Water Use Plans for Sustainable Power Generation

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BC Hydro's Water Use Plan Program embodies a triple-bottom line, sustainable approach to the operation of BC Hydro's hydroelectric facilities. The Program has translated sustainability theory into practice: the innovative, collaborative, structured-decision-making model for preparing Water Use Plans has resulted in operational changes at BC Hydro's water management facilities that have increased social and environmental benefits and increased regulatory certainty and public consent to operate.

Background

BC Hydro uses water to generate about 45,000 gigawatt-hours of electricity annually. The dams and reservoirs used to store and regulate water at BC Hydro's hydroelectric facilities affect fish and wildlife habitat, cultural resources, recreation, industry and other aquatic interests. In addition to power generation, these facilities provide benefits such as domestic drinking water supply, flood management and economic development. Traditionally water management decisions have largely been the domain of BC Hydro's operation planners, who had little more than the water licences and single party interests to guide operating decisions.

About a decade ago BC Hydro was facing increasing pressure to modify operations, particularly for fisheries interests, to reflect changing societal values. Reactive situation management was creating business uncertainty and causing deterioration in working relationships with regulators and non-government organisations. The Water Use Plan Program was developed to review conditions for water management and achieve an overall societal approach to sustainable water management at BC Hydro's generating facilities.

Smart Choice: Collaboration and Co-operation over Litigation

The Water Use Plan Program was developed in partnership with provincial agencies, Fisheries and Oceans Canada (DFO) and First Nations representatives. The co-operative approach to the review of water management objectives was recognised by all parties as preferable to one dominated by litigation, regulatory action and public pressure. BC Hydro committed $25 million to prepare Water Use Plans for all of its water storage and hydroelectric generating facilities. The provincial government committed to implement changes to BC Hydro's operations through the *Water Act* when the outcome of the Water Use Plan process showed net benefits of doing so.

Program cornerstones were an Interagency Management Committee and a collaboratively developed 13-step process, described in the Water Use Plan Guidelines. Both bestowed clear, procedural consistency across individual Water Use Plan consultative committees.

Water Use Plan Implementation

A Water Use Plan is a technical document outlining operating conditions for a facility. These conditions focus on the amount and timing of water releases through various water storage and release structures.

All interests around operations were canvassed, objectives clarified and science-based performance measures developed for each objective. Technical aspects of hydroelectric operations were explained and a multi-interest committee assessed alternatives and selected a preferred operating regime. A multi-disciplinary team supported each committee's deliberations through power and hydrology modelling, social and environmental studies and modelling, economic analysis and decision-analysis.

In addition to the Water Use Plan prepared by BC Hydro, the new operating conditions will be written into the provincial water licensing and DFO authorisations. Where uncertainty continues, Consultative Committees agreed on a monitoring program for the benefit of future decisions.

Outcomes and Achievements

During the Water Use Plan Program, participants from different organisations and the public worked jointly on new studies, interpreted data results and made science-based decisions that reflect today's range of societal values. Participants contributed their professional expertise and personal commitment through their steadfast support of individual Water Use P projects and the program as a whole.

While the goal of the Water Use Plan Program was to seek agreement on the sustainable management of water across measurable social, environmental and economic objectives, the partnerships and positive working relationships that have developed are an important and valuable outcome.

The Water Use Plan Program has achieved international recognition and exposure for its leading-edge approach to revisiting conditions for water management. Such organisations as the International Association of Public Participation, World Business Council on Sustainable Development, and the International Hydropower Association have expressed interest in our approach to sustainable operations. In addition, peer-reviewed publications will ensure that other professionals and organisations can benefit from the unique and practical tools developed in the disciplines of instream flow analysis, power studies modelling, and decision-analysis tools.

The 5-year Program was completed this year with consensus agreement on 22 out of 23 Water Use Plans. Key themes emerging as program outcomes, achievements and legacies include:

- Improved relationships with federal and provincial regulatory agencies.
- Improved relationships with First Nations and local communities.
- Advancements in the application of scientific tools in environmental and power modelling, decision-science and traditional ecological knowledge of First Nations.
- Enhanced future business certainty through clarified operations and public consent to operate.
- Long-term approach to complex biological questions through ongoing commitment to monitoring and research.
- Cost-effective and efficient clarification of water management conditions, rather than an adversarial approach through litigation and single party negotiation.
- Increased shared value outcomes, or win-win solutions, were achieved at some facilities through open dialogue and creative exploration of alternatives.
- Of enduring value, this proven model can be adapted to other multi-party initiatives that require value-based trade-offs to arrive at a balance between different objectives.

The Water Use Plan Program is a benchmark program of co-operative partnerships for long-term sustainable water management, which we hope will be a valuable legacy for the next generation.