

---

## NEEDS FOR AND ALTERNATIVES TO (NFAT)

### **Reference: April 25 GAC Pre-Asks of Manitoba Hydro – Question 2b**

Reference: NFAT Business Case, Chapter 13, p. 45, lines 13-20:

*For purposes of estimating the external cost of the Manitoba GHG emissions in the different plans – the difference between the estimated social cost of GHG emissions and the carbon charges plus coal taxes included in Manitoba Hydro’s estimated expenditures – it is assumed that the social cost of GHG emissions would be \$40/tonne CO<sub>2</sub> in 2014, rising to \$80/tonne CO<sub>2</sub> by 2048 (in constant 2012\$). This is somewhat higher than Environment Canada’s estimate of GHG damage costs, but less than its estimate of the willingness to pay to avoid the risks of uncertain but catastrophic effects. It is broadly consistent with the most recent U.S. estimates, again without any provision for the willingness to pay to avoid uncertain, catastrophic risks.*

- b. Please provide any information you have assembled on the impacts of climate change on Manitoba.

### **Response:**

Subsequent to the Manitoba Hydro response to Question 2.b. of the April 25 GAC Pre-Asks (previously filed as MH Exhibit #191); the White House released a report titled ***National Climate Assessment***, which was prepared by the U.S. Global Change Research Program, a scientific panel overseen by the U.S. Government. This U.S. climate assessment speaks to national and specific Midwest regional climate change impacts which may extend into Manitoba and/or impact our export region. This report provides additional, timely context to the GAC pre-ask.

Beginning with the statement, “*Climate change, once considered an issue for a distant future, has moved firmly into the present*”, the U.S. National Climate Assessment:

- Collects, integrates, and assesses observations and research from around the country.
- Includes analyses of impacts on seven sectors – human health, water, energy, transportation, agriculture, forests, and ecosystems – and the interactions among sectors at the national level.
- Assesses key impacts on all U.S. regions: Northeast, Southeast and Caribbean, Midwest, Great Plains, Southwest, Northwest, Alaska, Hawaii and Pacific Islands, as well as the country’s coastal areas, oceans, and marine resources.

The information contained within the ***National Climate Assessment*** is available via an interactive website: <http://nca2014.globalchange.gov/>. Due to the comprehensive nature of this assessment, provided within this exhibit are two select sections. The first, Overview and

---

Report Findings, provides a broad national perspective and discussion on the abundant evidence of climate change, observed and projected climate change in the U.S., an overview of response options, and a summary of the key findings from the U.S. climate assessment. Climate Change Impacts in the United States: Chapter 18 – Midwest is focused on the climate change impacts within the Midwest (including Minnesota and Wisconsin) and highlights the climate change challenges faced with respect to agriculture, ecosystems, public health, the greenhouse gas intensive economy, and hydrology.