
NEEDS FOR AND ALTERNATIVES TO (NFAT)

Manitoba Hydro Undertaking #70

Manitoba Hydro to describe the socio-economic benefits to non-Aboriginal northern communities and to Aboriginal communities who are non-partners of Manitoba Hydro in a matrix format, in a similar style as to what was provided for environmental effects in responses to CAC/MH 231 a).

RESPONSE:

The response to CAC/MH 231a provides a high level overview of the socio-economic effects to all Aboriginal and northern residents, including those who are members of the Partner communities. The information provided in CAC/MH-I 231a is further expanded upon in MMF/MH-II 40a, which provides further analysis on the socio-economic effects of the alternative development options in matrix and written format, including a consideration of employment and business opportunities, housing, health and resource use. The response to MMF/MH-II 40a also provides commentary, where feasible, on the differences in socio-economic effects between communities in the vicinity of the Keeyask and Conawapa Generation Projects and other Aboriginal and non-Aboriginal residents in Northern Manitoba. MMF/MH-II 40a has been reattached here for reference purposes.

The Keeyask Project is the only project within the PDP or among its alternatives for which detailed socio-economic assessments have been undertaken; as such, it is the only project for which it is possible to separate out in detail the benefits for partner communities and others in northern Manitoba.

Details on the socio-economic benefits of the Keeyask Infrastructure Project, the Keeyask Generation Project and the Keeyask Transmission Project are available in the EIS documents submitted for each of these projects and can be found primarily in the sections on Economy. The attached Table 1 summarizes these differences at a high level based on predictions made in the EIS – it is important to remember that these are predictions only and that actual benefits realized may be different.

Table 1: Keeyask Generation Project: Summary of Socio-economic Benefits for Northern Manitobans

	Keeyask Cree Nations	Northern Aboriginal Residents	Other Northern Residents
Direct Employment¹ <ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> - <i>Infrastructure:</i> Up to 110 person years - <i>Generation:</i> 235 to 600 person years - <i>Transmission:</i> Not separately estimated by component; the JKDA designates the construction power station and the clearing and construction of the Construction Power Line Right of Way as Direct Negotiated Contracts. - <i>Other:</i> 35-40 person years through other project-related opportunities (e.g., participation in project monitoring) 	<ul style="list-style-type: none"> - <i>Infrastructure:</i> up to 138 person years, including KCNs employment - <i>Generation:</i> 550-1700 person years of employment, including KCNs employment; roughly 315-1100 person of employment, excluding KCNs employment - <i>Transmission:</i> Not separately estimated by component; all components not covered by the JKDA may be directly negotiated or publicly tendered. The Transmission Line Agreement will be applicable for wages and benefits on the projects and the contract documents will set out the first preference hiring for Northern Aboriginals. 	<ul style="list-style-type: none"> - <i>Infrastructure:</i> No separate analysis undertaken - <i>Generation:</i> No separate analysis undertaken - <i>Transmission:</i> No separate analysis undertaken
<ul style="list-style-type: none"> Operation 	<p>All positions estimated to be located in the North. Approximately 45% of 50 positions estimated to be Aboriginal.</p> <p>A minimum of 182 positions have been targeted to KCNs members across Manitoba Hydro operations (not Keeyask-specific) as a commitment in the JKDA.</p>	<p>All positions estimated to be located in the North. Approximately 45% of 50 positions estimated to be Aboriginal.</p>	<p>All positions estimated to be located in the North. Approximately 45% of 50 positions estimated to be Aboriginal.</p>
Business <ul style="list-style-type: none"> Direct Negotiated Contracts 	<p>To date, roughly \$390M negotiated with the KCNs (at time of EIS writing, this value was estimated at \$203M (in 2007 \$) based on the JKDA negotiations).</p>	N/A	N/A

	Keeyask Cree Nations	Northern Aboriginal Residents	Other Northern Residents
<ul style="list-style-type: none"> Open-Tendered Contracts 	Generally prohibited from bidding on open-tendered contracts due to “insider information”. See JKDA Article 13 for more information.	Manitoba Hydro’s Northern Purchasing Policy would apply for tendered work. . No estimate available on the dollar value of work that could accrue.	Manitoba Hydro’s Northern Purchasing Policy would apply for tendered work. . No estimate available on the dollar value of work that could accrue.
<ul style="list-style-type: none"> Sub-Contracts 	Bid-depository mechanism to facilitate sub-contracting opportunities for the KCN on the Keeyask Project. Possible opportunities to bid on sub-contract work for the Keeyask Generation and Keeyask Transmission Projects. No estimate available on the dollar value of work that could accrue.	Possible opportunities to bid on sub-contract work for the Keeyask Generation and Keeyask Transmission Projects. No estimate available on the dollar value of work that could accrue.	Possible opportunities to bid on sub-contract work for the Keeyask Generation and Keeyask Transmission Projects. No estimate available on the dollar value of work that could accrue.
Training	Funded to participated in the Hydro Northern Training & Employment Initiative (HNTEI): - KCNs: \$32.7M; 1108 participants	MMF and MKO funded to participated in the Hydro Northern Training & Employment Initiative (HNTEI): - MMF: \$4.8M; 149 participants - MKO: \$9.7M; 1015 participants - NCN: \$10.9M; 398 participants - WKTC Ops: \$2.2M	N/A
Income & Governance	Through the JKDA, partners in the Keeyask Infrastructure and Keeyask Generation projects: - Can purchase up to 25% equity ownership shares (15% for Cree Nations Partners; 5% each for York Factory and Fox Lake) and will receive revenue stream based on investment - Participation in Project governance, including seats on General Partner Board of Directors and all Project-related committees. - As proponent, participation in monitoring activities, including community-specific ATK monitoring contracts and participation in technical science monitoring.	N/A	N/A

Table Notes:

- Estimates of indirect employment have not been undertaken for each of the identified categories; overall estimates of indirect employment for Manitoba and Canada are included in CAC/MH-I 230a.

1 **SUBJECT: Socio-economic impacts**

2

3 **REFERENCE: MMF/MH I-038a**

4

5 **PREAMBLE:** The information presented in the “Socio-economic Comparison of Resource
6 Options” table (CAC/MH 1-231a) is not complete, or detailed enough, to allow for an
7 understanding of the socio-economic effects of the resource options. Further, it
8 presents very general information for all of the components of the PDP, but the same
9 type and level of information is not provided in the NFAT submission, or to subsequent
10 Round 1 IRs, including MMF/MH 1-004a, MMF/MH 1-004c, MMF/MH 1-038a, MMF/MH
11 1-039a, MMF/MH 1-046a, for the alternatives and other options.

12

13 It is still not clear whether, or how, the PDP is superior to the alternatives in even the
14 most general socio-economic terms, and with respect to the Metis in particular.

15

16 **QUESTION:**

17 Please provide a matrix, consistent with the "Socio-economic Comparison of Resource Options"
18 (CAC/MH 1-231a) that describes the same socio-economic parameters for each of the 15
19 development plans described in Chapter 8.

20

21 **RESPONSE:**

22 The response to CAC/MH I-231(a) compared the macro environmental and socio-economic
23 effects of Keeyask, Conawapa, gas turbines, wind generation, demand-side management
24 (DSM), the Manitoba-Minnesota Transmission Interconnection Project and the North-South
25 Transmission Upgrade Project. Five critical environmental characteristics and five socio-
26 economic characteristics were identified that, at a macro level, may differentiate potential
27 effects of the various resource options from each other.

28

29 Each of the 15 development plans has various combinations of the resource options. All plans
30 must be able to meet Manitoba Hydro’s expected domestic load and existing firm export

1 commitments. Several development plans share similar resource options, although the timing
2 as to when each option would be developed differs. For the purposes of this macro-level
3 analysis, 12 of the 15 plans can be placed into three groups:

- 4 • Group A (Keeyask, Conawapa, 3 SCGTs, and North-South Upgrade): Plans 1, 2, 4, 6, 8 and
5 12. All but Plan 12 also include a new U.S. Interconnection.
- 6 • Group B (Keeyask, gas turbines and U.S. Interconnection): Plans 3, 5, 7.
- 7 • Group C (Keeyask or Conawapa and gas [no U.S. Interconnection]): Plans 11, 13 and 14.

8 The following are the plans that do not fit into a group:

- 9 • Plan 9 ('all gas' with no interconnection).
- 10 • Plan 10 (gas turbines and wind farms with no interconnection).
- 11 • Plan 15 (wind farms, Conawapa and gas turbines with no interconnection).

12 This response first examines employment and business opportunities. It then examines
13 Infrastructure and Services; Personal, Family and Community Life; and Resource Use.

1 **Table 1 (MMF/MH II-040a): Manitoba and Canada Employment**

DEVELOPMENT PLAN	CONSTRUCTION (Person Years)			OPERATIONS (Person Years)			TOTAL (Construction + Operations)		
	All of Manitoba	Rest of Canada	Total – All of Canada	All of Manitoba	Rest of Canada	Total – All of Canada	All of Manitoba	Rest of Canada	Total – All of Canada
1. K19/C25/750MW WPS Sale & Investment in 750 MW Interconnection Gas: SCGT in '41, '44, '46 (PDP)	19,200	40,100	59,300	4,500	1,600	6,100	23,700	41,700	65,500
2. K19/C25/750MW No WPS / resources same as above. Gas: SCGT in '41, '44, '46	19,200	40,100	59,300	4,500	1,600	6,100	23,700	41,700	65,500
3. K19/Gas25/750MW WPS Sale & Investment Gas: SCGT in '25, '26, '28, '31, '33, '45, '47 (LM); CCGT in '42.	10,500	22,200	32,700	7,500	6,400	13,900	18,000	28,700	46,600
4. K19/C31/750MW Gas: SCGT in '41, '44, '46	19,200	40,100	59,300	4,000	1,500	5,500	23,300	41,600	64,900
5. K19/Gas 31/750MW Gas: SCGT in 2 x '31, 32, '34, '43; CCGT in '39, '45	10,700	22,900	33,700	7,800	5,800	13,500	18,500	28,700	47,200
6. K19/C25/250MW Gas: SCGT in '40, '44, '46	19,000	39,700	58,700	4,500	1,700	6,200	23,500	41,400	64,900
7. K19/Gas 24/250MW Gas: SCGT in 24, '29, CCGT in '32, '38, '41, '45	11,000	24,000	35,000	7,200	6,800	13,900	18,200	30,700	48,900

8.	K19/C31/250MW Gas: SCGT in '24, '29, '46	19,000	39,700	58,700	5,600	3,200	8,700	24,600	42,900	67,500
9.	All Gas SCGT in '22, '25, '28, '34, '47 (LM); CCGT in '31, '37, '40, '44	2,800	9,100	11,900	7,400	8,800	16,300	10,300	17,900	28,200
10.	Wind/Gas Gas: SCGT in '25 (2x), '28, '31, '33, '36, '38, '40, '43, '45, '47 (LM) Wind: 2 x 65 MW in '22, '23, '24; 1 x 65 MW in each year from '27 - '47			11,100			17,100			28,200
11.	K22/Gas Gas: SCGT in '29, '32, CCGT in '34, '38, '41, '45	10,750	23,800	34,500	6,400	6,000	12,400	17,100	29,800	46,900
12.	K22/C29 Gas: SCGT in '40, '44, '46	18,700	39,500	58,300	4,000	1,500	5,500	22,700	41,000	63,800
13.	SCGT/C26 SCGT in '22, '38, '41, '43, '45	10,200	24,000	34,100	4,200	3,100	7,200	14,300	27,000	41,400
14.	CCGT/C26 Gas: SCGT in '39, '42, '44, '47; CCGT in '22	10,500	25,000	35,500	4,800	4,400	9,200	15,300	29,300	44,700
15.	Wind/C26 Wind: 2 x 65 MW in '22, '23, '24 Gas: SCGT in '36, '38, '41, '43, '45			34,800			5,600			40,400

- 1 Notes:
- 2 • Totals may not add due to rounding.
- 3 • Further info about employment estimates is available in Table 4.
- 4

Table 2 (MMF/MH II-040a): Aboriginal and Northern Employment and Local Business Opportunities

	ABORIGINAL AND NORTHERN EMPLOYMENT			LOCAL BUSINESS OPPORTUNITIES
	Construction (person years)	Operations (positions)		
Group A Keeyask, Conawapa, gas, N-S Upgrade (all but one plan also includes a new U.S. Interconnection)	Keeyask: 500 - 1700 Conawapa: substantial (not yet estimated) N-S upgrade: much smaller than K or C (not yet estimated) U.S. interconnection: nil for northerners; relatively small for southern Aboriginals (not yet estimated). Gas: relatively small for southern Aboriginals (not yet estimated)	Keeyask: All positions estimated to be located in the North. Approximately 45% of 50 positions estimated to be Aboriginal. A minimum of 182 positions have been targeted to KCN members across Manitoba Hydro operations. Conawapa: All positions estimated to be located in the North. Approximately 45% of 60 positions estimated to be Aboriginal. N-S upgrade and U.S. interconnection: minimal Gas: relatively small for southern Aboriginals (not yet estimated)	Keeyask: substantial (\$200 million in contracts for KCN businesses) Conawapa: substantial (not yet estimated) N-S upgrade: clearing contracts, other local contracts (not yet estimated) U.S. interconnection: (not yet estimated) Gas: nil for northern businesses; local southern business opportunities (small relative to Keeyask, but not yet estimated); potential for opportunities for southern Aboriginals (not yet estimated)	
Group B Keeyask, gas, U.S. interconnection	Same as A, but without Conawapa	Same as A, but without Conawapa	Same as A, but without Conawapa	
Group C Keeyask or Conawapa, gas	Similar as B, but with either Keeyask or Conawapa and without U.S. Interconnection.	Similar as B, but with either Keeyask or Conawapa and without U.S. Interconnection.	Similar as B, but with either Keeyask or Conawapa and without U.S. Interconnection.	
Plan 9 All gas	Relatively small for southern Aboriginals (not yet estimated).	Relatively small for southern Aboriginals (not yet estimated).	Nil for northerners; local southern opportunities; potential for opportunities for southern Aboriginals (not yet estimated).	

<p>Plan 10 Wind farms, gas turbines</p>	<p>Relatively small for southern Aboriginals (not yet estimated).</p>	<p>Relatively small for southern Aboriginals (not yet estimated).</p>	<p>Nil for northerners; local southern opportunities, including benefits for southern landowners on whose property wind turbines would be located; potential for opportunities for southern Aboriginals (not yet estimated).</p>
<p>Plan 15 Wind and Conawapa</p>	<p>Conawapa: substantial (not yet estimated) Wind: Relatively small for southern Aboriginals (not yet estimated).</p>	<p>Conawapa: All positions estimated to be located in the North. Approximately 45% of 60 positions estimated to be Northern Aboriginal. Wind: Relatively small for southern Aboriginals (not yet estimated).</p>	<p>Conawapa: substantial (not yet estimated) Wind: nil for northerners; local southern opportunities, including benefits for southern landowners on whose property wind turbines would be located; potential for opportunities for southern Aboriginals (not yet estimated).</p>

1 **Manitoba and Canada Employment (also see Table 1)**

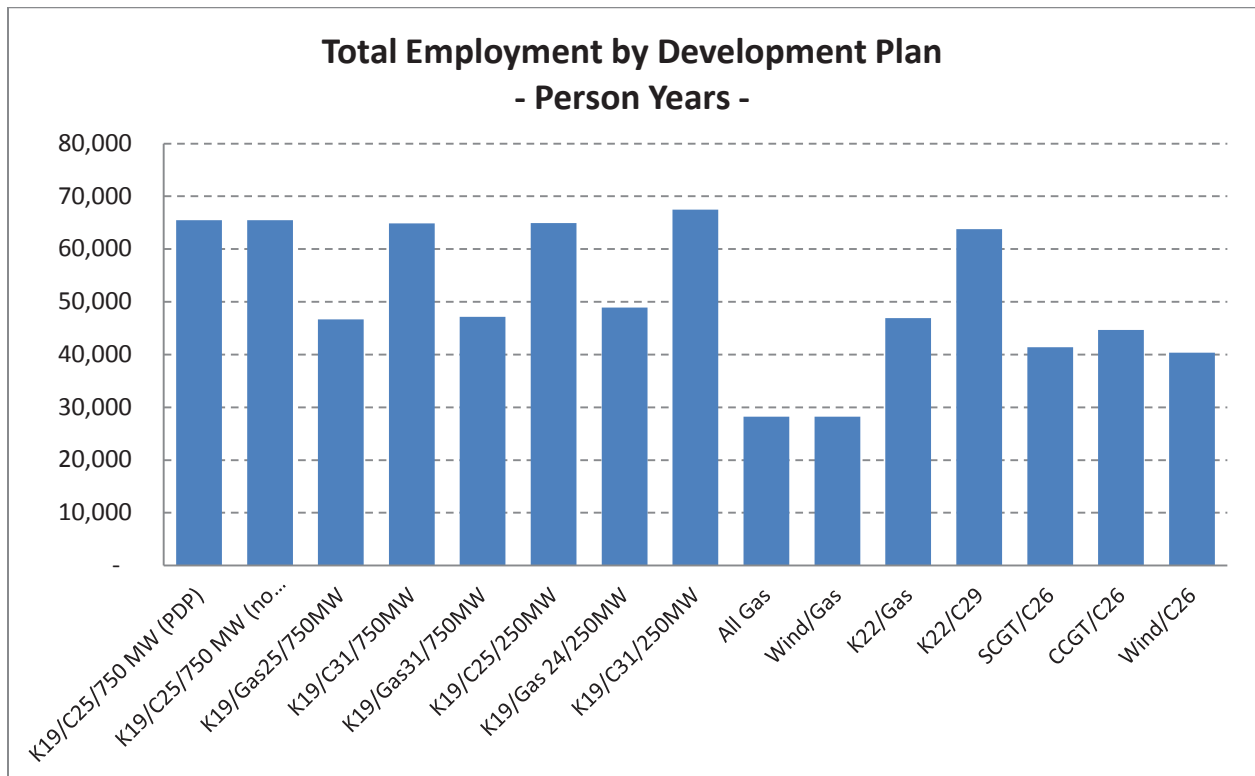
2 Employment in CAC/MH I-231a was presented into two categories, construction and
3 operations. Construction was reported in person years of employment, and operations in the
4 number of positions per year.

5

6 In preparing the response to MMF/MH II-040a, Manitoba Hydro estimated the operational jobs
7 in person years, in order to provide a fuller comparison between the various development
8 plans. This was accomplished by multiplying the number of operational jobs associated with a
9 particular resource option by the number of years the respective resource options would
10 operate during the NFAT review's 35-year time horizon (to 2047). With construction and
11 operational positions both estimated in person years, it was possible to estimate and compare
12 the total employment opportunities associated with each development plan. These data are
13 presented in Table 1 and are illustrated below in Figure 1 (MMF/MH II-040a).



1 **Figure 1 (MMF/MH II-040a): Total Employment by Development Plan**



2

3 Plans with both Keeyask and Conawapa (Group A) would result in the most employment
 4 opportunities, with employment ranging from 22,700 to 24,600 person years in Manitoba and
 5 63,800 to 65,500 in Canada. Plans with just Keeyask but more gas turbines than plans in Group
 6 A would result in employment ranging from 18,000 to 18,500 person years in Manitoba and
 7 46,600 to 48,900 in Canada. Employment estimates for plans in Group C (with Keeyask or
 8 Conawapa plus gas, but no U.S. Interconnection) ranged from 14,300 to 17,100 for Manitoba
 9 and 41,400 to 46,900 for Canada. For the all-gas plan (Plan 9), the estimates were 10,300 for
 10 Manitoba and 28,200 for Canada. Data were not available to break down provincial and
 11 national employment for wind-related development plans. However, total employment for Plan
 12 15 (Conawapa, wind and gas) is estimated at 40,400 person years, and for Plan 10 (wind and
 13 gas), 28,200.

1 **Aboriginal and Northern Employment (also see Table 2)**

2 Group A development plans (i.e. plans with both Keeyask and Conawapa) would result in
3 substantial Aboriginal and northern employment. Plans in Groups B and C (with either Keeyask
4 or Conawapa, but not both) would have a corresponding decrease in Aboriginal and northern
5 employment. Plans relying more on gas and wind would likely result in no specific benefits for
6 northern residents and Aboriginal people.

7

8 CAC/MH I-231(a) noted that Aboriginal and Northern employment estimates have been
9 calculated for construction of the Keeyask Project (with a range of 500 – 1700 persons), but not
10 for any other projects. The response to CAC/MH I-231(a) also suggested Aboriginal and
11 northern employment to construct Conawapa would be greater than with Keeyask. Upon
12 review, Manitoba Hydro has revised that statement. Because of the current preliminary nature
13 of the Conawapa planning process, it is more appropriate to expect that Aboriginal and
14 northern employment on Conawapa would be substantial, rather than suggesting it would be
15 greater than Keeyask. Aboriginal and northern people can also expect to gain employment
16 among the 50 and 60 operating positions associated with Keeyask and Conawapa, respectively
17 (Aboriginal workers are estimated to constitute 45% of Manitoba Hydro's northern workforce).
18 As well, under the Joint Keeyask Development Agreement, 182 positions in Manitoba Hydro's
19 existing operations (not necessarily only Keeyask) have also been targeted for Keeyask Cree
20 Nation members.

21

22 Gas generating stations and wind farms, which would be located in southern Manitoba, would
23 provide little, if any, benefit to northern residents. Whereas Aboriginal employment
24 opportunities are greatly enhanced through preference provisions for the Keeyask and
25 Conawapa projects, it is unknown at this time if preferences (as well as the nature of any
26 preferences) would be provided for gas and wind projects in southern Manitoba. There would
27 be opportunities for southern Aboriginal construction employment, but this has not been

1 estimated to date. The chart provided in this response has been revised accordingly from that
2 contained in CAC/MH I-231(a).

3

4 There would be potential Aboriginal employment opportunities, similar to those in other
5 Manitoba Hydro facilities, during the operational phase of a gas plant, but this has not been
6 estimated to date. Employment opportunities have not yet been estimated for the two
7 transmission projects. Some short-term jobs may be associated with the clearing contract and
8 possibly the general contractor. Short-term opportunities would exist for northern and
9 Aboriginal workers on the North-South Transmission Project. The response to PUB/MH II-499(a)
10 sets out preferences for the Manitoba – Minnesota and North – South Upgrade transmission
11 projects.

12

13 For further discussion regarding the plans' impacts on the demand for labour, including
14 Northern and Aboriginal labour, please see Sections 13.3.4 and 13.3.6 of the NFAT submission.

15

16 **Business Opportunities (also see Table 2)**

17 Similar to the Aboriginal and northern employment opportunities, estimates have only been
18 developed for the Keeyask Project. The Keeyask Cree Nations are expected to negotiate
19 construction-related contracts worth over \$200 million for Keeyask. The response to MMF/MH
20 II-037(b) also notes all contracts not designated as Direct Negotiated Contracts with the KCNs
21 will be procured through an open tender process and, as such, it is not possible to estimate the
22 dollar amount of contracts that may be filled by northern and Aboriginal businesses other than
23 the KCNs. All northern and Aboriginal businesses, other than the KCNs, will have the
24 opportunity to submit tenders on this work as well as subcontracting opportunities on a
25 number of contracts. The KCNs will have an opportunity to bid on subcontracting opportunities
26 via the bid depository process as outlined in the Joint Keeyask Development Agreement.



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1 The Conawapa ownership arrangement is not yet finalized, but Manitoba Hydro is committed
 2 to achieving long-term, sustainable benefits for Aboriginal communities in the vicinity of the
 3 project with a focus on income, training, employment and business opportunities.

4
 5 With transmission projects, local contractors such as northern Aboriginal communities may be
 6 awarded clearing contracts.

7
 8 Local southern businesses could earn modest opportunities with gas and wind projects. Local
 9 landowners could also expect to benefit from wind turbines on their land. No specific benefits
 10 associated with wind and gas projects have been identified for northern residents. In the past,
 11 wind projects have been developed through an Independent Power Producer arrangement; the
 12 wind developer would be responsible for procuring all materials and services directly. There
 13 may be business opportunities for southern Aboriginal businesses, but this has not been
 14 estimated to-date. With respect to gas projects managed by Manitoba Hydro directly, tendering
 15 documents could include local or Aboriginal preference clauses. This has not been determined
 16 to-date and would depend on the specific context of the project.

17

18 **Table 3 (MMF/MH II-040a): Housing, Health and Resource Use**

		Infrastructure and Services (Housing)	Personal, Family and Community Life (Health)	Resource Use
1. (PDP)	K19/C25/750MW WPS Sale & Investment in 750 MW Interconnection Gas: SCGT in '41, '44, '46	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices
2.	K19/C25/750MW No WPS / resources same as above. Gas: SCGT in '41, '44, '46	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices



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3.	K19/Gas25/750MW WPS Sale & Investment Gas: SCGT in '25, '26, '28, '31, '33, '45, '47 (LM); CCGT in '42.	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices
4.	K19/C31/750MW Gas: SCGT in '41, '44, '46	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices
5.	K19/Gas 31/750MW Gas: SCGT in 2 x '31, 32, '34, '43; CCGT in '39, '45	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices
6.	K19/C25/250MW Gas: SCGT in '40, '44, '46	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. Hunting, trapping, fishing and gathering Agricultural equipment and practices
7.	K19/Gas 24/250MW Gas: 'SCGT in 24, '29; CCGT in '32, '38, '41, '45	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices

1



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8.	K19/C31/250MW Gas: SCGT in '24, '29, '46	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering Agricultural equipment and practices
9.	All Gas SCCT in '22, '25, '28, '34, '47 (LM); CCGT in '31, '37, '40, '44		Water quality	E.g. hunting, trapping, fishing and gathering
10.	Wind/Gas Gas: SCGT in '25 (2x), '28, '31, '33, '36, '38, '40, '43, '45, '47 (LM) Wind: 2 x 65 MW in '22, 23, '24; 1 x 65 MW in each year from '27 – '47		Water quality Noise Water quality	E.g. hunting, trapping, fishing and gathering
11.	K22/Gas Gas: SCGT in '29, '32; CCGT in '34, '38, '41, '45	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering
12.	K22/C29 Gas: SCGT in '40, '44, '46	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering
13.	SCGT/C26 SCGT in '22, '38, '41, '43, '45	Housing	Worker interaction with local northern residents Mercury Water quality	Hunting, trapping, fishing and gathering
14.	CCGT/C26 Gas: SCGT in '39, '42, '44, '47; CCGT in '22	Housing	Worker interaction with local northern residents Mercury Water quality	E.g. hunting, trapping, fishing and gathering
15.	Wind/C26 Wind: 2 x 65 MW in '22, '23, '24 Gas: SCGT in '36, '38, '41, '43, '45	Housing	Water quality Noise Mercury	E.g. hunting, trapping, fishing and gathering

1 **Housing (also see Table 3)**

2 Housing was identified in the response to CAC/MH I-231(a) as the parameter for review under
3 the category of Infrastructure and Services.

4 Workers hired to construct Keeyask and Conawapa (i.e. development plans in Groups A, B and
5 C) would be housed in well-equipped construction camps, and infrastructure and services will
6 be expanded to meet the growing workforce of Gillam, the operational centre for Manitoba
7 Hydro's northern hydroelectric generating system. The use of a job referral service for the
8 construction of these projects, rather than hiring workers directly at site, is expect to reduce in-
9 migration of off-reserve First Nations workers into their home communities, as these potential
10 workers do not need to relocate to be hired for work on the projects. In addition, there are
11 limited local accommodations available and these communities are generally located some
12 distance from the project site (note, though, that the Fox Lake community of Bird is closer than
13 Gillam to Conawapa).

14
15 Crews constructing transmission lines, gas turbines or wind farms would likely be housed in
16 local communities. Transmission crews may also be housed in temporary remote camps.

17
18 For further discussion about housing, please see Manitoba Hydro's response to CAC/MH I-
19 231(a).

20
21 **Personal, Family and Community Life (also see Table 3)**

22 Health was the parameter identified for discussion under Personal, Family and Community Life
23 in the response to CAC/MH I-231(a). Different plans (or groups of plans) will affect health
24 differently.

25
26 Negative interactions between non-local construction workers and local residents is an
27 important concern related to plans with Keeyask and/or Conawapa (plans in Group A, B and C).
28 Several measures are being planned to limit such adverse effects (see the response to CAC/MH

1 I-231(a)). It is also possible that this may be a concern for southern developments, such as gas
2 and wind, depending on the size of the workforce and the nature of their accommodations.

3

4 A second important health-related concern associated with Keeyask and Conawapa is
5 increasing levels of mercury in fish, as a result of project flooding. The response to CAC/MH I-
6 231(a) erroneously indicated that mercury is not a concern for the Conawapa project. Rather,
7 as noted in the response to PUB/MH II-499(i), it is anticipated that, given the limited amount of
8 upstream flooding associated with Conawapa, mercury will be of considerably less concern
9 than it was for Keeyask. This aspect of the Conawapa project will be thoroughly assessed and
10 reviewed with in-vicinity Cree nations and regulators, and appropriate mitigation measures will
11 be determined based on the assessment findings. In the case of Keeyask, several mitigation
12 measures are being planned to manage this effect (see CAC/MH I-231(a)) through long-term
13 monitoring and the provision of relevant, accurate information so that consumers can make
14 informed consumption decisions. Keeyask and/or Conawapa are included in all plans except 9
15 and 10.

16

17 The health concern associated with wind farms (i.e. Plans 10 and 15) is wind turbine sound.
18 Health Canada is currently collaborating with Statistics Canada on an epidemiological study
19 related to this topic.

20

21 The health concern identified in the response to CAC/MH I-231(a) related to gas turbines is not
22 at the generating station itself, but rather “upstream” where natural gas is extracted. The
23 United States Environmental Protection Agency is currently undertaking a study of the potential
24 impacts of hydraulic fracturing (or ‘fracking’) on potable water. All development plans include
25 some gas turbines. They are most prevalent in Plans 9 and 10, and least prevalent in Group A
26 plans.

1 For discussion about health effects, please see the response to CAC/MH I-231(a).

2 **Resource Use (also see Table 3)**

3 Resource use includes domestic and commercial use of lands and resources, including hunting,
4 trapping, fishing, gathering, mining, forestry and other activities. Typically, of primary concern
5 are domestic hunting, trapping, fishing and gathering by Aboriginal people as these activities
6 provide access to healthy foods and are important to many people's cultural identity. In
7 southern Manitoba, where gas and wind are likely to be located, agriculture is a primary
8 resource use.

9

10 Development plans that include hydropower plants have a greater potential to affect
11 traditional resource use activities. Group A plans (Plans 1, 2, 4, 6, 8 and 12) have the most
12 potential to affect resource use, followed by groups B, C and Plan 15. Agreements have been
13 reached with the Keeyask Cree Nations to address Keeyask effects (for example, by providing
14 alternative harvesting opportunities) and similar approaches are anticipated with Conawapa.
15 The Manitoba Metis Federation is concerned programs and agreements have not been
16 developed specifically for the Metis, although to date no evidence has been provided to
17 indicate that this is required or that planned project-related mitigation measures available to all
18 resource users will not be appropriate for Metis harvesters. Manitoba Hydro, on behalf of the
19 Keeyask Hydropower Limited Partnership, has provided funding to the MMF to undertake a
20 Metis-specific Traditional Land Use and Knowledge Study, Socio-economic Impact Assessment
21 and historical narrative for the Keeyask region. These studies, originally to be completed by
22 October 2013, were planned for completion in late February 2014. The Partnership has
23 committed to review the results of these studies, once available, to determine whether
24 additional or enhanced mitigation measures are required.

25

26 The Group A and B plans also include a new U.S. Interconnection, which has the potential to
27 interfere with agricultural practices and other local resource users. Manitoba Hydro employs a

- 1 comprehensive site selection process to avoid or minimize potential impacts of transmission
2 projects on people and the environment.
- 3 Wind farms (i.e. Plans 10 and 15) have the potential to affect aerial spraying of agricultural
4 crops.
- 5 Gas turbines are unlikely to affect local resource users. However, the “upstream” exploration
6 and production of natural gas, and transmission facilities (e.g. pipelines) may affect resource
7 harvesting in other jurisdictions.
- 8
- 9 For more information about the effects on resource use, please see the response to CAC/MH I-
10 231(a).
- 11
- 12 Table 4, which follows, provides the data upon which the calculations for Table 1 are based.

1 **Table 4 (MMF/MH II-040a): Employment Estimates by Resource Option**

	CONSTRUCTION PHASE			OPERATIONAL PHASE		
	Manitoba	Rest of Canada (Does not include Manitoba)	Total – All of Canada	Manitoba	Rest of Canada (Does not include Manitoba)	Total – All of Canada
Keyask						
- Project Direct Employment	2,436	2,532	4,967	39	0	39
- Other Direct Employment	<u>2,175</u>	<u>3,198</u>	<u>5,374</u>	<u>2</u>	<u>1</u>	<u>3</u>
- Total Direct Employment	4,611	5,730	10,341	41	1	42
- Indirect and Induce Employment	<u>3,736</u>	<u>10,414</u>	<u>14,151</u>	<u>29</u>	<u>16</u>	<u>45</u>
- Total: Direct, Indirect and Induced Employment	8,347	16,144	24,492	70	17	87
Conawapa						
- Project Direct Employment	3,238	3,915	7,154	42	0	42
- Other Direct Employment	<u>1,831</u>	<u>3,448</u>	<u>5,279</u>	<u>2</u>	<u>1</u>	<u>4</u>
- Total Direct Employment	5,070	7,363	12,433	44	1	46
- Indirect and Induce Employment	<u>4,234</u>	<u>13,601</u>	<u>17,834</u>	<u>33</u>	<u>18</u>	<u>50</u>
- Total: Direct, Indirect and Induced Employment	9,304	20,964	30,267	77	19	96
SCGT						
- Project Direct Employment	45	65	110	52 (per 2 plants)	0 (per 2 plants)	52 (per 2 plants)
- Other Direct Employment	<u>44</u>	<u>131</u>	<u>175</u>	<u>10 (per 2 plants)</u>	<u>19 (per 2 plants)</u>	<u>28 (per 2 plants)</u>
- Total Direct Employment	89	197	285	61 (per 2 plants)	19 (per 2 plants)	80 (per 2 plants)
- Indirect and Induce Employment	<u>82</u>	<u>404</u>	<u>486</u>	<u>36 (per 2 plants)</u>	<u>86 (per 2 plants)</u>	<u>122 (per 2 plants)</u>
- Total: Direct, Indirect and Induced Employment	171	601	771	97 (per 2 plants)	105 (per 2 plants)	202 (per 2 plants)

2



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CCGT - Project Direct Employment - Other Direct Employment - Total Direct Employment - Indirect and Induce Employment - Total: Direct, Indirect and Induced Employment	129	184	312	94 (per 2 plants)	0 (per 2 plants)	94 (per 2 plants)
	<u>144</u>	<u>375</u>	<u>519</u>	<u>14</u> (per 2 plants)	<u>42</u> (per 2 plants)	<u>55</u> (per 2 plants)
	273	559	832	108 (per 2 plants)	42 (per 2 plants)	149 (per 2 plants)
	<u>242</u>	<u>1043</u>	<u>1285</u>	<u>60</u> (per 2 plants)	<u>181</u> (per 2 plants)	<u>241</u> (per 2 plants)
	515	1602	2117	168 (per 2 plants)	223 (per 2 plants)	390 (per 2 plants)
Wind (65 MW) - Project Direct Employment - Other Direct Employment - Total Direct Employment - Indirect and Induce Employment - Total: Direct, Indirect and Induced Employment			58			6
			<u>53</u>			<u>3</u>
			111			9
750 MW Interconnection - Project Direct Employment - Other Direct Employment - Total Direct Employment - Indirect and Induce Employment - Total: Direct, Indirect and Induced Employment	119	0	119	1	0	1
	<u>124</u>	<u>144</u>	<u>268</u>	<u>0</u>	<u>0</u>	<u>0</u>
	243	144	387	1	0	1
	<u>255</u>	<u>444</u>	<u>700</u>	<u>1</u>	<u>1</u>	<u>1</u>
	498	588	1,087	2	1	2
250 MW Interconnection - Project Direct Employment - Other Direct Employment - Total Direct Employment - Indirect and Induce Employment - Total: Direct, Indirect and Induced Employment	70	0	70	1	0	1
	<u>63</u>	<u>84</u>	<u>146</u>	<u>0</u>	<u>0</u>	<u>0</u>
	132	84	216	1	0	1
	<u>100</u>	<u>149</u>	<u>249</u>	<u>1</u>	<u>0</u>	<u>1</u>
	232	233	465	2	0	2
North-South Transmission Upgrade - Project Direct Employment - Other Direct Employment - Total Direct Employment - Indirect and Induce Employment - Total: Direct, Indirect and Induced Employment	171	0	171	n/a	n/a	n/a
	<u>164</u>	<u>219</u>	<u>383</u>			
	335	219	554			
	<u>251</u>	<u>386</u>	<u>637</u>			
	586	605	1,191			



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Notes:

- Keeyask includes the Keeyask Infrastructure Project, Generation Project and Transmission Project; Conawapa include the Generation Project, Generation Outlet Transmission Project, and Generation Outlet Station Upgrades; North-South Upgrade includes transmission lines and switching station; 750 MW and 250 MW Interconnection includes the transmission line and switching station; SCGT and CCGT Project Direct Employment totals do not include estimated, on-site foreign staff of 6 and 17 workers, respectively.
- Project Direct Employment data for all but the wind farms are internal MH estimates; Other Direct Employment, Indirect and Induce Employment data for all but the wind farms are outputs from the Manitoba Bureau of Statistics.
- SCGT & CCGT Operation and Maintenance estimates are based on two plants per site.
- Direct employment estimate for wind farms was based on Manitoba Hydro Range of Resource Options report (Appendix 7.2 of the NFAT submission) and Indirect and Induced employment estimates were based on the report, Economic Impact of the Greenwich Wind Farm (March 2012 by the Crupi Consulting Group), available at <http://www.crupi.biz/assets/files/economic-impact-of-the-greenwich-wind-farm.pdf>. Accessed January 17, 2014.
- Totals may not add due to rounding.