

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Purpose is to provide:

- an overview of existing Canadian regulatory practices outside Ontario
- how emergent hydro fits into the regime

Resources:

- NRCan reports:
 - *Small Scale Hydro - Public Policy & Experience Country Report for Canada* (2008, revised 2010)
 - *Emergent In-Stream Technology Regulatory Review* (2010)



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Key Federal legislation:

- *Fisheries Act (FA)*
- *Navigable Waters Protection Act (NWPA)*
- *Canadian Environmental Assessment Act (CEAA)*
- *Others;*
 - *Species at Risk Act*
 - *Migratory Birds Convention Act*
 - *Wildlife Act*
 - *more.....*



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

CEAA triggered if:

- Federal undertaking
- Federal funding
- Federal land
- Federal legislative trigger

Federal departments require detailed data and information to make determinations for legislative triggers.

Harmonized EA processes are common however timeline for successful completion may vary somewhat.



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

- DFO (FA) (fish habitat, killing fish (impingement/entrapment), deleterious substance release, etc.)
 - Mitigation measures
 - Operational Statements (i.e. water crossings, etc.)
 - Small Hydro Power and Water Withdrawal Guidelines (i.e. approach velocities)
 - Compensation strategies – hierarchy
- Transport Canada (NWPA)
 - Notice of a Project Proposal to initiate process
 - Navigational impacts due to in-water components and including public safety measures requirements



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Regulatory Regimes in Canada:

- Based across the country around the key issues for waterpower – Environment, Natural Resources & Energy which are predominantly provincial or territorial jurisdiction
- Generally the regime looks pretty similar to Ontario's with varying levels of complexity



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Provincial

Newfoundland:

- Political climate on waterpower changed?
- Ministry of Natural Resources and the Energy Corporation staff for direction

Prince Edward Island:

- Few established micro site <10kW; no current development
- Ministry of Environment, Energy and Forestry staff for direction



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Nova Scotia:

3 core ministries; 7 key legislations; <10MW EA requirements on case by case basis

New Brunswick:

4 core ministries; 4 key legislations; <3 MW, no EIA

Quebec:

3 core ministries; 5 key legislations; <5 MW EA relaxed

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Manitoba:

2 core agencies; >6 key legislations; no relaxation

Saskatchewan:

2 core agencies; 8 key legislations; case by case basis

Alberta:

4 core agencies; 7 key legislations; unknown relaxation (case by case basis?)

BC:

“One window” agency (2 other ministries?); 9 key legislations; unknown (case by case basis?)*



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Yukon:

5 core agencies; 8 key legislations and Inuvialuit EA; <5 MW relaxation to less complex process – one Decision office.

NWT:

1 Board; 5 identified First Nations and their associated regulatory agencies; 3 key legislations; relaxation on a case by case basis

Nunavut:

2 core agencies; 4 key legislations; to early



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Emergent Technologies Development

- Scope: investigate how development of these technologies is progressing in PQ, ON, NWT, BC.
- Focused interviews with developers and/or project managers to collect experiences in permitting and approvals.
- Limited number of case studies available, many not yet in the water, most rapid growth in BC.

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Verdant CORE project a kinetic hydropower turbine, St. Lawrence River at Cornwall, Ontario:

- EA not yet initiated, funding delays, re-designs, Consultation with FN; permitting delays, and significant regulator input centering on fisheries concerns around Ontario Endangered Species Act.

Other EnCurrent Project at Cardinal, Ontario

- unlikely to proceed due to complexity and cost of regulatory approval process timelines



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Northwest Territories Power Corporation McKenzie River at Fort Simpson, NWT:

- Pilot installation of a 25kW EnCurrent VAHT. Temporary installation, removed before freeze up.
- MVLWB and most federal departments anticipated negligible impacts due to size, waived usual approvals and consultation.
- However, due to absence of internal permitting and approval guidelines TC requested additional info and consultation - approval took 7 months and delayed project until the following year due to freeze up.

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

- ❖ BC reported multiple projects (some using same technology) at varying stages of demonstration or prototyping. Permitting based on temporary nature of projects, process was truncated for these cases:

Clean Current Power Systems Inc. tidal turbine at Race Rock Ecological Reserve

- BC Parks acted as project champion, approvals took 6-7months
- Demo until 2011; option to seek to adopt at site permanently.
- Demo exempt from EA, habitat assessment required, TC had navigation concerns, specified 5m clearance. *TC Ontario has identified 10m clearance for another pilot site.



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Instream Energy Systems Corp. Duncan Dam, BC Hydro

- field test on BC hydro property
- 4 (four) 25kW vertical axis hydrokinetic turbines (VAHT) in discharge channel of dam (engineered waterway)
- Environmental Management Plan reviewed by MOE, TC and DFO; no further approvals required for demo however, will be for more permanent installation

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

EnCurrent – Calgary, Alberta Waste Water Treatment Plant:

- fixed prototype ducted 5 kW turbine in effluent outflow for one month.
- Approvals needed only at municipal level (took only weeks) for short term and engineered channel setting
- Discovered environmental benefit - effluent quality improved through aeration.

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Conclusions:

- Attractive to proponents because small footprint of civil works and relatively environmentally benign
- Presently subjected to level of scrutiny that rivals more traditional hydropower owing to lack of exposure and understanding of technologies and limited to no internal guidance for permitting agencies.

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Conclusions

- Unavailability of environmental data in natural environment has resulted in delays in securing approvals
- Delays causes strain for smaller proponents because R&D costs leave little for consultation, planning and permitting stage of development
- A Champion regulator/agency is necessary



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Recommendations:

- Developers and agencies should work together to promote inter- and intra-agency communication to;
 - Expand the understanding of these technologies
 - Establish standard criteria and guidelines within permitting and approval processes
 - Pool scientific data results – information repository
 - Identify suitable sites located within legislative settings willing to host short and long term installations in the natural environment

Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Recommendations:

- Establish a true “One Window” Champion agency approach for these technologies either across Canada (federal lands) or in each province or territory
- Assistance from government to locate existing funding opportunities or develop new ones for baseline studies and/or approval planning needs



Emergent Hydro Regulatory Best Practices – Canadian Regulatory Regimes

Thank You!
Comments?



Nova Scotia

- 3 main ministries:
 - Environment and Labour
 - Natural Resources, and
 - Energy
- Legislations- 7 main:
 - *Environment Act, Water Act, Water Resources Protection Act, Electricity Act, Crown Lands Act, Public Utilities Act and the Utility and Review Board Act*



New Brunswick

- Clean Water Act, Clean Environment Act, Electricity Act and the Energy and Utilities Board Act
- Ministry of Natural Resources; Ministry of Environment; Ministry of Energy and the Ministry of Local Government

Quebec

- Environment Quality Act, Watercourse Act, Dam Safety Act, Hydro-Quebec Act, An Act Respecting the Régie de l'énergie, and An Act Respecting Municipal and Private Electric Power Systems
- Sustainable Development, Environment and Parks; Ministry of Natural Resource and Land ; Régie de l'énergie



Manitoba:

Manitoba Conservation; Manitoba Water Stewardship,
Environmental Assessment & Licensing Branch

Manitoba Hydro - Crown owned utility monopoly

- *Manitoba Hydro Act* (amended 2006/2007)
- *MB Heritage Resources Act*
- *The Water Rights Act*
- *The Water Resources Administration Act*
- *The Water Resources Conservation and Protection Act*
- *The Water Power Act*



Saskatchewan

- Saskatchewan Power, Ministry of Environment
- Environmental Assessment Act, Water Power Act, Environmental Management and Protection Act, Natural Resources Act, Provincial Lands Act, Planning and Development Act and the Power Corporation Act



Alberta:

- Alberta Energy Utilities Board, Ministry of Environment, Ministry of Sustainable Resource Development and Natural Resource Control Board (NRCB)
- Environment Protection and Enhancement Act, Water Act, Natural Resources Conservation Board Act, Public Lands Act, Hydro and Electric Energy Act, Electric Utilities Act and Alberta Energy and Utilities Board.
- Codes of Practice exist for certain activities with known environmental impacts – develop codes for emergent waterpower?



BC

- Land and Water British Columbia Inc. (LWBC) – one window
 - Ministry of Environment and the Ministry of Agriculture and Lands
- *Environmental Assessment Act, Water Act, Land Act, Ministry of Environment Act, Municipal Act, Public Utilities Act, Utilities Commission Act, Hydro and Power Authority Act and the Transmission Corporation Act.*



Yukon

- Ministry of Energy, Mines and Resources (EMR); Yukon Environmental Socio-economic Assessment Board; Yukon Department of Environment, Yukon Water Board and the Yukon Energy Board
- Yukon Environmental and Socio-economic Assessment Act (YESAA), Canadian Environmental Assessment Act, the Inuvialuit assessment process, Environment Act, Waters Act, Wildlife Act, Historical Resources Act, Public Utilities Act and the Territorial Lands (Yukon) Act



NWT

- Mackenzie Valley Land and Water Board; Five identified FN and their associated regulatory agencies
- Mackenzie Valley Resource Management Act; NWT Waters Act, and the Territorial Lands Act

Nunavut

- Nunavut Impact Review Board; Canadian Environmental Assessment Agency
- The Nunavut Act; Nunavut Land Claim Agreement Act; Nunavut Waters and Nunavut Surface Rights Tribunal Act; Northwest Territories Waters Act (except paragraph 33(1)(m&n)).