



Renewable Electricity: Accounting for Kyoto

Charting the Path Forward:
Accounting for Renewables and the Environment
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Nick Macaluso and Leslie Welsh



Environment Environnement
Canada Canada

Canada

Outline



- Policy setting for emission reduction strategies
- Renewable electricity contribution to avoided emissions
- Approaches to estimate “avoided” emissions



The Kyoto Protocol will likely enter-into-force



- Russia has indicated it will ratify, triggering the entry-into-force provisions
- Canada is the only North American country which ratified Kyoto and has a reduction target
 - Canada must reduce GHG emissions by 6% below 1990 levels by the first commitment period (2008-12)
- Missing our target in first commitment period results in having to make up this shortfall multiplied by 1.3 in second commitment period
- Report on “demonstrable progress” by January 2006



Canada will respect its Kyoto commitment



- The Government reiterates that it will respect its commitment to the Kyoto Accord on climate change in a way that produces long-term and enduring results while maintaining a strong and growing economy. It will do so by refining and implementing an equitable national plan, in partnership with provincial and territorial governments and other stakeholders (Speech from the Throne, October 5, 2004)



Avoided emissions from renewables will contribute to meeting Canada's target



- Accounting of avoided emissions is needed to estimate the impact of domestic actions being implemented by Canada
 - Incentives for expansion of renewable energy (e.g., quadrupling of Wind Power Production Incentive target)
 - Domestic offset system



Center piece of GHG Emissions Trading in the LFE System



- The Large Final Emitters (LFE) System covers industrial sectors (e.g., energy-intensive manufacturing and oil, gas and electricity production)
- Output based system
 - Free allocation = Activity level X Intensity standard
 - On average, Intensity standard would be set 15% below BAU
- LFEs would remit a compliance unit for each tonne of GHG emitted
- Covenants to adjust allocation to address specific issues
- Emission trading
 - LFEs' permits, Offset Credits, Kyoto units



Offsets provide a market incentive for GHG reductions/removals outside the LFE system



- Creation of offset credit
 - Tradable unit created in domestic Offset System
 - Represents 1 tonne of CO₂e reduced or removed
- Uses of offset credits
 - Used to achieve the 55 Mt reduction target when submitted by LFEs as a compliance unit
 - Used to reduce the outstanding Kyoto gap if purchased by citizens [or government] and “cancelled”
 - Banked for future use



The scope of Offset System includes



- ***Climate Change Plan for Canada*** – scope includes forest and agriculture reductions and sinks, possibly landfill gas
- ***Offset System Discussion Paper*** – proposed scope be “as broad as practical” (removals or reductions from sources included in Canada’s reporting for Kyoto compliance but not covered by a LFE allocation)
- Small “clean” energy projects are considered for inclusion
- Possible extension to other types of project that displace/avoid thermal electricity like DSM, Cogeneration and Energy efficiency



Several approaches to estimating avoided emissions from renewables have been used in recent years



- Estimation-based emission intensities:
 - Operating margin emission intensities for the various provincial grids in Canada (IPM)
 - Provincial grid average emission intensities (Analysis and Modeling Group, LFE)
 - National emission intensity factor (LFE)
- Simulation-based impacts
 - Simulating the impact of renewable enhancement initiatives through an integrated Canada-US energy supply and demand model (Energy 2020, Climate Change Plan)



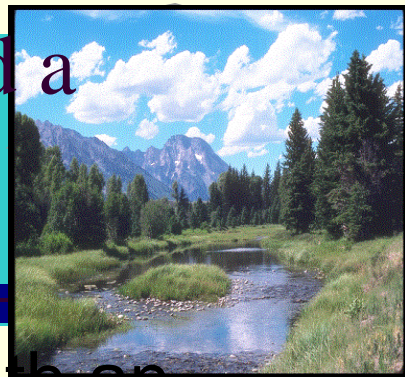
Our modeling and analysis tells



- Renewable energy incentives are effective
- Renewable energy could result in avoided emissions
 - Leakage (exports)
 - Displaced source: coal or natural gas
- Natural gas displacement seems to be more likely than coal
 - Economics favor continued use of coal; coal retirement is policy driven
 - Renewable energy's small scale makes avoid new natural gas capacity most likely result



The Offset System proposed that would a straight-forward approach for avoided emissions



- Assumed displacement/avoidance with an adjustment for leakage
- National intensity factor would be determined by Government
- Straightforward calculation (Electricity production X National Intensity Factor)



All projects must meet Offset System criteria



- Emissions not covered by LFE allocation
- Quantifiable and verifiable emissions reductions/removals
- Real emissions reductions (net of leakage)
- Project eligibility date (current thinking is January 2002 for initial reduction/removal from the project)
- Surplus to other federal GHG measures



Data must be reliable and accessible



- Approach currently under consideration calls for reliable electricity generation data
- Clean energy project proponent provides data & the project methodologies / assumptions in a manner that was verifiable
- Project results must be verified

