

Hydropower in Canada: innovative and stable

Canadian Hydropower Association

CHA continues to be one of the world's most dynamic national hydro associations encouraging and promoting hydropower development. This article gives an overview of current CHA activities, and also looks at some of the hydro developments underway in Canada.

The Canadian Hydropower Association (CHA), the national organization representing the hydropower industry in Canada, has a new leader. In May 2009 the CHA welcomed Jacob Irving as the new President of the Association. Mr Irving combines solid expertise in the energy sector with more than 10 years of experience in government relations at municipal, provincial, and federal levels. Mr Irving has already launched a pro-active campaign to engage the CHA's members, and is increasing media outreach by meeting with editorial boards across Canada.

CHA activities and priorities

The priorities for the CHA and the hydropower industry are clear. In February 2009, President Obama made his first official visit to Ottawa. The US President's meeting with the Canadian Prime Minister, Stephen Harper, resulted in a mutual commitment to ongoing dialogue on clean energy. Following that meeting, the Government of Canada's economic stimulus package included funding for the development of clean energy. Mr Irving's first priority, therefore, is to position hydropower as a major component in North American plans for clean energy and as part of the solution to climate change.

Among the President's other priorities are issues arising from two Federal acts: the Fisheries Act, and the Species at Risk Act (SARA). Although the difficulties posed to the hydropower industry by the Acts arise mostly from their implementation and interpretation, some of the issues affecting fish and species at risk are linked to the issues of clean energy and climate change.



Jacob Irving, CHA's new President.

Environmental protection

Indeed, at its recent submission to the Parliamentary Committee on Environment and Sustainable Development, the CHA made the point that pollution affecting climate change also affects species at risk. The Parliamentary Committee is currently reviewing the Species at Risk Act (SARA) and the CHA has been invited to offer its thoughts and recommendations throughout the process. Inspired by the UN Convention on Biological Diversity, SARA is a federal Act to prevent indigenous or wildlife species from becoming extinct, and to provide for their recovery. CHA supports the protection of wildlife and the principles of the Act, and is hoping to offer advice that would strengthen the application of the law, while increasing opportunities for industry, government and all stakeholders to protect and enhance species at risk.

SARA differentiates between incidental harm and direct harm to fish species. Direct harm is intentional, such as fishing. The construction and ongoing operation of a hydropower station can cause incidental harm to fish. Being sensitive to incidental harm, the hydropower industry has made significant gains in protecting various fish species by developing new technology, such as fish-friendly turbines, and improving habitat protection measures.

Hydro-Québec's plans for the Romaine complex for example, include spending \$20 million on an Atlantic salmon development programme over 20 years. This would include, among other measures: protecting downriver in-stream flows to preserve fish habitats; creating spawning areas and stocking of lakes and tributaries; developing wetlands and borrow pits; and, creating bays to facilitate riparian habitat. In meeting regulatory obligations under the Canadian Environmental Assessment Act, and gaining knowledge directly from aboriginal communities, the hydropow-

Site of the La Romaine hydro complex, now going ahead in Québec.



Colin Clark, Canadian Hydropower Association Chair and Executive Vice-President at Brookfield Power, and Former Chairs Paul Adams and Al Snyder, launching booklet on hydropower in Canada in Ottawa last November.



er industry has learned from its own practices and from the wisdom of others in developing its extensive expertise on aquatic species.

Despite SARA's differentiation between direct and incidental harm, there is little distinction or differentiation for the hydropower industry. The temporary permits which are issued for incidental harm cover neither the ongoing operation of a hydropower facility, nor the many years required for constructing a generating station. As CHA President Jacob Irving pointed out, "SARA's current method for issuing temporary permits for activities that cause incidental harm risks putting the hydropower industry into a position of unintended non-compliance. We believe this is something no one desires, given that hydropower is a clean, renewable, low-emitting source of electricity that helps Canada in its fight against climate change."

Instead of relying primarily on the permitting process, the CHA proposes a longer-term solution through conservation agreements. A conservation agreement would take a broader view, considering the whole eco-system and its species. Such agreements would be monitored, and industry action could be enforced. Moreover, conservation agreements would encourage an enhanced stewardship approach for the hydropower industry, focusing on the management of species and habitat tailored to each situation in a species area. In addition, the hydropower industry could be involved earlier in the process of creating recovery strategies. Of the several recommendations made by the CHA for amendments to SARA, the top two were for authorizing activities which are in com-

The ground-breaking ceremony at La Romaine. Fourth from the left is Jean Charest, Prime Minister of Québec.



Colin Clark, Canadian Hydropower Association Chair and Steven Fletcher, Canada's Minister of State for Democratic Reform at the 2009 Forum on Hydropower in Ottawa.

pliance with conservation agreements, and for long-term or renewable incidental harm permits for hydropower activities.

Raising awareness of the benefits of hydro

Outside the parameters of SARA, the most important protection offered by the hydropower industry to species at risk is that hydropower provides clean low-emitting energy without any pollutants causing acid rain or smog. Moreover, with a very small amount of greenhouse gas emissions (60 times less than those from coal-fired plants and up to 30 times less than natural gas powered plants), hydropower is advantageous from a climate change perspective. One of the world's largest exporters of clean electricity, Canada exports on average 40 TWh/year to the USA. Finally, hydropower's storage capacity makes it ideal to support the development of other renewable but intermittent sources of electricity, such as wind power.

The benefits of hydropower are many. Canada has profited from hydroelectricity for 128 years. Since the 19th century, hydroelectricity has met the energy needs of Canadians while creating jobs and powering industry and business growth. As part of its 10th anniversary celebration, the CHA has published a booklet highlighting the history of hydro in Canada, and explaining the environmental, economic and social benefits of hydropower. Not only does the booklet comprehensively illustrate how hydropower works, it also describes some of the remarkable social advancements that have occurred in developing projects such as agreements made recently with aboriginal communities. Check under "What's New" to download *Hydropower in Canada: Past, Present and Future*, at www.canhydropower.org.

CHA 2009 Annual Forum: Focus on La Romaine

The CHA will be hosting its tenth annual forum in November 2009. Over the past ten years, CHA members and the general public have had the privilege of hearing some impressive speakers at the annual forum: Aboriginal Chiefs, federal and provincial ministers, and CEOs of national and international businesses and organizations. Forum themes have ranged from the blackout of 2004, to the integration of the North American market, sustainable development,

* If you would like to register for the 3-4 November 2009 Forum, you can do so at the CHA website: www.canhydropower.org.

partnerships with other renewables, relations with aboriginal communities and new technologies.

For the 2009 Forum*, the theme is Hydropower and the Economy: Powering for Growth. How will the industry meet the challenges of an economic downturn? How will carbon trading affect hydropower shares? In addition to these questions, participants will also discuss the importance of hydropower to regional economies, and opportunities for low-emitting energy in the current socio-economic context. One of the most exciting talks at the 2009 Forum will be given by Réal Laporte, Président, Hydro-Québec Équipement, and CEO, Société d'énergie de la Baie James. He will discuss La Romaine Hydroelectric Complex, currently the largest construction project in Canada.

Officially launched in Havre-Saint-Pierre on 13 May 2009 (see Box and photos), construction will continue

La Romaine

Hydro Québec's Romaine hydro complex, Canada's largest construction project under way at present, was officially launched by Canada's Prime Minister Jean Charest at a ground-breaking ceremony in Havre-Saint-Pierre on 13 May (see photos). He noted in his speech that the project met three objectives of the Québec Energy Strategy—enhancing energy security, making greater use of energy as a lever for economic development, and giving a greater role to local and regional communities and the First Nations. The project shows that the interests of economy, the environment, and social acceptability can be harmoniously reconciled, he added.

The scheme involves four hydro plants on the Romaine river, in the Côte-Nord region of Quebec, with a total capacity of 1550 MW.

Construction of the four reservoir-powered plants and a permanent 150 km long road will cost an estimated \$6.5 billion. Average annual production at the complex is anticipated to be 8 TWh, enough to power more than 450 000 households or the cities of Québec, Saguenay, and Longueuil combined.

The La Romaine complex has undergone an extensive environmental impact study of the physical, biological, and human aspects of the project. Various attenuation and compensatory measures will be implemented to minimize the project's environmental footprint and enable local residents to continue their pursuits in the area. The project will also be subject to a massive environmental monitoring program until 2040. The cost of studies, attenuation measures, and environmental monitoring is estimated at more than \$200 million.

The project is being carried out in partnership with local and regional communities. Partnership agreements have been concluded with the Regional County Municipality (RCM) of Minganie and with the four Innu communities: Ekuanitshit, Nutashquan, Unamen Shipu, and Pakua Shipi. The agreement with the RCM of Minganie is to support projects of an economic, recreational, social, or cultural nature within the municipality's limits. The agreements with the Innu communities are to finance projects of an economic, community, or cultural nature as well as to foster traditional practices and encourage vocational training. These communities also took part in the local impact studies and will be closely involved in project construction and environmental monitoring.

The planned start-up schedule for the four powerplants is as follows: Romaine-2, 2014; Romaine-1, 2016; Romaine-3, 2017; and, Romaine-4, 2020.

until 2020. At the height of construction, between 2012 and 2016, the project will create more than 2000 jobs per year. It will also generate significant economic spin-offs in the form of contracts and purchases of construction-related goods and services worth approximately \$3.5 billion. The completed project will provide Hydro Québec an additional 8 TWh/year of electricity.

La Romaine has the support of Côte-Nord communities. Four Innu communities and the Regional County Municipality of Minganie signed partnership agreements to secure long-term benefits for affected areas by fostering the economic, cultural, and social development of the host communities. The agreements provide for community participation in project construction and environmental monitoring. Moreover, a joint federal-provincial review panel approved construction of the project after a rigorous and transparent environmental assessment process. La Romaine is a model of sustainable development that hydropower offers benefiting not only local communities but also North America, socially, economically, and environmentally.

Future Canadian hydro development

Canada has huge hydropower potential that can be developed with respect for the environment and in collaboration with local communities. Canada currently has 163 000 MW of installed hydropower capacity and has the technical potential to more than double this amount. Developments are underway in Québec, Manitoba, British Columbia, and Newfoundland and Labrador, but more potential exists across Canada. Because hydropower plants remain in operation for 50 to 100 years, they are the sensible choice for a clean source of electricity.

The good news is that the Canadian Government regards hydropower as a source of clean and renewable energy. In his speech to the Canadian Council of Chief Executives in Toronto on 20 January, 2009, the Honourable Jim Prentice, Minister of Environment Canada, discussed Canada's growing role as an energy provider in North America: "... we're a country with substantial untapped natural gas deposits and clean hydropower potential - an obvious way for many [US] border States to reduce their reliance on coal-fired power plants." "In that context," he added, "hydroelectricity is extraordinarily important."

Prentice argued that Canada has a duty to supply more energy: "But Canada not only can, I say we should play a larger role in the North American energy security solution, because when you consider the implications of oil scarcity [...], Canada's status as the world's most reliable supplier of energy becomes not just an economic opportunity for us, but also an obligation to others; perhaps the single best way that we can contribute much-needed stability in an uncertain world."

In times of crisis, we all long for stability. Hydropower is stable. Despite an economic crisis, turbines continue to turn and hydropower steadily generates electricity. At the same time, the hydropower industry is creating innovative technologies, and leading the way in working with local and aboriginal communities. Still the most efficient, reliable and clean source of energy, hydropower's environmental advantages will benefit Canada and North America in our fight against global warming and our search for green energy solutions. ◇