

# Manitoba Hydro

## GREENHOUSE GAS EMISSION FACTORS

The following information is provided to help Manitoba Hydro customers understand the greenhouse gas (GHG) implications associated with their use of electricity and natural gas.

### GHG EMISSIONS ASSOCIATED WITH ELECTRICITY

Electricity use in Manitoba affects GHG emissions inside Manitoba (provincial perspective) as well as outside of Manitoba (global perspective). The provincial perspective considers only the direct GHG emissions from Manitoba Hydro's fossil fuel electric generation. The global perspective incorporates the indirect implications that changes in domestic energy production or use have on fossil fuel emissions in the broader interconnected region. Customers should consider which perspective best meets their needs.

#### Manitoba Hydro GHG Emission Factors at Generation (Provincial Perspective)

While nearly all of the grid connected electricity in Manitoba is generated at hydroelectric generating stations, Manitoba Hydro also operates two grid connected fossil fuel generating stations, located in Brandon and Selkirk. These stations generally function as back-up electricity sources for the system and normally operate at minimal levels. The following data table provides the annual emission intensity of Manitoba Hydro's grid connected electricity generation (in tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) per gigawatt-hour (GWh)):

Year	2013	2014	2015	2016	2017
GHG Emission Intensity Factor at Generation (tonnes CO <sub>2</sub> e/GWh)	2.65	2.31	2.89	1.13	1.25

While the preceding table provides Manitoba Hydro's estimate of generation emission intensity within Manitoba, an independent (but somewhat less accurate) source of provincial electricity intensity factors is provided in Annex 13 of Environment and Climate Change Canada's National Inventory Report - Part 3: <https://unfccc.int/documents/65715>. It is apparent from the National Inventory Report that provinces, like Manitoba, that are dominated by hydropower have the lowest GHG emission intensities.

#### GHG Implications Considering the Interconnected Region (Global Perspective)

Another perspective looks not just at the GHG emission profile of electricity generation in Manitoba but also considers the implications within the broader regional electricity market, including the U.S. Midwest. When considering incremental changes to electricity consumption through energy efficiency, or fuel switching applications, Manitoba Hydro evaluates these decisions based on the global GHG consequences. Manitoba Hydro currently uses a factor of **750 tonnes CO<sub>2</sub>e/GWh**, which reflects an estimate of the incremental GHG emission effects of consumption changes within the broader interconnected region. Additional information on the global perspective can be found in Section 3.3 of Manitoba Hydro's **Climate Change Report**.

### GHG EMISSIONS ASSOCIATED WITH NATURAL GAS COMBUSTION

Manitoba Hydro uses a GHG emission factor of **0.0019 tonnes CO<sub>2</sub>e/m<sup>3</sup>** for the industrial, commercial, and residential combustion of natural gas. Site specific conditions and end-use combustion conditions can affect this value. This factor is based on data provided in Annex 6 of the National Inventory Report - Part 2, and was also applied to the proposed **Manitoba carbon tax**.

This information will be updated on an annual basis. For a summary of Manitoba Hydro's corporate emissions, refer to the website: [http://www.hydro.mb.ca/environment/greenhouse\\_gas/summary.shtml](http://www.hydro.mb.ca/environment/greenhouse_gas/summary.shtml)

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