surplus/(Deficit)																	
	(291)	(352)	(414)	(473)	(259)	19	(45)	(110)	(176)	(243)	(309)	(375)	(457)	(539)	(621)	(702)	(784)	(866)
12	Less: Brandon Unit 5																	
	Exportable Surplus																	
	11+12																	
	19																	

Date: May 2014

System Firm Energy Demand and Dependable Resources (GWh) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31	
Power Resources																			
New Power Resources																			
New Hydro																			
Conawapa																			
Keeyask																			
1 Total New Hydro																			
New Thermal																			
SCGT																			
CCGT																			
2 Total New Thermal																			
New Imports																			
Contracted																			
Proposed																			
3 Total New Imports							928	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	
4 New Wind																			
5 Total New Power Resources 1+2+3+4							928	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	1 113	
Base Supply Power Resources																			
Existing Hydro	21 914	21 912	21 911	21 899	21 888	21 880	21 862	21 854	21 846	21 838	21 838	21 828	21 818	21 818	21 808	21 798	21 798	21 788	
Existing Thermal																			
Brandon Coal - Unit 5	811	811	811	811	811	811	592												
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	
Brandon Units 6-7 SCGT	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	
Contracted Imports	2 705	1 949	1 549	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	
Proposed Imports		781	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	
Hydro Adjustment	340	373	784	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	
Market Purchases	363	338	583	493	493	493	493	957	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	1 050	
Existing Wind	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	
Pointe du Bois Rebuild																		60	
Bipole III Reduced Losses					190	190	190	190	190	190	190	190	190	190	190	190	190	190	
6 Total Base Supply Power Resources	30 211	30 242	30 652	30 700	30 879	30 871	30 634	30 498	30 583	30 575	30 575	30 565	30 555	30 555	30 545	30 535	30 535	30 585	
7 Total Power Resources 5+6	30 211	30 242	30 652	30 700	30 879	30 871	30 634	31 426	31 696	31 688	31 688	31 678	31 668	31 668	31 658	31 648	31 648	31 698	
Manitoba Domestic Load																			
2013 Base Load Forecast	25 239	25 676	26 013	26 691	27 345	28 111	28 876	29 268	29 675	30 084	30 491	30 896	31 301	31 704	32 104	32 519	32 931	33 342	
Construction Power - Hydro														4	12	16	28	8	
Less: Level 2 DSM Forecast	- 138	- 382	- 637	- 1 196	- 1 475	- 1 840	- 2 062	- 2 217	- 2 325	- 2 459	- 2 552	- 2 653	- 2 751	- 2 858	- 2 961	- 3 032	- 3 099	- 3 166	
8 Manitoba Net Load	25 101	25 294	25 376	25 495	25 870	26 271	26 814	27 051	27 350	27 625	27 939	28 243	28 550	28 850	29 155	29 503	29 860	30 184	
Contracted Exports	3 156	3 156	2 115	2 012	2 012	2 012	2 012	3 048	4 191	4 314	4 314	4 314	2 314	2 170	1 756	1 672	1 672	1 672	
Proposed Exports		448	931	952	952	952	952	742	252	162	162	162	162	671	1 695	1 695	1 695	1 695	
Less: Adverse Water			- 309	- 370	- 370	- 370	- 370	- 370	- 489	- 513	- 513	- 513	- 85						
9 Total Net Exports	3 156	3 604	2 737	2 594	2 594	2 594	2 594	3 420	3 954	3 963	3 963	3 963	2 391	2 841	3 451	3 367	3 367	3 367	
10 Total Energy Demand 8+9	28 257	28 898	28 113	28 089	28 464	28 865	29 408	30 471	31 304	31 588	31 902	32 206	30 941	31 691	32 606	32 870	33 227	33 551	
11 System Surplus/(Deficit) 7-10	1 954	1 344	2 539	2 611	2 415	2 006	1 226	955	392	100	(214)	(528)	727	(23)	(948)	(1 222)	(1 579)	(1 853)	
12 Less : Brandon Unit 5	- 811	- 811	- 811	- 811	- 811	- 811	- 592												
13 Adverse Water			- 309	- 370	- 370	- 370	- 370	- 370	- 489	- 513	- 513	- 513	- 85						
Exportable Surplus 11+12+13	1 143	533	1 419	1 430	1 234	825	264	585					642						

Date: May 2014

System Firm Energy Demand and Dependable Resources (GWh) @ generation
NFAT 2013 Update with Diversity Contract Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	
Power Resources																			
New Power Resources																			
New Hydro																			
Conawapa																			
Keeyask																			
1 Total New Hydro																			
New Thermal																			
SCGT																			
CCGT																			
2 Total New Thermal																			
New Imports																			
Contracted	1 113	1 113	1 113	1 113	186														
Proposed																			
3 Total New Imports	1 113	1 113	1 113	1 113	186														
4 New Wind																			
5 Total New Power Resources	1+2+3+4	1 113	1 113	1 113	1 113	186													
Base Supply Power Resources																			
Existing Hydro	21 788	21 778	21 768	21 768	21 758	21 748	21 748	21 738	21 738	21 728	21 718	21 718	21 708	21 698	21 698	21 688	21 678	21 678	
Existing Thermal																			
Brandon Coal - Unit 5																			
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	
Brandon Units 6-7 SCGT	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	
Contracted Imports	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	
Proposed Imports	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	
Hydro Adjustment	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	
Market Purchases	1 050	1 050	1 050	1 050	1 978	1 363	1 142	1 178	1 215	1 252	1 289	1 326	1 366	1 407	1 447	1 487	1 527	1 567	
Existing Wind	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	
Pointe du Bois Rebuild	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	
Bipole III Reduced Losses	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	
6 Total Base Supply Power Resources	5+6	30 675	30 665	30 655	30 655	31 573	30 948	30 727	30 753	30 790	30 817	30 844	30 881	30 911	30 942	30 982	31 012	31 042	31 082
7 Total Power Resources	5+6	31 788	31 778	31 768	31 768	31 759	30 948	30 727	30 753	30 790	30 817	30 844	30 881	30 911	30 942	30 982	31 012	31 042	31 082
Manitoba Domestic Load																			
2013 Base Load Forecast	33 744	34 145	34 547	34 949	35 351	35 753	36 154	36 556	36 958	37 360	37 762	38 163	38 565	38 967	39 369	39 771	40 172	40 574	
Construction Power - Hydro	8	4																	
Less: Level 2 DSM Forecast	-3 230	-3 292	-3 352	-3 412	-3 472	-3 534	-3 582	-3 631	-3 661	-3 691	-3 722	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752	
8 Manitoba Net Load	30 522	30 857	31 195	31 537	31 879	32 219	32 572	32 925	33 297	33 669	34 040	34 411	34 813	35 215	35 617	36 019	36 420	36 822	
Contracted Exports	1 672	1 672	1 672	1 672	636	428	428	428	428	428	428	428	428	428	428	428	428	428	
Proposed Exports	1 695	1 695	1 695	1 695	1 695	418	162	162	162	162	162	162	162	162	162	162	162	162	
Less: Adverse Water																			
9 Total Net Exports	3 367	3 367	3 367	3 367	2 331	846	590	590	590	590	590	590	590	590	590	590	590	590	
10 Total Energy Demand	8+9	33 889	34 224	34 562	34 904	34 210	33 065	33 162	33 515	33 887	34 259	34 630	35 001	35 403	35 805	36 207	36 609	37 010	37 412
11 System Surplus/(Deficit)	7-10	(2 101)	(2 446)	(2 794)	(3 136)	(2 451)	(2 117)	(2 435)	(2 762)	(3 097)	(3 442)	(3 786)	(4 120)	(4 492)	(4 863)	(5 225)	(5 597)	(5 968)	(6 330)
12 Less : Brandon Unit 5																			
13 Adverse Water																			
Exportable Surplus	11+12+13																		

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, NSP Sale Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	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	2028/29	2029/30	2030/31
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Winter Peak Demand and Capacity Resources (MW) @ generation
NFAT 2013 Update with Diversity Contract Extension, NSP Sale Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49
Power Resources																		
New Power Resources																		
New Hydro																		
Conawapa																		
Keeyask																		
1	Total New Hydro																	
New Thermal																		
SCGT																		
CCGT																		
2	Total New Thermal																	
New Imports																		
Contracted																		
Proposed																		
3	Total New Imports																	
4	Total New Power Resources 1+2+3																	
Base Supply Power Resources																		
Existing Hydro																		
Existing Thermal																		
Brandon Coal - Unit 5																		
Selkirk Gas																		
Brandon Units 6-7 SCGT																		
Contracted Imports																		
Proposed Imports																		
Pointe du Bois Rebuild																		
Bipole III Reduced Losses																		
5	Total Base Supply Power Resources																	
6	Total Power Resources 4+5																	
Peak Demand																		
2013 Base Load Forecast																		
Less: Level 2 DSM Forecast																		
7	Manitoba Net Load																	
Contracted Exports																		
Proposed Exports																		
8	Total Exports																	
9	Total Peak Demand 7+8																	
10	Reserves																	
11	System Surplus/(Deficit) 6-9-10																	
12	Less: Brandon Unit 5																	
Exportable Surplus 11+12																		

Date: May 2014

System Firm Energy Demand and Dependable Resources (GWh) @ generation
NFAT 2013 Update with Diversity Contract Extension, NSP Sale Extension, Level 2 DSM and Pipeline Load
Hypothetical Development Plan with 750MW US Interconnection, MP 250MW Sale, WPS 308MW Sale

Fiscal Year	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	
Power Resources																			
New Power Resources																			
New Hydro																			
Conawapa																			
Keeyask																			
1 Total New Hydro																			
New Thermal																			
SCGT																			
CCGT																			
2 Total New Thermal																			
New Imports																			
Contracted	1 113	1 113	1 113	1 113	186														
Proposed																			
3 Total New Imports	1 113	1 113	1 113	1 113	186														
4 New Wind																			
5 Total New Power Resources 1+2+3+4	1 113	1 113	1 113	1 113	186														
Base Supply Power Resources																			
Existing Hydro	21 788	21 778	21 768	21 768	21 758	21 748	21 748	21 738	21 738	21 728	21 718	21 718	21 708	21 698	21 698	21 688	21 678	21 678	
Existing Thermal																			
Brandon Coal - Unit 5																			
Selkirk Gas	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953	953
Brandon Units 6-7 SCGT	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354	2 354
Contracted Imports	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639	1 639
Proposed Imports	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936
Hydro Adjustment	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844
Market Purchases	1 050	1 050	1 050	1 050	1 978	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164	2 164
Existing Wind	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771	771
Pointe du Bois Rebuild	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Bipole III Reduced Losses	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190
6 Total Base Supply Power Resources	30 675	30 665	30 655	30 655	31 573	31 749	31 749	31 739	31 739	31 729	31 719	31 719	31 709	31 699	31 699	31 689	31 679	31 679	31 679
7 Total Power Resources 5+6	31 788	31 778	31 768	31 768	31 759	31 749	31 749	31 739	31 739	31 729	31 719	31 719	31 709	31 699	31 699	31 689	31 679	31 679	31 679
Manitoba Domestic Load																			
2013 Base Load Forecast	33 744	34 145	34 547	34 949	35 351	35 753	36 154	36 556	36 958	37 360	37 762	38 163	38 565	38 967	39 369	39 771	40 172	40 574	
Construction Power - Hydro	8	4																	
Less: Level 2 DSM Forecast	-3 230	-3 292	-3 352	-3 412	-3 472	-3 534	-3 582	-3 631	-3 661	-3 691	-3 722	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752	-3 752
8 Manitoba Net Load	30 522	30 857	31 195	31 537	31 879	32 219	32 572	32 925	33 297	33 669	34 040	34 411	34 813	35 215	35 617	36 019	36 420	36 822	
Contracted Exports	4 198	4 198	4 198	4 198	3 162	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954	2 954
Proposed Exports	1 695	1 695	1 695	1 695	1 695	418	162	162	162	162	162	162	162	162	162	162	162	162	162
Less: Adverse Water																			
9 Total Net Exports	5 893	5 893	5 893	5 893	4 857	3 372	3 116	3 116	3 116	3 116	3 116	3 116	3 116	3 116	3 116	3 116	3 116	3 116	3 116
10 Total Energy Demand 8+9	36 415	36 750	37 088	37 430	36 736	35 591	35 688	36 041	36 413	36 785	37 156	37 527	37 929	38 331	38 733	39 135	39 536	39 938	
11 System Surplus/(Deficit) 7-10	(4 627)	(4 972)	(5 320)	(5 662)	(4 977)	(3 842)	(3 939)	(4 302)	(4 674)	(5 056)	(5 437)	(5 808)	(6 220)	(6 632)	(7 034)	(7 446)	(7 857)	(8 259)	
12 Less : Brandon Unit 5																			
13 Adverse Water																			
Exportable Surplus 11+12+13																			