

Gunn and Olagunju, Macro-Environmental

Manitoba Hydro's NFAT Review of Keeyask and Conawapa Generating Stations

MMF-CAC Information Request Responses, Round 1

February 20, 2014

No	Preamble	Question	Response
007a	<p>The evidence by Intergroup suggests: "In Manitoba, the majority of the adverse environmental and socio-economic impacts required to develop further Nelson River hydropower have already been experienced."</p> <p>Dr. Gunn indicated in her evidence that: "The further impacts of any energy development scenario must be considered in light of the already profound consequences which have resulted from on-going, intensive hydro-electric power development in the Nelson River sub-watershed. The effects of prior development—the extensive hydro-electric power complex that now exists on the Nelson River—are well documented. They include habitat degradation, fragmentation, and total loss; aquatic ecosystem disturbance; and a variety of socio-economic impacts</p>	<p>Relying upon the term macro-environmental as defined by the Public Utilities Board, please comment on the inference that the damage to the Nelson River to date is already so profound that any future habitat fragmentation and degradation flowing from future projects would be modest or insignificant.</p>	<p>Noble and Gunn (2013) and suggest that exactly the opposite to this inference by Intergroup could be true: that the damage to the Nelson River to date is already so profound that any future habitat fragmentation and degradation flowing from future projects could be considered <i>highly</i> significant. They state (p. 18):</p> <p>"Perhaps, one could argue that the incremental effects caused by further hydroelectric (or other) development in the Nelson River sub-watershed are insignificant given the magnitude of change and the degree of hydrological alteration that has already occurred over the last 55 years, and that the future of the region is to be designated as a hydroelectric development area. In other words, any incremental change from (this) point forward doesn't matter given the already 'substantially altered' state of the Nelson River sub-watershed environment. But, given that the region has already been substantially altered by hydroelectric development, and that it is agreed past alterations have been cumulatively significant, one could also argue that any further development must be also considered cumulatively significant and should not proceed unless net positive contributions to the sustainability of the sub-watershed, including its ecological functions and people, can be demonstrated.</p> <p>There is no 'scientific' answer, but the question is more than philosophical</p>

	<p>(see for e.g., Gunn and Noble 2012; Noble and Gunn 2013; G&P Resource Services 2013; Peake 2013; Schaefer 2013). Manitoba Hydro and the Keeyask Cree Nations Partners have agreed that the Nelson River sub-watershed has already been “substantially altered” [Manitoba Hydro (2012), see Ch. 7, p.7-16, p. 7-23, p. 7-37, etc.] and sustained significant environmental impacts (Noble and Gunn 2013).”</p>		<p>– it is fundamental to determining whether the additional effects caused by the Keeyask project, in an already significantly altered environment, are acceptable to the CEC and to the citizens of Manitoba. Given the magnitude and imminence of the future Conawapa hydro-electric generation project, the Keeyask Project represents a critical decision point in the future of hydroelectric development and sustainability in northern Manitoba and in the province as a whole.</p> <p>Looking back on the Keeyask EIS two, five or ten years from now, the quality of the CEA will not be judged by the number of maps produced or volumes of information about VECs, but by the role it played in supporting a sound decision about the overall significance of the Project in the broader Nelson River sub-watershed.”</p> <p>Noble and Gunn (2013: 6) explain that the reason any additional impacts to the Nelson River could be considered <i>highly</i> significant has to do with the nature of a cumulative effect: “A cumulative environmental effect is based on the understanding that each individual disturbance or impact, regardless of its magnitude, can represent a high marginal cost to the environment (emphasis added).”</p> <p>The assessment of cumulative (macro) environmental effects must always be approached from the perspective of the receiving environment – i.e., the affected environmental component(s) or systems – in this case the Nelson River. In other words, it is critical to understand how much more stress the Nelson River sub-watershed can withstand either from an ecological perspective (via scientifically established thresholds) and/or a socio-cultural perspective (can be expressed in multiple ways such as through personal testimony, or statistical analyses). If this region and its peoples are already at a ‘breaking point’, then any further development may unexpectedly cause the ‘death’ or total demise of the existing socio-ecological system or key components of it. This is a phenomenon known as ‘death by a thousand cuts’ (Noble and Gunn 2013).</p>
--	--	--	--

			<p>Noble, B., and Gunn, J. (2013) Review of KHLP's approach to the Keeyask generation project cumulative effects assessment. Manitoba Clean Environment Commission Hearings, 2013. Research report prepared for the Public Interest Law Centre, Manitoba, on behalf of the Consumers Association of Canada (Manitoba Branch) under contract agreement. Winnipeg, MB: Public Interest Law Centre.</p>
007b		<p>Relying upon the term macro-environmental as defined by the Public Utilities Board, please discuss the importance of the environmental health of the Nelson River sub-watershed for the region and for the Province. Is damage to the Nelson River sub-watershed just a local problem?</p>	<p>Gunn and Olagunju respectfully decline to answer the first part of this question as they do not have the expertise to answer it. Questions about the importance of the health of the Nelson River sub-watershed for the regions and the province could be referred to a hydrologist for example. The question of importance could also be one of a socio-cultural nature and we would refer the MMF to those with appropriate expertise in that regard as well.</p> <p>However, we can answer that from the perspective of cumulative (macro) environmental effects, damages in one region could very possibly affect conditions in adjacent regions and beyond. Noble and Gunn (2013: 21) explain: "scoping (for cumulative effects assessment) must be sufficiently spatially and temporally broad to not only capture the direct effects of a Project but also its subsequent indirect (secondary or induced) effects—which may be experienced far beyond the boundaries of the Project's anticipated direct effects". They also express concern that: "Because the Keeyask Project includes infrastructure and operations that are regionally disruptive (e.g. transmission line corridor construction, changes to water flow on the Nelson River), its cumulative effects may eventually be experienced by communities and environments much further afield" (p. 22).</p> <p>The Canadian Cumulative Effects Assessment Practitioner's Guide (Hegmann et al. 1999: 13) explains that the long-range transport of pollutants in airsheds and watersheds, and the movements of far-ranging or migratory wildlife including birds, if affected by project developments,</p>

			<p>suggest the “need to assess effects over a larger and larger geographic area”.</p> <p>Based on this, damage to the Nelson River sub-watershed can likely not be considered just a ‘local’ problem. A regional cumulative effects assessment is required to answer the MMF’s question with certainty and accuracy.</p> <p>Hegmann, G., Cocklin, C., Creasey, R., Dupuis, S., Kennedy, A., Kingsley, L., Ross, W., Spaling, H., Stalker, D. (1999) Cumulative Effects Assessment Practitioner’s Guide. Minister of Public Works and Government Services Canada.</p> <p>Noble, B., and Gunn, J. (2013) Review of KHLP’s approach to the Keeyask generation project cumulative effects assessment. Manitoba Clean Environment Commission Hearings, 2013. Research report prepared for the Public Interest Law Centre, Manitoba, on behalf of the Consumers Association of Canada (Manitoba Branch) under contract agreement. Winnipeg, MB: Public Interest Law Centre.</p>
007c		<p>Relying upon the term macro-environmental as defined by the Public Utilities Board, please offer any additional guidance you might have to the PUB in assessing the macro-environmental implications of additional hydro-electric development on the Nelson System as compared to additional reliance upon natural gas sources of generation.</p>	<p>The PUB’s definition of macro environmental impact emphasizes “collective macroeconomic consequences” of environmental changes anticipated via the project and the dimensions of inter and intra-generational equity (PUB 2013). As stated in our report, the latter requires that the risks, costs, benefits, and opportunities within and between generations are fairly distributed (see Winfield et al. 2011). We also state that clarity around the core issues, values, and a shared vision of the future will be more important than the technicality and rationality of the decision-making process.</p> <p>With respect to additional hydroelectric development on the Nelson River system, it is anticipated that water as a renewable resource will continue to be available, that existing hydro technology is proven, and that the new plants can leverage on the existing transmission infrastructure, though additional investment in transmission lines for export markets is</p>

			<p>anticipated in the foreseeable future. It is, however, also conceivable that with new plants on the river system, further alterations to both aquatic and terrestrial ecosystems will cause them to continue to degenerate. Besides the benefits of low cost per output and efficiency that a natural gas option offers, its overall direct and indirect CO₂ contribution as part of the fossils-energy package is high, and significantly greater than hydro's.</p> <p>The following questions may be useful, among others, in deciding between additional investment in hydroelectric plants on the Nelson River system and increased natural gas reliance: (1) What is the level of risk and uncertainty associated with each energy option? (2) What option presents the least environmental harm to the environment (including humans)? and (3) What is the level of stakeholder/community support for each alternative?</p> <p>PUB (2013) Needs For And Alternatives To (NFAT) Review of Manitoba Hydro's Preferred Development Plan. Manitoba Public Utilities Board, September 30. http://www.pub.gov.mb.ca/pdf/nfat/mb_hydro_nfat_motion_day_transcript_sep_30_2013.pdf</p>
007d		<p>Relying upon the term macro-environmental as defined by the Public Utilities Board, please offer any additional guidance you might have to the PUB in assessing the macro-environmental implications of additional hydro-electric development on the Nelson River System as compared to a portfolio consisting of more aggressive DSM programming and wind with the potential of supplementing supply at a later date when photovoltaic becomes more</p>	<p>Although it has been reported that the actual magnitude of energy efficiency from DSM programming does not necessarily reflect what engineering analyses project (it is often relatively lower) (see for instance: Allcott and Greenstone 2012), it is arguably the least cost resource to the environment (Dunsky 2014) as demand for energy is kept at a level in which renewable resource energies (such as solar photovoltaic) can be effectively used. Accordingly, the above questions (in 007c) will also apply in reviewing the options.</p> <p>Allcott, H. and Greenstone, M. (2012) Is There an Energy Efficiency Gap? E2e Working Paper 001. University of California, Berkeley and MIT Center for Energy and Environmental Policy Research (CEEPR). http://e2e.haas.berkeley.edu/pdf/workingpapers/WP001.pdf</p>

		price competitive?	Dunsky, P. (2014) The role and value of demand-side management in Manitoba hydro's resource planning process. A Testimony submitted to Manitoba Public Utilities Board, February 3.
--	--	--------------------	---