Workshop on:
Approaches to Estimating the Environmental Benefits of Renewable Energy and Energy Efficiency
Washington DC
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BC Hydro's Green Power Program
+
Proposed Electricity Sector GHG Regulations

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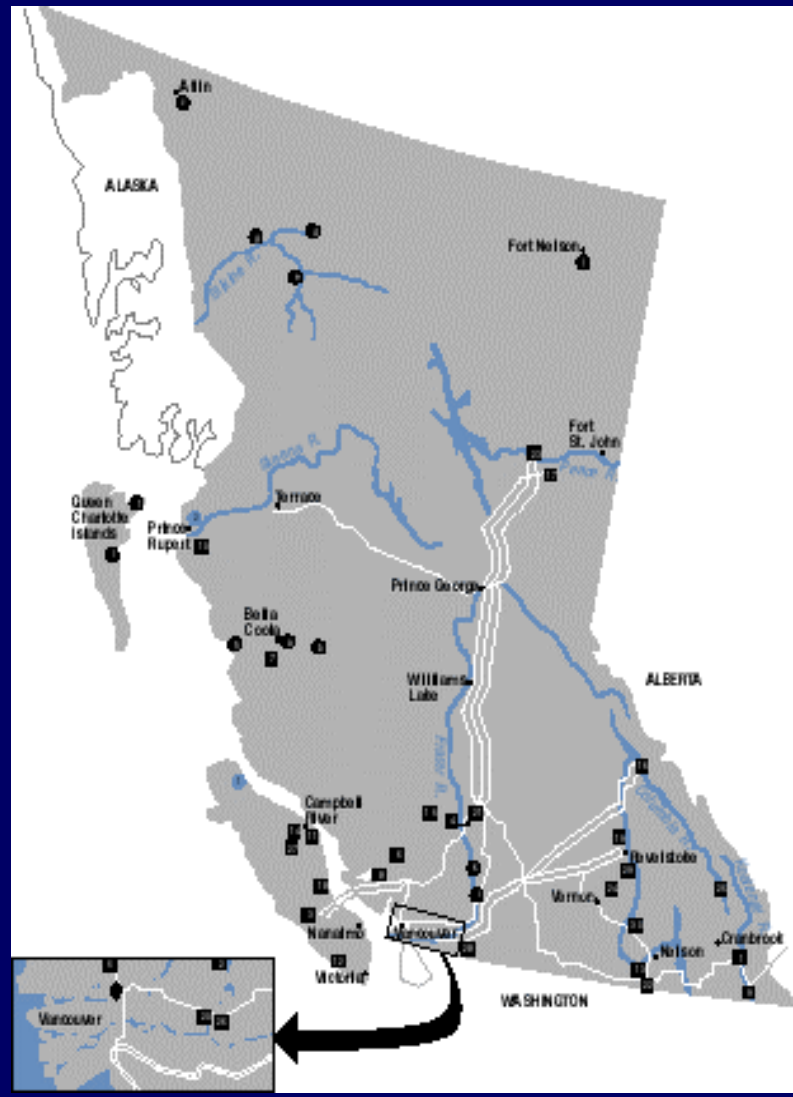
BC Hydro Profile

- 3rd largest electric utility in Canada
- 1.6 million customers
- 52,000 GWh in 2002
  - 94% hydro
  - 5% natural gas
- ~20% growth in demand expected over next 10 years
- Annual emissions 1~3 Mt (potential for 5Mt/yr during Kyoto)
- Significant US trade
- Very aggressive RE and EE targets.



Overview

- BC Hydro's GHG adjustment to Green power and Customer-based Generation purchases
- BC Hydro's Green Power Certificate Program
- Proposed Kyoto electricity sector GHG regulations, impact on:
  - energy efficiency investments
  - renewable energy investments

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Green Energy GHG Adjustment

- BC Hydro adjusts Green power and Customer Based Generation contract bids to reflect their GHG emissions intensity.
- For evaluation purposes, prices are reduced by $3/MWh if they are GHG free.
- $3 is based on a CCGT as a reference, and approximately $10 per tonne.
- Reflects avoided natural gas generation in the BC Hydro system.
- Had to decide between system average, marginal resource or build margin.

Green Energy GHG Adjustment

- In some cases a GHG intensity calculation is done to address the fact that the project emits some GHGs.
- At the time of creation (2000), it was assumed that
  - BC Hydro would receive some kind of baseline protection;
  - Credit for early action may also exist;
  - GHG targets for thermal generation would be stricter.
- In addition, Green power was expected to create an emissions credit.
- We continue to use the $3/MWh, however Kyoto policies may impact it going forward.

Adjustments to Bid Prices for Green Power: for ranking purposes only

Bid Price

($ / MWh)

Green

Premium paid to reflect positive environmental and social attributes of project.

Also reflects BC Hydro's commitment to satisfy 50% of load growth with Clean Energy with any surpluses being available to sell as a premium product in the domestic or export markets (Green Power Certificates).

Natural Resource Variability

Adjustment to reflect differing values of acquired energy to BC Hydro from a planning perspective: dispatchable, firm or non-firm

At IPP's option, provides relief from liquidated damages associated with non-delivery due to natural resource variability (e.g. hydrology, wind).

GHG Offsets

Premium paid to reflect the net reduction in GHG emissions per unit of energy produced and sold to BC Hydro - an effective means of mitigating BC Hydro's future GHG liabilities.

Location

Three separate adjustments provided in the 'Generator Interconnection Preliminary Study' to reflect the point of delivery of the contracted energy relative to the load centres, and the associated:

1. Transmission capacity impacts / constraints,
2. Line losses, and
3. Impact of interconnection costs borne by BC Hydro.

Adjusted Bid Price

($ / MWh)

(for bid comparison only)

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POWER SMART | green power certificates

- A new value-added product from BC Hydro
- Represents the environmental attributes of new, emissions-free electricity with lower environmental impacts than conventional sources
- All contributing projects have met BC Hydro's stringent green criteria
- By purchasing Green Power Certificates, business offsets the impacts from its electricity use and helps create a more sustainable future
- Includes emission reductions at a CCGT level, .36tonnes/MWh for GHG

Proposed Electricity Sector Kyoto Regulations

- Output-based allocation, 85% of emissions per unit of output - based on an established GHG intensity and applied only to thermal plants.
- Impact on RE and EE:
  - If a new unit of RE or EE displaces thermal, only the 15% emissions scale back is saved
  - Only $.54 per MWh (@$10/t) incentive to change from a CCGT to RE or to do EE ($1.50/MWh for coal @1000t/GWh)
  - No surplus permits awarded.
- Result is that for compliance purposes, only offsets would be purchased since GHG intensity can't be reduced significantly at the plants.

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Kyoto Regulations

- RE and EE GHG credits not allowed under the proposed offset system rules.
- The emission reduction value of RE and EE have not been recognized.

What to do?

- Establish RPS' and TRECs, EE goals with Tradeable EE Certificates, each with no GHG value?
- Establish an emissions intensity proxy for the grid and award GHG credits to RE and EE output?
- Provide for set-asides?

Any advice?

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Other Related Issues

- The question of avoided emissions is particularly pertinent for a company with a low existing emissions profile, combined with a significant number of programs initiated to keep the profile low.
  - When trying to avoid being penalized by regulation for being proactive
  - When trying to estimate and quantify the emission-related financial benefits from certain corporate policies
- Eg.
  - Power Smart DSM program savings
  - 50% Clean energy target
  - Resource Smart-internal efficiency programs

Further Info

BC Hydro
www.bchydro.com

BC Hydro's GHG policy
http://bchydro.com/policies/ghg/ghg798.html

BC Hydro's Green Energy Program
http://bchydro.com/environment/greenpower/greenpower1652.html

BC Hydro's Power Smart program
http://www.bchydro.com/powersmart/

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