

Response to Application of IPCC Methodologies



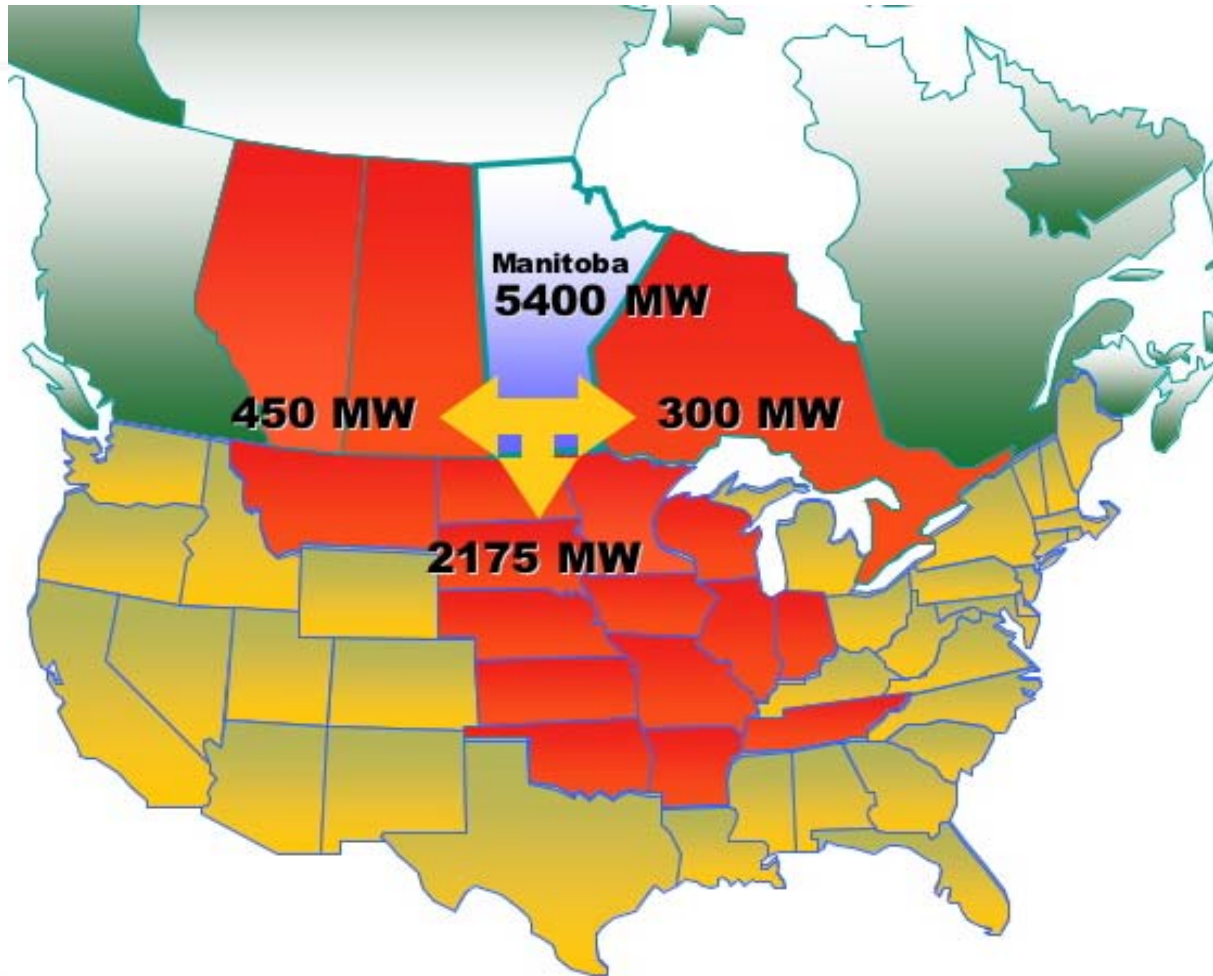
Presentation to
The Climate Registry

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Hydropower: Clean. Reliable. Renewable!

Manitoba Hydro



Environmental Leadership & Commitment to Climate Change



Outline

- **Review IPCC methodologies.**
- **Are potential emissions significant?**
- **Is it appropriate to account for on an annual basis?**
- **Where should these landuse change issues be considered?**

IPCC

- Inter-governmental Panel on Climate Change
- *Strive to account for GHG implications at a national level.*
- *Objective is not to account for the implications of individual projects.*

- Chapters or sections
 - Energy
 - Industrial Processes and Product Use
 - Agriculture, Forestry and Other Land Use B
 - Biomass
 - Soils
 - Livestock
 - Wetlands
 - » Flooded lands

Several Methodologies

- **IPCC Good Practice Guidelines (2003)**
 - *Chapter 3 - Above ground biomass*
 - *Appendix 3a.3 – emission factors*
- **IPCC Guidelines (2006)**
 - *Vol 4, Several Chapters dealing with clearing of biomass*
 - *Vol 4, chapter 7: CO₂ flooding - biomass*
 - *Vol 4 appendix 2: flooding - emission factor alternative CO₂*
 - *Vol 4 appendix 3: flooding CH₄ emission factor*
 - *basis for future methodological development.*
- **Countries have considerable flexibility to interpret and select from among these methods and customize.**

IPCC Guidelines 2006

Vol 4, Appendix 2

- **Alternative methodology for CO2 emissions**
 - *Based on diffusive emission measurements.*
 - *Applies emission factors to **flooded “land”** for the **first 10 years** following flooding.*
 - *Strives to avoid double-counting emissions if carbon originated from land and is already accounted for in other activities (e.g. forest management)*

IPCC Guidelines 2006

Vol 4, Appendix 3

- **Described only as a basis for future methodological development, CH₄ emissions**
- **Applies permanent emission factors to total surface area.**
- **Assumed to significantly over-estimates emissions because:**
 - *emission factors of based on young “interesting” reservoirs;*
 - *assumes all tropical reservoirs are anoxic; and*
 - *assumes significant methane fluxes are permanent.*

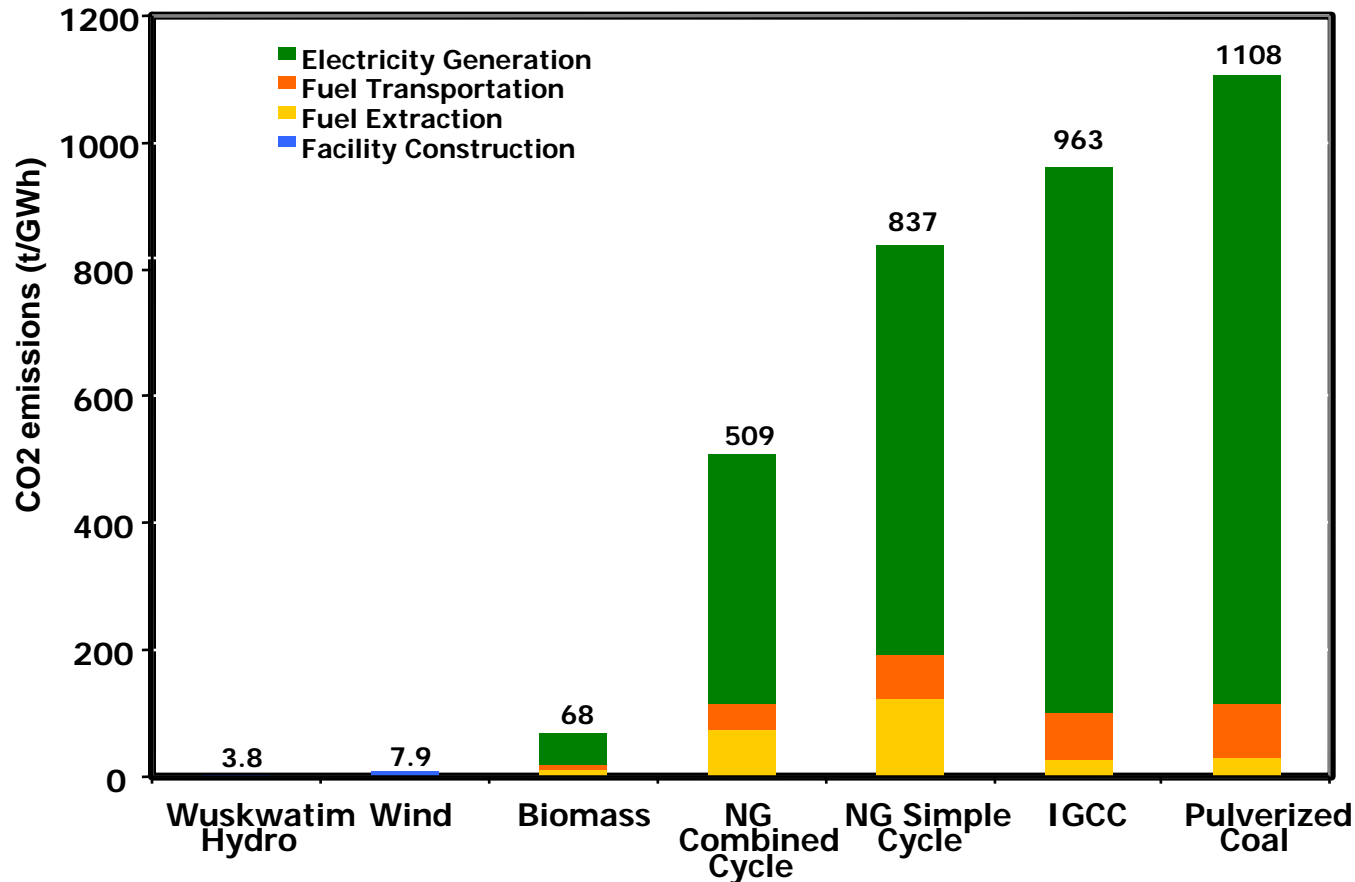
IPCC Implications

- **Considers some aspects of the “net” impact but not others.**
- **Based on carbon stocks in some places and flux in others**
- **Does not fully account for all of the potential changes to estimate the net implication.**
- **CH4 method of Appendix 3 significantly over-emission estimates.**
- **Overall, it overestimates net GHG emissions for National Inventories.**
- **Provides the impression that all reservoirs are net sources of emissions when many are likely net sinks.**
- **Still, can be useful in illustrating the some aspect of this issue.**
- **To more fully account for landuse change implications requires very expensive pre and post-project study. (Should only be done for a couple of projects to better inform the issue.)**

Outline

- Review IPCC methodologies.
- **Are potential emissions significant?**
- Is it appropriate to account for on an annual basis?
- Where should these landuse change issues be considered?

In North America, landuse change implications are not significant.



Source: Pembina Institute for Appropriate Development Study on Life Cycle GHG Emissions and Land Change Related to Selected Power Generation Options in Manitoba

Outline

- Review IPCC methodologies.
- Are potential emissions significant?
- **Is it appropriate to account for on an annual basis?**
- **Where should these landuse change issues be considered?**

Appropriate for annual accounting?

- **Not appropriate**
 - *Methods are imperfect and can only illustrate overall implications over the longer term*
 - *Don't account for annual variability (estimates are over many variable pre and post-project processes).*
 - *Would be fraught with verification issues and uncertainties.*
 - *Vast majority of facilities are well past the period of reservoir effect.*

Where should this be considered?

- **Should be considered as part of the project approval process.**
 - *e.g. New Canadian facilities already account for these potential implications as part of their environmental assessment.*

**WATER
POWER**

- Clean
- Reliable
- Renewable



Thank You

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