

1 **REFERENCE:** Testimony of P. Bowman, InterGroup Report, page 1-7 (lines 20-
2 21); Gunn, Macro Environmental Impact Assessment Guidance,
3 section 5.0

4 **PREAMBLE:**

5 The evidence by Intergroup suggests: “In Manitoba, the majority of the adverse
6 environmental and socio-economic impacts required to develop further Nelson River
7 hydropower have already been experienced.”

8 Dr. Gunn indicated in her evidence that: "The further impacts of any energy development
9 scenario must be considered in light of the already profound consequences which have
10 resulted from on-going, intensive hydro-electric power development in the Nelson River
11 sub-watershed. The effects of prior development—the extensive hydro-electric power
12 complex that now exists on the Nelson River—are well documented. They include
13 habitat degradation, fragmentation, and total loss; aquatic ecosystem disturbance; and a
14 variety of socio-economic impacts (see for e.g., Gunn and Noble 2012; Noble and Gunn
15 2013; G&P Resource Services 2013; Peake 2013; Schaefer 2013). Manitoba Hydro and
16 the Keeyask Cree Nations Partners have agreed that the Nelson River sub-watershed
17 has already been “substantially altered” [Manitoba Hydro (2012), see Ch. 7, p.7-16, p. 7-
18 23, p. 7-37, etc.] and sustained significant environmental impacts (Noble and Gunn
19 2013).”

20 **QUESTION:**

21 a) Relying upon the term macro-environmental as defined by the Public Utilities
22 Board, please comment on the inference that the damage to the Nelson River to
23 date is already so profound that any future habitat fragmentation and degradation
24 flowing from future projects would be modest or insignificant.

25 b) Relying upon the term macro-environmental as defined by the Public Utilities
26 Board, please discuss the importance of the environmental health of the Nelson
27 River sub-watershed for the region and for the Province. Is damage to the Nelson
28 River sub-watershed just a local problem?

29 c) Relying upon the term macro-environmental as defined by the Public Utilities
30 Board, please offer any additional guidance you might have to the PUB in
31 assessing the macro-environmental implications of additional hydro-electric
32 development on the Nelson System as compared to additional reliance upon
33 natural gas sources of generation.

1 d) Relying upon the term macro-environmental as defined by the Public Utilities
2 Board, please offer any additional guidance you might have to the PUB in
3 assessing the macro-environmental implications of additional hydro-electric
4 development on the Nelson River System as compared to a portfolio consisting
5 of more aggressive DSM programming and wind with the potential of
6 supplementing supply at a later date when photovoltaic becomes more price
7 competitive?

8 **ANSWER:**

9 **(a) to (d)**

10 Please see MIPUG's response to CAC/MIPUG I-5.

11 Note that Mr. Bowman does not infer that "the damage to the Nelson River to date is
12 already so profound that any future habitat fragmentation and degradation flowing from
13 future projects would be modest or insignificant".

14 Mr. Bowman's comments simply reflect that the large-scale landscape altering projects
15 undertaken for Lake Winnipeg Regulation and Churchill River Diversion (LWR/CRD)
16 proceeded in part on the premise that they were initial stages of ongoing Nelson River
17 development, and were a necessary precursor to these later projects (such as
18 Conawapa).

19 Mr. Bowman's NFAT scope is based primarily on financial and economic considerations.
20 In this regard, Mr. Bowman's main comment in respect of the collective consequences of
21 macro-environmental issues is that the financial and economic analysis provided by
22 Hydro purports to "internalize" (the economic concept for "incorporating") the costs of
23 local adverse effects of the hydro and transmission projects as part of the Adverse Effect
24 Agreements signed with the local communities, mitigation activities, etc.

25 In comparison, Hydro's economic and financial analysis does not attempt to internalize
26 the full costs associated with emissions from gas and coal plants, whether operated in
27 Canada or the US, except to the extent that these costs are forecast to be represented
28 by an implemented carbon pricing regime. Hydro's scenarios largely appear to
29 incorporate only a modest carbon pricing regime (hence the requirement for an
30 additional "Multiple Account" assessment on carbon pricing in Chapter 13) and no
31 pricing regime for other contaminants. As such, the weight of favour from macro-
32 environmental considerations would suggest that the consequences of gas scenarios

1 are under-reported in the financial and economic modelling, unlike the consequences of
2 hydro scenarios.

3 Based on Hydro's portrayal of the hydraulic and transmission based plans and the wind
4 based plans, it would appear that the approach to each has been to equally consider
5 macro-environmental effects in the financial and economic analysis, so no further weight
6 of favour adjustment is required as between these plans.

7 It is not apparent that DSM has had any adjustment for adverse or positive macro-
8 environmental effects.

9 In short, it appears the approach taken by Hydro to the economic (Chapter 9 and 10)
10 and financial (Chapter 11) analysis is *intended* to fully reflect the macro-environmental
11 impacts of hydraulic generation and transmission as well as wind. It clearly does not fully
12 incorporate the macro-environmental impacts of fossil fuel generation, whether in
13 Canada or the US. It is not clear that macro-environmental DSM effects have been
14 included either way (positive or adverse). It is also important to note that Mr. Bowman
15 has taken no views on the sufficiency of the various agreements and pricing assumed by
16 Hydro, simply on the portrayal of the scope of costs that Hydro has internalized in the
17 economic and financial analysis.