

# **Research –** **Manitoba Greenhouse Gas Emissions,** **Reduction Targets, Reporting, Actions**



*Manitoba Wildlands compiled this research document in August 2007 to provide a picture of public, web-based information regarding Manitoba's greenhouse gas (GHG) emissions since the province's 2002 Action Plan. This information is intended to inform analysis of the Manitoba government's approach to addressing climate change.*

*We have assembled sources that: confirm Manitoba's GHG reduction target; provide reporting information about GHG emissions over time; and indicate actions taken or committed to by our government where there is an associated GHG emissions reduction<sup>1</sup>. All of the source documents are Government of Manitoba publications.*

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<sup>1</sup> There are numerous other Government of Manitoba commitments regarding actions to reduce or avoid GHG emissions. The references here are those where a specific (# of Mt) of GHG emissions reduction is associated with the commitment.

## **Manitoba GHG Reduction Targets**

### **Western Climate Initiative Statement of Regional Goal**

August 22, 2007

<http://www.westernclimateinitiative.org/ewebeditpro/items/O104F13006.pdf>

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Manitoba's short-term (2010 – 2012) greenhouse gas reduction goal is 6 per cent below 1990 levels.

### **Climate Change: Leading Practices by Provincial and Territorial Governments in Canada**

Council of the Federation, August 3, 2007

[http://www.councilofthefederation.ca/pdfs/CCInventoryAug3\\_EN.pdf](http://www.councilofthefederation.ca/pdfs/CCInventoryAug3_EN.pdf)

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"To work with individuals, businesses, communities and sectors of the Manitoba economy to bring emissions below 1990 levels by 2012"

### **Green and Growing – 1. Acting on Energy and Climate Change** (accessed August 28, 2007)

<http://www.gov.mb.ca/greenandgrowing/acting.html>

"Our first green priority is to meet and exceed climate change targets, as established in the Kyoto Accord, and create sustainable business practices and opportunities in the process. Many actions are being taken to meet this priority."

### **2005 Provincial Sustainability Report for Manitoba**

<http://www.gov.mb.ca/conservation/sustainabilityreport/>

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"Manitoba released its Climate Change Action Plan in October 2002, outlining how provincial reductions could meet or exceed Canada's Kyoto Protocol commitments by 2010. The Action Plan states that Manitoba's greenhouse gas emissions can be reduced up to 18 per cent below 1990 baseline levels. This level of reduction can be achieved if renewable energy development becomes a priority in the national market."

### **Kyoto and Beyond – A Plan of Action to Meet and Exceed Manitoba's Kyoto Targets** (Manitoba's Climate Change Action Plan)

Manitoba Science, Technology, Energy and Mines, October 2002

[http://www.climatechangeconnection.org/pdfs\\_ccc/final-mccap-sep-16-02.pdf](http://www.climatechangeconnection.org/pdfs_ccc/final-mccap-sep-16-02.pdf)

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“Our government has expressed strong support for the ratification of the Kyoto Protocol that calls for a 6 per cent reduction of greenhouse gas emissions from 1990 levels by 2012 in Canada. We believe this to be a critical first step in reducing greenhouse gas emissions worldwide and we are committed to helping Canada meet its Kyoto targets. That is why we are presenting an action plan that will allow Manitoba to meet and exceed the Kyoto Protocol targets early, by 2010, so that we can contribute to helping Canada meet its Kyoto targets on time.”

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“By 2010, Manitoba's net contribution could equal a greenhouse gas reduction of up to 18 per cent from 1990 levels — significantly more than the six per cent obligation faced by the nation as a whole. These achievements will be possible when the right conditions and market price signals are put in place to make renewable energy sources more economically attractive than fossil fuels.”

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“By 2012, Manitoba's net contribution could equal a greenhouse gas reduction of up to 23 per cent from 1990 levels, provided the right conditions are in place.”

### **Kyoto and Beyond: Meeting and Exceeding our Kyoto Targets**

(June 2002 report that preceded the October 2002 Climate Change Plan)

[http://www.climatechangeconnection.org/pdfs\\_ccc/kyoto\\_beyond.pdf](http://www.climatechangeconnection.org/pdfs_ccc/kyoto_beyond.pdf)

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“Manitoba plans to do more than its share to help Canada meet its target. Our province will go beyond the six per cent reduction that Canada as a whole must achieve. In fact, with the federal government as a partner, we believe we can achieve reductions of up to 18 per cent below 1990 levels by 2010, and reductions of up to 23 per cent by 2012.”

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“With continued emphasis on clean and renewable energy sources, capturing emissions from landfill sites, carbon storage and diversified and alternative agricultural practices, we believe we can meet our Kyoto targets by 2010 in a way that strengthens our economy and benefits our citizens.”

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“By 2010, Manitoba's net contribution could equal a GHG reduction of up to 18 per cent from 1990 levels”

**June 19, 2002 Government of Manitoba press release,  
Manitoba On Course to Meet Kyoto Targets: Premier**

<http://www.gov.mb.ca/chc/press/top/2002/06/2002-06-19-02.html>

“Premier Gary Doer announced today that Manitoba anticipates meeting its own Kyoto Protocol targets two years early” [2010]

“In a new report, *Kyoto and Beyond--Meeting and Exceeding Our Kyoto Targets*, the Manitoba government states that it expects to reduce greenhouse gases (GHG) by up to 18 per cent below 1990 levels by 2010 and by up to 23 per cent below 1990 levels by 2012.”

# Manitoba Emissions Reporting

## Climate Change: Leading Practices by Provincial and Territorial Governments in Canada

Council of the Federation, August 3, 2007

[http://www.councilofthefederation.ca/pdfs/CCInventoryAug3\\_EN.pdf](http://www.councilofthefederation.ca/pdfs/CCInventoryAug3_EN.pdf)

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Re: Reporting

“Climate change legislation to include regular reporting on GHG emissions and emission reduction actions (announced April 2007)”

“Climate Registry (mechanism for measuring, tracking, verifying and publicly reporting GHG emissions accurately, transparently and consistently across borders and industry sectors)”

## 2005 Provincial Sustainability Report for Manitoba

<http://www.gov.mb.ca/conservation/sustainabilityreport/>

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“In 2002, Manitoba ranked sixth among the provinces and territories with total greenhouse gas releases of 21,600 kilotonnes of CO<sub>2</sub> equivalent.”

## National Inventory Report, 1990-2004 – Greenhouse Gas Sources and Sinks in Canada

TABLE A12-15: 2004 Greenhouse Gas Emissions Summary for Manitoba

[http://www.ec.gc.ca/pdb/ghg/inventory\\_report/2004\\_report/ta12\\_15\\_e.cfm](http://www.ec.gc.ca/pdb/ghg/inventory_report/2004_report/ta12_15_e.cfm)

2004 total emissions for Manitoba: 20,000 kt CO<sub>2</sub> eq = 20 Mt

Selected examples of emissions sources:

Residential: 1,300 kt CO<sub>2</sub> eq = 1.3 Mt

Transportation: 7,300 kt CO<sub>2</sub> eq = 7.3 Mt

Agriculture: 6,400 kt CO<sub>2</sub> eq = 6.4 Mt

TABLE A12-14: 1990-2004 Greenhouse Gas Emissions Summary for Manitoba

[http://www.ec.gc.ca/pdb/ghg/inventory\\_report/2004\\_report/ta12\\_14\\_e.cfm](http://www.ec.gc.ca/pdb/ghg/inventory_report/2004_report/ta12_14_e.cfm)

1990 total emissions for Manitoba: 18,000 kt CO<sub>2</sub> eq = 18 Mt

(see table for total emissions for every year from 1990 – 2004)

## MANITOBA HYDRO

2005 Sources and Types of GHG Emissions

[http://www.hydro.mb.ca/environment/greenhouse\\_gas/source.shtml](http://www.hydro.mb.ca/environment/greenhouse_gas/source.shtml)

Current and Past Reports (2003 – 2006 – Greenhouse Gas Summaries)  
[http://www.hydro.mb.ca/environment/greenhouse\\_gas/reports.shtml](http://www.hydro.mb.ca/environment/greenhouse_gas/reports.shtml)

Manitoba Hydro's 2006 Greenhouse Gas Summary  
[http://www.hydro.mb.ca/environment/greenhouse\\_gas/greenhouse\\_gas\\_brochure\\_2006\\_view.pdf](http://www.hydro.mb.ca/environment/greenhouse_gas/greenhouse_gas_brochure_2006_view.pdf)

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“In 2006, Manitoba Hydro's total gross greenhouse gas emissions were 457.9 kilotonnes of carbon dioxide equivalent (CO<sub>2</sub>e). In 1990, Manitoba Hydro produced the equivalent of 553 kilotonnes of carbon dioxide.

## **Actions to Reduce Manitoba Greenhouse Gas Emissions**

(including information as to emissions reductions)

### **Climate Change: Leading Practices by Provincial and Territorial Governments in Canada**

Council of the Federation, August 3, 2007

[http://www.councilofthefederation.ca/pdfs/CCInventoryAug3\\_EN.pdf](http://www.councilofthefederation.ca/pdfs/CCInventoryAug3_EN.pdf)

Re: Government Operations(page 3)

“GHG emissions reduced by 8% from 1990 levels by 2002, largely by reducing the use of fuel oil in favour of natural gas for building heating (based on a 2002 study of a significant number of government buildings)”

### **Green and Growing (Released January 2006)**

#### **1. Acting on Energy and Climate Change**

(accessed August 28, 2007)

<http://www.gov.mb.ca/greengrowing/acting.html>

“By 2002, all Manitoba government buildings met and exceeded Kyoto emissions targets.”

“goal of developing 1,000 megawatts of wind power in Manitoba over the next decade. This will generate significant levels of clean, renewable electricity and enable greenhouse gas reductions of more than 3.5 million tonnes annually”

“By installing a geothermal system, average homes could reduce greenhouse gas emissions by five tonnes each year.”

“Today, the Manitoba government has passed biofuels legislation to mandate the use of 10% ethanol in gasoline products. The mandate will take effect once local production grows to meet the demand and will reduce 150,000 tonnes of greenhouse gasses annually.”

“The province has also worked with Manitoba Hydro and the City of Winnipeg to capture, manage and harness the biogas resource from the Brady Landfill site - with a potential of reducing 500,000 tonnes of greenhouse gases”

“when in operation, the [Wuskwatim] dam will represent a potential reduction of greenhouse gas emissions of 1.5 million tonnes annually.”

### **October 27, 2005 Government of Manitoba News Release – 2005 THRONE SPEECH HIGHLIGHTS**

<http://www.gov.mb.ca/chc/press/top/2005/10/2005-10-27-03.html>

“Manitoba’s ethanol mandate for 10 per cent blends of gasoline to cut vehicle emissions by 135,000 tonnes”

### **2005 Provincial Sustainability Report for Manitoba**

<http://www.gov.mb.ca/conservation/sustainabilityreport/>

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“Manitoba Hydro’s Selkirk Generation Station was converted to natural gas in 2002, resulting in a cut of 200 kilotonnes of carbon dioxide emissions per year.”

### **Kyoto and Beyond: Meeting and Exceeding our Kyoto Targets**

(June 2002 report that preceded the October 2002 Climate Change Plan)

[http://www.climatechangeconnection.org/pdfs\\_ccc/kyoto\\_beyond.pdf](http://www.climatechangeconnection.org/pdfs_ccc/kyoto_beyond.pdf)

#### **Re: How to Achieve 2010 Emissions Target**

(18 per cent below 1990 levels): (page 3)

**Electricity Exports** – Increased exports to the U.S. and elsewhere in Canada – based predominately on hydroelectricity but also energy conservation and wind generation – could provide reductions of about 4.25 Mt per year by 2010. (These reductions are based on the displacement of coal and gas generation in export markets. These estimates assume Canada receives the Clean Energy Export Credit for exports to the U.S. and that Manitoba negotiates a 50 per cent share of the emission reduction credits resulting from exports to other provinces.)

**Selkirk Conversion** – Manitoba Hydro has switched the source of fuel at its Selkirk generating station from coal to natural gas. This initiative alone will cut emissions by 0.2 Mt per year.

**Ethanol** – The Manitoba government has announced its intention to require the blending of ethanol at 10 per cent in all gasoline sold in the province. This initiative alone will reduce emissions by over 0.135 Mt per year and create up to 900 direct and indirect jobs in Manitoba.

**Methane Capture** – Methane from rotting organic matter in landfills is a major source of greenhouse gas emissions. Winnipeg’s Brady Road landfill is Canada’s largest and most cost-effective remaining site for capturing methane. Capturing the bio-gas emitted from Manitoba landfill sites could reduce emissions by 0.4 Mt per year. The gas could be used to create 6.7 MW of electricity.

**Industry Targeted Measures** – A series of targeted measures with



agriculture and other sectors, cost-shared with the federal government, could offer emission reductions and sequestration or sinks credits of about 4.5 Mt per year.

\*\*\*See page 4-5 for similar figures re: exceeding Kyoto by 2012

***Kyoto and Beyond – A Plan of Action to Meet and Exceed Manitoba's***

***Kyoto Targets*** (Manitoba's Climate Change Action Plan)

Manitoba Science, Technology, Energy and Mines, 2002

[http://www.climatechangeconnection.org/pdfs\\_ccc/final-mccap-sep-16-02.pdf](http://www.climatechangeconnection.org/pdfs_ccc/final-mccap-sep-16-02.pdf)

**Re: Meeting 2010 Targets (18 per cent below 1990 levels)**

(page 10)

“Increased exports to the U.S. and elsewhere in Canada — based predominately on hydro-electricity but also on energy conservation and wind generation — could provide reductions of about 4.25 megatonnes (Mt) per year by 2010\*.

\* These reductions are based on the displacement of coal and gas generation in export markets. These estimates assume Canada receives the Clean Energy Export Credit for exports to the U.S. and that Manitoba negotiates a 50 per cent share of the emission reduction credits resulting from exports to other provinces.”

**NOTE:** *the 4.25 Mt per year reduction assumes contribution by Wuskwatim – with 2009 in-service date providing a reduction of 1.1 Mt per year. In service date is now moved back atleast 3 years>*

“Manitoba Hydro has switched the source of fuel at its Selkirk generating station from coal to natural gas. This initiative alone will cut emissions by 0.2 Mt per year.”

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“The Manitoba government has announced its intention to require the blending of ethanol at 10 per cent in all gasoline sold in the province. This initiative alone will reduce emissions by over 0.135 Mt per year”

“Capturing the biogas emitted from Manitoba landfill sites could reduce emissions by 0.4 Mt per year.”

“A series of targeted measures with agriculture and other sectors, cost-shared with the federal government, could offer emission reductions and sequestration or sinks credits of about 4.5 Mt per year.”

**Re: Meeting 2012 Targets (23 per cent below 1990 levels)**

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“Increased exports to the U.S. and elsewhere in Canada — based predominately on hydro-electricity but also energy conservation and wind generation — could provide about 5.55 Mt of reductions per year by 2012.”

*NOTE: the 5.55 Mt per year reduction assumes contribution by Wuskwatim (see above) and by Gull – with 2012 in-service date providing a reduction of 3.3 Mt per year*

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“Manitoba Hydro's Power Smart conservation programs alone (not taking into account changes in building codes) are expected to save 237 MW and 988 Gwh by 2011/12. These savings will result in reductions of about 0.75 Mt per year in the year 2011/12.”

“Manitoba production [of ethanol] is expected to reach at least 400 million litres by 2012, cutting emissions by 0.39 Mt per year.”

“Doubling the number of installations [of ground source heat pumps] in Manitoba by 2012 will save 0.02 Mt of greenhouse gas emissions per year.”

## Other Climate Change / Emissions Reduction Commitments

(including information as to emissions reductions)

**Green and Growing – 1. Acting on Energy and Climate Change** (accessed August 28, 2007)

<http://www.gov.mb.ca/greenandgrowing/acting.html>

“We will build on this by:

- establishing a new provincial energy saving target of 842 megawatts of electricity by 2017 (up from 241 megawatts), . . . and reducing greenhouse gas emissions by more than 800,000 tonnes each year”

### **A KyotoSmart Case Study: Province of Manitoba – The Public and Private Sector Moving Forward Together**

[http://www.kyotosmart.net/pdf/case\\_manitoba.pdf](http://www.kyotosmart.net/pdf/case_manitoba.pdf)

(page 2)

“Beginning in 2006, Manitoba will transfer over CDN\$500 million in renewable energy to Ontario as part of the Clean Energy Transfer Initiative. In its first phase, 150 megawatts (MW) of power will be transferred in 2006, increasing to 400 MW annually as transmission upgrades come on line. Expected to be completed by 2009, the transfer will represent a doubling of the east-west grid capacity. Subsequent phases will result in a 1,500 to 3,000 MW power deal between the two provinces. This sale is expected to provide enough clean energy to Ontario to reduce coal-fired CO<sub>2</sub> emissions by 2.5 million tonnes annually, making it one of the single largest greenhouse gas reduction initiatives in Canada.”

(Note: they cite “The Clean Energy Transfer: Preliminary Assessment of the Potential for a Clean Energy Transfer Between Manitoba and Ontario”, 2004, A Report to the Governments of Manitoba and Ontario,

[http://www.gov.mb.ca/est/pdfs/clean\\_energy\\_transfer.pdf](http://www.gov.mb.ca/est/pdfs/clean_energy_transfer.pdf))

### **Kyoto and Beyond – A Plan of Action to Meet and Exceed Manitoba’s Kyoto Targets** (Manitoba’s Climate Change Action Plan)

Manitoba Science, Technology, Energy and Mines, 2002

[http://www.climatechangeconnection.org/pdfs\\_ccc/final-mccap-sep-16-02.pdf](http://www.climatechangeconnection.org/pdfs_ccc/final-mccap-sep-16-02.pdf)

### **Manitoba Government – Leading by Example**

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### **Manitoba Transportation and Government Services**

Greenhouse gas reduction strategy and plan for reducing emissions

in government operations and in the transportation sector.

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### **Manitoba Hydro**

*Landfill Gas Utilization Study* – Funding of a pre-feasibility study of the potential for reducing greenhouse gas emissions from City of Winnipeg landfill sites. In addition to flaring of landfill gas, the study also considered use of the gas for heating and electrical generation.

*Reservoir Emissions Study* – Expanded studies involving the Freshwater Institute are seeking to determine the greenhouse gas emissions attributable to hydro reservoirs in Manitoba.

### **Manitoba Transportation and Government Services**

*Transportation Options Research at the University of Manitoba Transport Institute* – Contracted University of Manitoba Transport Institute to research options to reduce transportation-generated greenhouse gas emissions in Manitoba.

*Heavy Trucking Greenhouse Gas Emissions Baseline* – Research and develop modelling tool to improve estimate of greenhouse gas emissions from Manitoba's trucking industry fleet.

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### **Manitoba Agriculture and Food**

*Climate Leadership in Manitoba Agriculture (CLIMA)* – Climate Leadership in Manitoba Agriculture (CLIMA) is a departmental team setup to build on the knowledge of climate change and create awareness in the agricultural sector. The committee includes expertise in soils, conservation, livestock, agro-meteorology, policy and crop insurance. Its work includes responding to the direction and recommendations of the Manitoba Climate Change Task Force. CLIMA is also developing an action plan for agriculture.

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### **Manitoba Agriculture and Food**

*Sequestration/Emission Trading Opportunities Strategy* – Develop a Manitoba strategy for greenhouse gas carbon sequestration and emission trading in partnership with the agricultural sector. Raise awareness and knowledge, examine and develop options and policy for on-farm and agri-industry opportunities in future sequestration and emission trading scenarios. Explore opportunities for agricultural and biological-based products to mitigate and sequester greenhouse gases.

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**Manitoba Industry, Trade and Mines**

*Provincial Energy Policy* – The Manitoba Energy Development Initiative, in collaboration with stakeholders and with public consultation, will develop a broad provincial energy policy that will create a framework for sustainable economic development and programs which will contribute to the reduction of greenhouse gases.

*Provincial Emerging Renewables/Alternative Energy Policy* – Coordinated by the Manitoba Energy Development Initiative, a provincial inter-departmental working group will be established to develop policy and communication options that will encourage the development of various emerging renewable and alternative energy sources.