

Needs For and Alternatives To

**APPENDIX 9.1**

**High Level Development Plan Comparison Table**

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Development Plan		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
		All Gas	K22/Gas	Wind/Gas	K19/Gas24/250MW	K19/Gas25/750MW (WPS Sale & Investment)	K19/Gas31/750MW	SCGT/C26	CCGT/C26	Wind/C26	K22/C29	K19/C31/250MW	K19/C31/750MW	K19/C25/250MW	K19/C25/750MW (WPS Sale & Investment)	K19/C25/750MW	
Technical	Fuel Type	Natural Gas	Water & Natural Gas	Air & Natural Gas	Water & Natural Gas	Water & Natural Gas	Water & Natural Gas	Natural Gas & Water	Natural Gas & Water	Air & Water	Water	Water	Water	Water	Water	Water	
	Renewable	No	Partially	Partially	Partially	Partially	Partially	Partially	Partially	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Dispatchability	Yes	Yes	Yes through gas	Yes	Yes	Yes	Yes	Yes	Predominantly	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Mode of Operation	Intermediate & Peaking	Baseload, Intermediate & Peaking	Must Take & Peaking	Baseload, Intermediate & Peaking	Baseload, Intermediate & Peaking	Baseload, Intermediate & Peaking	Peaking & Modified Run-of-River	Intermediate, Peaking & Modified Run-of-River	Must Take, Modified Run-of-River	Baseload, Peaking & Modified Run-of-River	Baseload, Peaking & Modified Run-of-River	Baseload, Peaking & Modified Run-of-River	Baseload, Peaking & Modified Run-of-River	Baseload, Peaking & Modified Run-of-River	Baseload, Peaking & Modified Run-of-River	
	Asset Life	30 yrs	67 & 30 yrs	20 & 30 yrs	67 & 30 yrs	67 & 30 yrs	67 & 30 yrs	30 & 67 yrs	30 & 67 yrs	20 & 67 yrs	67 yrs	67 yrs	67 yrs	67 yrs	67 yrs	67 yrs	
	Earliest Resource ISD	2022	2022	2022	2019	2019	2019	2022	2022	2022	2022	2019	2019	2019	2019	2019	
	Transmission Length	120 Km	118 Km	943 Km	263 Km	349 Km	349 Km	87 Km	87 Km	263 Km	547 Km	692 Km	738 Km	692 Km	738 Km	738 Km	
	Capacity at Plant																
	Total Nominal	2115 MW	2345 MW	3892 MW	2345 MW	2304 MW	2356 MW	2530 MW	2629 MW	2920 MW	2807 MW	2807 MW	2807 MW	2807 MW	2807 MW	2807 MW	
	Total Net Winter Peak	2242 MW	2376 MW	2280 MW	2376 MW	2343 MW	2395 MW	2415 MW	2517 MW	2415 MW	2599 MW	2599 MW	2599 MW	2599 MW	2599 MW	2599 MW	
Environmental	Air Impacts	Cumulative GHG Operating Emissions	33.2 Mt CO2e	23.1 Mt CO2e	16.0 Mt CO2e	25.4 Mt CO2e	16.3 Mt CO2e	18.7 Mt CO2e	13.0 Mt CO2e	17.5 Mt CO2e	9.8 Mt CO2e	7.8 Mt CO2e	12.0 Mt CO2e	7.4 Mt CO2e	7.8 Mt CO2e	7.5 Mt CO2e	7.5 Mt CO2e
		Cumulative Regional GHG Disp. Potential	22.5 Mt CO2e	94.4 Mt CO2e	67.4 Mt CO2e	107.7 Mt CO2e	94.4 Mt CO2e	94.1 Mt CO2e	102.1 Mt CO2e	113.1 Mt CO2e	125.1 Mt CO2e	155.5 Mt CO2e	159.5 Mt CO2e	162.4 Mt CO2e	186.2 Mt CO2e	191.6 Mt CO2e	191.8 Mt CO2e
		Cumulative NOx Emissions	13800 t	10800 t	8700 t	11500 t	8900 t	9600 t	7900 t	9100 t	7000 t	6400 t	7600 t	6300 t	6500 t	6400 t	6400 t
	Land Impacts	GS Footprint	19 ha	229 ha	423 ha	229 ha	228 ha	228 ha	173 ha	174 ha	263 ha	383 ha	383 ha	383 ha	383 ha	383 ha	383 ha
		Flooded Area	0 ha	4,463 ha	0 ha	4,463 ha	4,463 ha	4,463 ha	507 ha	507 ha	507 ha	4,970 ha	4,970 ha	4,970 ha	4,970 ha	4,970 ha	4,970 ha
		Additional Impacted Area	0 ha	9,302 ha	53,595 ha	9,302 ha	9,302 ha	9,302 ha	1,381 ha	1,381 ha	13,291 ha	10,683 ha	10,683 ha	10,683 ha	10,683 ha	10,683 ha	10,683 ha
		Total Impacted Area	19 ha	13,994 ha	54,018 ha	13,994 ha	13,993 ha	13,993 ha	2,061 ha	2,062 ha	14,061 ha	16,036 ha	16,036 ha	16,036 ha	16,036 ha	16,036 ha	16,036 ha
	Water Impacts	Water Consumption	≈ 900 m <sup>3</sup> /GW.h for CCGT generation	≈ 900 m <sup>3</sup> /GW.h for CCGT generation	Domestic Needs Only	≈ 900 m <sup>3</sup> /GW.h for CCGT generation	≈ 900 m <sup>3</sup> /GW.h for CCGT generation	≈ 900 m <sup>3</sup> /GW.h for CCGT generation	Domestic Needs Only	≈ 900 m <sup>3</sup> /GW.h for CCGT generation	Domestic Needs Only	Domestic Needs Only	Domestic Needs Only	Domestic Needs Only	Domestic Needs Only	Domestic Needs Only	Domestic Needs Only
		Water Quality	-	Erosion & Mercury	-	Erosion & Mercury	Erosion & Mercury	Erosion & Mercury	Negligible	Negligible	Negligible	Erosion & Mercury	Erosion & Mercury	Erosion & Mercury	Erosion & Mercury	Erosion & Mercury	Erosion & Mercury
		Water Regime	-	Regulated Operating Range	-	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range	Regulated Operating Range
	Wildlife Species of Interest	Aquatic	-	Lake Sturgeon Habitat	-	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat	Lake Sturgeon Habitat
		Terrestrial	-	Caribou Habitat	-	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat	Caribou Habitat
		Avian	-	Nesting Habitat	Bird & Bat Collisions	Nesting Habitat	Nesting Habitat	Nesting Habitat	Negligible	Negligible	Bird & Bat Collisions	Nesting Habitat	Nesting Habitat	Nesting Habitat	Nesting Habitat	Nesting Habitat	Nesting Habitat
Socio-Economic / Provincial	Generic Tech. Rating	Health Concerns	Low	Very Low / Low	Low	Very Low / Low	Very Low / Low	Very Low / Low	Low / Very Low	Low / Very Low	Low / Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Safety Concerns	High	Medium / High	Very Low / High	Medium / High	Medium / High	Medium / High	High / Medium	High / Medium	Very Low / Medium	Medium	Medium	Medium	Medium	Medium	Medium
	MB Business Opportunities (% of capital spent in MB)		28%	46%	21%	45%	42%	41%	41%	43%	40%	47%	46%	45%	44%	44%	44%
	Cumulative Development Plan Employment	Direct Construction	2,000 Person-Years	6,300 Person-Years	3,100 Person-Years	6,300 Person-Years	5,800 Person-Years	6,000 Person-Years	7,900 Person-Years	8,200 Person-Years	8,300 Person-Years	12,500 Person-Years	12,500 Person-Years	12,500 Person-Years	12,500 Person-Years	12,500 Person-Years	12,500 Person-Years
		At Northern Work Sites	0%	69%	0%	69%	73%	72%	86%	84%	82%	89%	89%	89%	89%	89%	89%
		Permanent O&M	3,900 Person-Years	4,300 Person-Years	4,700 Person-Years	4,700 Person-Years	3,800 Person-Years	3,500 Person-Years	3,000 Person-Years	4,100 Person-Years	4,200 Person-Years	3,200 Person-Years	2,900 Person-Years	3,400 Person-Years	2,000 Person-Years	2,000 Person-Years	2,000 Person-Years
		At Northern Work Sites	0%	35%	0%	32%	40%	44%	45%	33%	32%	84%	53%	86%	77%	77%	77%
	Present Value Royalties / Taxes (2014\$)	Water Rentals	\$0 M	\$125 M	\$0 M	\$155 M	\$149 M	\$151 M	\$155 M	\$157 M	\$149 M	\$243 M	\$263 M	\$263 M	\$306 M	\$314 M	\$314 M
		Capital Taxes	\$131 M	\$361 M	\$312 M	\$404 M	\$416 M	\$425 M	\$438 M	\$458 M	\$519 M	\$650 M	\$670 M	\$698 M	\$754 M	\$780 M	\$794 M
		Guarantee Fees	\$209 M	\$577 M	\$505 M	\$647 M	\$666 M	\$680 M	\$702 M	\$733 M	\$831 M	\$1040 M	\$1072 M	\$1117 M	\$1206 M	\$1247 M	\$1270 M
Other		Grants-in-lieu of taxes	Grants-in-lieu of taxes	Land Rentals, Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Land Rentals, Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	Grants-in-lieu of taxes	
Nearby Population Centers	Brandon, Southern centre near pipeline	Brandon, Fox Lake CN, Gillam, Southern centre near pipeline, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Brandon, Southern centre near pipeline, Southwest & South-central Manitoba	Brandon, Fox Lake CN, Gillam, Southern centre near pipeline, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Brandon, Fox Lake CN, Gillam, Southern centre near pipeline, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Brandon, Fox Lake CN, Gillam, Southern centre near pipeline, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Brandon, Fox Lake CN, Gillam, Southern centre near pipeline, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Brandon, Fox Lake CN, Gillam, Shamattawa FN, Southern centre near pipeline, Tataskweyak CN, York Factory FN	Brandon, Fox Lake CN, Gillam, Shamattawa FN, Southern centre near pipeline, Tataskweyak CN, York Factory FN	Brandon, Fox Lake CN, Gillam, Shamattawa FN, Southern centre near pipeline, Tataskweyak CN, York Factory FN	Fox Lake CN, Gillam, Shamattawa FN, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Fox Lake CN, Gillam, Shamattawa FN, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Fox Lake CN, Gillam, Shamattawa FN, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Fox Lake CN, Gillam, Shamattawa FN, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Fox Lake CN, Gillam, Shamattawa FN, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	Fox Lake CN, Gillam, Shamattawa FN, Tataskweyak CN, Thompson, War Lake FN, York Factory FN	
Economic	Incremental NPV Relative to All Gas Plan Reference Scenario (2014\$)	\$0 M	\$887 M	-\$775 M	\$1346 M	\$1097 M	\$1091 M	\$738 M	\$784 M	\$531 M	\$806 M	\$1215 M	\$1360 M	\$1295 M	\$1696 M	\$1427 M	