

**Appendix B - Regulatory Documents**

**B-1 Order of the Lieutenant Governor in Council – Heritage Contract**


**B-2 Resource Planning Guidelines**

**B-3 BC Clean Electricity Guidelines**

**B-1 Order of the Lieutenant Governor in Council – Heritage Contract**

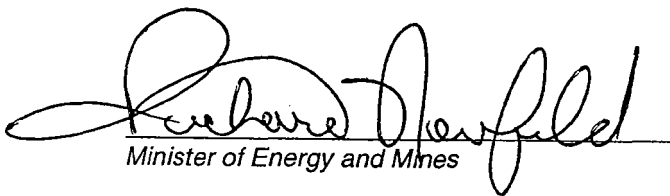
**PROVINCE OF BRITISH COLUMBIA**  
**ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL**

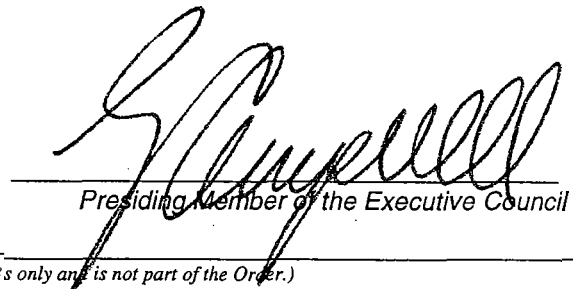
Order in Council No. **1123**, Approved and Ordered **NOV 27 2003**

  
Lieutenant Governor

**Executive Council Chambers, Victoria**

On the recommendation of the undersigned, the Lieutenant Governor, by and with the advice and consent of the Executive Council, orders that, effective April 1, 2004, the attached Special Direction No. HC2 is made.

  
Minister of Energy and Mines

  
Presiding Member of the Executive Council

*(This part is for administrative purposes only and is not part of the Order.)*

**Authority under which Order is made:**

Act and section:- BC Hydro Public Power Legacy and Heritage Contract Act, sections 3 and 4

Other (specify):- \_\_\_\_\_

November 20, 2003

1408 /2003/33  
Appendix B

## HERITAGE SPECIAL DIRECTION NO. HC2 TO THE BRITISH COLUMBIA UTILITIES COMMISSION

### Definitions

1 In this Special Direction:

“**Act**” means the **BC Hydro Public Power Legacy and Heritage Contract Act**;

“**debt**” means, in relation to a fiscal year of the authority, the amount obtained by

(a) adding the outstanding amounts of the following at the end of the fiscal year:

- (i) borrowings;
- (ii) bonds;
- (iii) notes;
- (iv) debentures, and

(b) deducting from the amount determined under paragraph (a) the sum of the of the following amounts at the end of the fiscal year:

- (i) sinking funds;
- (ii) temporary investments;
- (iii) repurchased debt;

“**equity**” means the sum of the following amounts at the end of the fiscal year:

- (a) retained earnings;
- (b) deferred revenue;
- (c) contributions arising from the **Columbia River Treaty**;
- (d) contributions in aid of construction;

“**government policy directive**” means a directive in writing to the authority from the minister charged with the administration of the *Hydro and Power Authority Act*;

“**heritage contract**” means the document attached as Appendix A to this Special Direction;

“**heritage deferral account**” means an account established under section 7 (a) of this Special Direction;

“**heritage energy**” has the same meaning as in the heritage contract;

“**heritage payment obligation**” has the same meaning as in the heritage contract;

“**heritage resources**” has the same meaning as in the heritage contract;

“**trade income**” means the audited net income of Powerex Corp., according to generally accepted accounting principles, adjusted by,

- (a) if the audited net income is less than zero, adding the amount necessary to make it zero, and

- (b) where audited net income is greater than \$200 million, subtracting any amounts in excess of \$200 million;

**“transmission rate customers”** means industrial or commercial customers of the authority who are eligible for service under rates designed by the commission under section 3.

#### **Application**

- 2 This Special Direction is issued to the commission under sections 3 and 4 of the Act.

#### **Consideration in designing rates for transmission rate customers**

- 3 (1) In designing rates for the authority’s transmission rate customers, the commission must ensure that those rates are consistent with recommendations #8 to #15 inclusive in the commission’s report and recommendations to the Lieutenant Governor in Council dated October 17, 2003.
- (2) Without limiting subsection (1), the commission must ensure the following:
  - (a) the rates for the authority’s transmission rate customers are subject to
    - (i) the terms and conditions found in Supplements 5 and 6 to the authority’s tariff, and
    - (ii) any other terms and conditions the commission considers appropriate for those rates;
  - (b) customers who own multiple plants under common ownership may engage in load aggregation for energy, **if** each plant
    - (i) is in operation, and
    - (ii) meets the requirements to be a transmission rate customer that are set out in the authority’s ~~tariff~~, or is otherwise authorized by the commission to be treated **as** a transmission rate customer;
  - (c) the authority publishes the Tier 2 rate in the manner and with the frequency required by the commission.

#### **Basis for establishing authority revenue requirements**

- 4 Subject to section 7, in regulating and setting rates for the authority, the commission must ensure that those rates allow the authority to collect sufficient revenue in each fiscal year to enable the authority to
  - (a) provide reliable electricity service,
  - (b) meet all of its debt service, *tax* and other financial obligations,
  - (c) comply with government policy directives, including, without limitation, government policy directives requiring the authority to construct, operate or extend a plant or system, **and**
  - (d) achieve an annual rate of return on equity equal to the pre-income tax annual rate of return allowed by the commission to the most comparable investor-owned energy utility regulated under the *Utilities Commission Act*.

#### **Determining the cost of energy**

- 5 In setting the authority’s rates, the commission

- (a) must treat the heritage contract as if it were a legally binding agreement between 2 arms-length parties,
- (b) must determine the energy required by the authority to meet its domestic service obligations and must determine the cost to the authority of the portion of that required energy that is in excess of the energy supplied under the heritage contract,
- (c) may employ any mechanism, formula or method referred to in section 60 (1) (b. 1) of the *Utilities Commission Act*, and
- (d) unless a different mechanism, formula or method is employed under paragraph (c), must ensure that electricity used by the authority to meet its domestic service obligations is provided to customers on a cost-of-service basis.

**Return on equity**

- 6** In setting the authority's rates, the commission must allow the authority an annual rate of return on equity calculated using forecast consolidated operating income, which forecast consolidated operating income is calculated on the basis of forecast trade income.

**Deferral accounts**

- 7** When regulating and setting rates for the authority, the commission:
  - (a) must allow the authority to establish one or more accounts to reflect and record variances between
    - (i) the heritage payment obligation and the authority's forecast of the heritage payment obligation, and
    - (ii) the trade income and the authority's forecast of trade income,
  - (b) may allow the authority to establish one or more other deferral accounts for other purposes, and
  - (c) must set or regulate the authority's rates in such a way as to allow the deferral accounts to be cleared from time to time and within a reasonable period of time.

**Annual distributable surpluses allowed**

- 8** When regulating and setting rates for the authority, the commission must ensure that those rates allow the authority to allocate annual distributable surpluses in the manner specified by the Lieutenant Governor in Council under section 4 of the Act or section 35 of the *Hydro and Power Authority Act*.

## APPENDIX A TO HERITAGE SPECIAL DIRECTION No. HC2

### HERITAGE CONTRACT

**WHEREAS** on November 25, 2002, the Province of British Columbia released Energy for Our Future, A Plan for B.C. (the “Energy Plan”);

**AND WHEREAS** the Energy Plan outlines certain policy actions designed to ensure British Columbians have continued access to sufficient supplies of dependable low-cost electricity;

**AND WHEREAS** the Energy Plan provides in Policy Action #1 that a legislated heritage contract will be created between BC Hydro’s generation line-of-business and BC Hydro’s distribution line-of-business for an initial term of 10 years.

THEREFORE, BCH Distribution and BCH Generation (the “parties”) agree as follows.

#### Definitions

1. In this Agreement:

“**Act**” means the *BC Hydro Public Power Legacy and Heritage Contract Act*;

“**Agreement**” means this Heritage Contract including Schedule A;

“**Ancillary Service Requirements**” means services necessary to deliver energy;

“**BC Hydro**” means the British Columbia Hydro and Power Authority;

“**BCH Distribution**” means BC Hydro’s distribution line-of-business;

“**BCH Generation**” means BC Hydro’s generation line-of-business;

“**Commission**” means the British Columbia Utilities Commission;

“**heritage electricity**” means the capacity, energy and ancillary services that BCH Generation is required to supply to BCH Distribution under this Agreement;

“**heritage energy**” means

- (a) subject to paragraph (b), 49 000 GW.h per year less the energy generated for delivery under the Skagit Valley Treaty, or
- (b) the quantity of energy determined by the Commission under section 8 of this Agreement to be heritage energy;

“**heritage payment obligation**” means

- (a) subject to paragraph (b), the annual payment determined in accordance with the procedure set out in Schedule A to this Agreement, or
- (b) the annual payment determined by the Commission under section 8 of this Agreement to be the heritage payment obligation;

“**heritage resources**” means the Electric Facilities and Thermal Facilities described in Schedule A to the Terms of Reference, together with

- (a) the related civil works and plant, and
- (b) potential future investments that increase the capacity, energy *or* ancillary service capability of such facilities, including potential future units 5 and 6 at Mica and potential future units 5 and 6 at Revelstoke;

“**Order**” means an order of the Commission;

“**Terms of Reference**” means Schedule A, Terms of Reference, to Order-in-Council No. 025312003;

**“Transfer Pricing Agreement”** means the Transfer Pricing Agreement for Electricity and Gas dated April 1, 2003 between BC Hydro and Powerex Corp. as amended from time to time;

**“Year”** means fiscal year.

#### **Electricity Supply**

2. BCH Generation must provide the full capacity of the heritage resources to BCH Distribution on a priority call basis.

#### **Obligation to supply**

3. BCH Generation must supply to BCH Distribution, in each Year, the heritage energy or such lesser amount of energy as may be required by BCH Distribution.

#### **Obligation to deliver**

4. BCH Generation will deliver the heritage energy to **BCH** Distribution at the various points of interconnection of the generating stations included in the heritage resources with the BC Hydro transmission grid or at points of interconnection with other utilities, as appropriate.

#### **Responsibility for obtaining transmission services**

5. BCH Distribution will be responsible for obtaining transmission services for energy provided to BCH Distribution.

#### **Ancillary services**

6. The parties may use the capacity available to them under section 2 to deliver energy to meet customer demand and to satisfy the parties’ Ancillary Service Requirements, regardless of whether provision for self-supply is made under any tariff.

#### **Payment**

7. BCH Distribution must, on **or** before the end **of** each Year, pay to BCH Generation an amount equal to the heritage payment obligation.

#### **Adjustment**

8. The parties acknowledge that
  - (a) the Commission may, by Order, modify one or both of the definitions of “heritage energy” and “heritage payment obligation” if the commission is satisfied that a change in circumstances has permanently affected
    - (i) the capability of the heritage resources to provide one or both of capacity and energy, or
    - (ii) the authority’s cost of generating the heritage energy, and
  - (b) any such modification will automatically modify the heritage energy or the heritage payment obligation, **as** the case may be, without further action by the parties.

#### **Information exchange and cooperation**

9. Each party will continue to freely provide the other with any requested information to facilitate the coordinated and optimal operation **of** the BC Hydro system.

#### **Dispute resolution**

10. (1) The parties will make reasonable efforts to resolve disputes arising in relation to this Agreement at the staff level.

- (2) As needed, issues may be dealt with by management levels within each party to achieve timely resolution.
- (3) Issues that cannot be resolved in a timely manner at senior management levels, may be referred by either party to the commission for resolution.

**Term and termination**

- 11. (1) This Agreement shall commence on April 1,2004.
- (2) This Agreement may be terminated by government, with 5 years notice, any time after April 1,2009 and if such notice is given, the Agreement shall terminate at the end of the 5-year notice period without any further action by the parties or the government.

Dated as of this \_\_\_\_ day of \_\_\_\_\_,2004.

\_\_\_\_\_

BCH Distribution

\_\_\_\_\_

BCH Generation

**SCHEDULE A**

**HERITAGE PAYMENT OBLIGATION**

The heritage payment obligation for any Year is the amount determined by

- (a) adding those of the following costs incurred by BCH Generation in the Year that the Commission orders may be included in the heritage payment obligation:
  - (i) cost of energy such as the cost of water rentals and energy purchases, including purchases of gas and electricity, required to supply heritage electricity;
  - (ii) operating costs such as the costs of operating and maintaining the heritage resources, including an allocation of corporate costs;
  - (iii) all costs of owning the heritage resources, including, without limitation, depreciation, interest, finance charges and other asset related expenses;
  - (iv) all costs or payments related to generation-related transmission access required by the heritage resources;
  - (v) the applicable return on equity on investments in heritage resources based on Heritage Special Direction No. HC2 to the Commission under the authority of the Act, and
- (b) by subtracting from the sum obtained under paragraph (a), any revenues BCH Generation receives from other services provided from the heritage resources, including, without limitation,
  - (i) revenues related to Skagit Valley Treaty obligations,
  - (ii) revenues from provision of ancillary services to the transmission operator in respect of third party use of the transmission system, and
  - (iii) revenues from the sale of surplus hydro electricity under section 5 of the Transfer Pricing Agreement.

**B-2 Resource Planning Guidelines**



***BRITISH COLUMBIA UTILITIES COMMISSION***

# *Resource Planning Guidelines*

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## PURPOSE AND SCOPE OF THE RESOURCE PLANNING GUIDELINES

The Commission's mandate to direct and evaluate the resource plans of energy utilities is intended to facilitate the cost-effective delivery of secure and reliable energy services. The Resource Planning Guidelines (the "Guidelines") outline a comprehensive process to assist the development of such plans.

The Utilities Commission Act ("UCA") was amended in 2003 to provide the Commission with a mandate to implement the policy actions of the Provincial Government's November 2002 energy policy, "Energy For Our Future: A Plan For BC" ("Energy Plan"). Amendments to Section 45 of the UCA expand upon and clarify the planning requirements of utilities and the Commission's role to review filed plans to determine whether expenditures are in the public interest and whether associated rate changes are necessary and appropriate. The additions to Section 45 of the UCA are as follows:

- 45 (6.1) A public utility must file the following plans with the commission in the form and at the times required by the commission;
- (a) a plan of the capital expenditures the public utility anticipates making over the period specified by the commission;
  - (b) a plan of how the public utility intends to meet the demand for energy by acquiring energy from other persons, and the expenditures required for that purpose;
  - (c) a plan of how the public utility intends to reduce the demand for energy and the expenditures required for that purpose.
- (6.2) After receipt of a plan filed under subsection (6.1), the commission may:
- (a) establish a process to review all or part of the plan and to consider the proposed expenditures referred to in the plan;
  - (a) determine that any expenditure referred to in the plan is, or is not at that time, in the interests of persons within British Columbia who receive, or who may receive, service from the public utility, and
  - (b) determine the manner in which expenditures referred to in the plan can be recovered in rates.

On the basis of subsection 6.1, the Commission will require that any resource plans filed under paragraph 6.1, (a), (b) and (c) be prepared in accordance with the Guidelines.

The Commission requires consideration of all known resources for meeting the demand for a utility's product, including those which focus on traditional and alternative supply sources (including "BC Clean Electricity" as referred to in the Energy Plan), and those which focus on conservation of energy and Demand Side Management ("DSM").<sup>1</sup> Resource planning is intended to facilitate the selection of cost-effective resources that yield the best overall outcome of expected impacts and risks for ratepayers over the long run. The process aids in defining and

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<sup>1</sup> *Demand Side Management* may be defined as a deliberate effort to decrease, shift or increase energy demand. Utilities develop DSM programs to encourage customers to enact DSM measures. Because of measurement difficulties and uncertainty about consumer behavior, DSM programs should be evaluated before and after implementation to determine their full impacts.

assessing market-based costs and benefits, while also entailing the assessment of tradeoffs between other expected impacts that may vary across alternative resource portfolios. Such impacts may be associated with objectives such as reliability, security of supply, rate stability and risk mitigation, or specific social or environmental impacts. In sum, a resource planning process that assesses multiple objectives and the tradeoffs between alternative resource portfolios is key to the development of a cost-effective resource plan for meeting demand for a utility's service.

In most circumstances, Certificates of Public Convenience and Necessity ("CPCN") applications should be supported by resource plans filed pursuant to Section 45 of the UCA. The Commission expects that resource plans will help facilitate the review of utility revenue requirements and rate applications.

The Guidelines do not alter the fundamental regulatory relationship between the utilities and the Commission. The Guidelines do not mandate a specific outcome to the planning process, nor do they mandate specific investment decisions. The Guidelines provide general guidance regarding Commission expectations of the process and methods for utilities to follow in developing plans that reflect their specific circumstances. More specific directions regarding resource plans will be provided to utilities on a utility to utility basis. Further directions may address issues regarding the elements of the resource plan or the underlying methodology. The Commission will review resource plans in the context of the unique circumstances of the utility in question. For this reason, the Guidelines do not distinguish between the circumstances of small and large utilities or between transmission and distribution utilities, nor do they prescribe specific planning horizons or approaches to resource acquisition. Although the Guidelines are not prescriptive in that sense, after review of a resource plan the Commission expects to be prescriptive on a utility by utility basis, as necessary, to facilitate cost-effective delivery of a reliable and secure supply that meets demand for a utility's service.

## RESOURCE PLANNING GUIDELINES

### 1. Identification of the planning context and the objectives of a resource plan

Key underlying issues and assumptions that inform the planning context should be identified and discussed (e.g., reliability and security issues, risk factors, major uncertainties). Objectives include, but are not limited to: adequate and reliable service; economic efficiency; preservation of the financial integrity of the utility; equal consideration of DSM and supply resources; minimization of risks; compliance with government regulations and stated policies; and consideration of social and environmental impacts.<sup>2</sup>

### 2. Development of a range of gross (pre-DSM) demand forecasts

In making a demand forecast, it is necessary to distinguish between demographic, social, economic and technological factors unaffected by utility actions, and those actions the utility can take to influence demand (e.g. rates, DSM programs). The latter actions should not be reflected in the utility's gross demand forecasts.<sup>3</sup> More than one forecast would generally be required in order to reflect uncertainty about the future: probabilities or qualitative statements may be used to indicate that one forecast is considered more likely than others. The energy end-use categories<sup>4</sup> used to analyze DSM programs should be compatible with those used in demand forecasting, so that at any point a consistent distinction can be made between demand with and without DSM on an end-use category-specific basis. Thus, the gross demand forecast should be structured in such a way that the savings, load shifting or load building due to each DSM resource can be allocated to specific end-uses in the demand forecast.

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<sup>2</sup> Bonbright, Danielsen and Kamerschen, (Principles of Public Utility Rates, 1988, Ch.8, p.165) suggest that the rates set by utility commissions invariably involve some discretionary judgment about the extent to which broader social principles should influence ratemaking. Because of social and environmental impacts, the rates charged by utilities may be allowed to deviate from those that would result from a rate determination based exclusively on financial least cost. The objectives to be addressed may be identified by the utility, intervenors, or government. The BC Utilities Commission interprets its jurisdiction as extending only to consideration of environmental and social impacts that are likely to become financial costs in the foreseeable future.

<sup>3</sup> In other words, gross forecasts represent an attempt to simulate markets in which the utility did nothing to influence demand. Of course, this is not entirely possible. Utilities will continue to require rate increases and existing DSM programs will affect demand as will already ordered rate design changes. However, the assumptions made with respect to these factors in estimating future gross demand should be clearly specified so that the effects of these assumptions may be distinguished from the effects of future utility actions designed to influence demand.

<sup>4</sup> The term *End-use categories* is intended to mean energy consumption by categories of end-user, such as industrial, commercial, or residential. Guideline No. 2 does not prescribe *end-use forecasting* or *end-use modeling*, but rather requests that forecast outputs and DSM results be organized and checked according to end-use categories.

### 3. Identification of supply and demand resources

Feasible<sup>5</sup> individual supply and demand resources, both committed and potential, should be listed. Individual resources are defined as indivisible investments or actions by the utility to modify energy and/or capacity supply, or modify (decrease, shift, increase) energy and/or capacity demand.

### 4. Measurement of supply and demand resources

Each supply-side and demand-side resource must be measured against the objectives established under Guideline No. 1. This includes identifying utility and customer costs (life cycle costs, impact on rates, etc.), associated risks, and lost opportunities.<sup>6</sup> Characterizing the feasible supply and demand resources could also include reporting how these resources perform<sup>7</sup> relative to specific social and environmental objectives. This can facilitate a more comprehensive understanding of the tradeoffs between objectives as they may be associated with various supply and demand resources. Supply and demand resource cost estimates should represent the full costs of achieving a given magnitude of the resource. These cost estimates may be represented as supply curves; i.e. graphs showing the unit costs associated with different magnitudes of the resource.

### 5. Development of multiple resource portfolios

For each of the gross demand forecasts, several plausible resource portfolios should be developed, each consisting of a combination of supply and demand resources needed to meet the gross demand forecast. The gross demand forecasts and the resource portfolios should cover the same period, generally 15 to 20 years into the future.

### 6. Evaluation and selection of resource portfolios

For each of the gross demand forecasts, the set of alternative resource portfolios that match the forecast are assessed against the objectives. Analysis of the tradeoffs between portfolios and how they perform under uncertainty will facilitate determining which portfolio performs best relative to the stated objectives. This process will lead to the selection of a set of preferred resource portfolios, each portfolio matching one of the gross demand forecasts.<sup>8</sup>

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<sup>5</sup> Feasible resource options are defined as those options consistent with the objectives of the resource planning process, as established under Guideline No. 1. For example, government policy may rule out a particular technology or form of energy.

<sup>6</sup> *Lost opportunities* are opportunities that, if not exploited promptly, are lost irretrievably or rendered much more costly to achieve. Examples can include cogeneration opportunities that are available but not taken when renovating a pulp and paper mill, or additional insulation that is not installed in a new house.

<sup>7</sup> Performance measures may be quantitative or qualitative.

<sup>8</sup> Guidelines No. 4 through No. 6 may require an iterative process to account for any interdependencies.

7. Development of an action plan

The selection process in Guideline No. 6 provides the components for the action plan. The action plan consists of the detailed acquisition steps for those resources (from the selected resource portfolio) which need to be initiated over the next four years in order to meet the most likely gross demand forecast. The action plan should include a contingency plan that specifies how the utility would respond to changed circumstances, such as changes in loads, market conditions or technology and resource options. For resources with considerable uncertainty, the action plan should incorporate an experimental design and monitoring plan to allow for hindsight evaluation of associated market impacts and full resource costs.

8. Stakeholder input

Although utility management is responsible for its resource planning and resource selection process, utilities should normally solicit stakeholder input during the resource planning process. Methods could include stakeholder collaboratives, information meetings, workshops, and issue papers seeking stakeholder response. Utilities are encouraged to focus such efforts on areas of the planning process where it will prove most useful and to choose methods that best fit their needs.

9. Regulatory input

To streamline the regulatory process, utilities are encouraged to seek review and comment from Commission staff during the various phases of resource plan preparation.

10. Consideration of government policy

A resource plan filed in accordance with the UCA and these Guidelines should be consistent with government policy, as it is expressed in legislation (e.g. efficiency standards) or in specific policy statements and directives. Emerging policy issues, such as increased control of emissions, may be addressed as risk factors.

11. Regulatory review

Upon receipt of a resource plan filed pursuant to Section 45, paragraph 6.1, the Commission will establish a review process, as necessary, pursuant to Section 45, paragraph 6.2. A review may provide, as the Commission considers appropriate, opportunities for written and/or oral public comment.

**B-3 BC Clean Electricity Guidelines**



# **BC Clean Electricity Guidelines**

**Prepared by: Ministry of Energy and Mines**

**April 2004**

## Introduction

In November 2002 the Province released *Energy For Our Future: A Plan For BC* (the Energy Plan), which establishes a framework for energy development throughout British Columbia. The Energy Plan is built on the following four cornerstones:

- Low electricity rates and public ownership of BC Hydro;
- Secure reliable energy supply;
- More private sector opportunities; and
- Environmental responsibility and no nuclear power sources.

Policy Action #20 in the Energy Plan requires electricity distributors to pursue a voluntary goal to acquire 50 percent of new supply from *BC Clean Electricity* over the next 10 years. The Energy Plan states that:

**"BC Clean electricity refers to alternative energy technologies that result in a net environmental improvement relative to existing energy production. Examples may include small/micro hydro, wind, solar, photovoltaic, geothermal, tidal, wave and biomass energy, as well as cogeneration of heat and power, energy from landfill gas and municipal solid waste, fuel cells and efficiency improvements at existing facilities."**

These guidelines are intended to assist electricity distributors, the British Columbia Utilities Commission (BCUC), and other interested parties by clarifying and expanding upon the definition of *BC Clean Electricity* (also referred to as "*BC Clean*" in this document). The guidelines may be amended from time to time in response to requests for clarification or as the result of circumstances unforeseen at the time the initial document was prepared (i.e., March 2004).

## Context

The Province supports environmentally responsible development of its diverse and abundant energy resources as a means of improving energy security, encouraging private sector energy development opportunities and stimulating economic growth throughout British Columbia.

Establishment of an energy classification, *BC Clean Electricity*, is intended to promote the development of a wide range of energy resources that are recognized as having a lesser environmental impact relative to conventional energy sources and technology, while also acknowledging the necessary balance between cost-effectiveness and environmental attributes. The overarching principle is that of continuous improvement -- economically, environmentally and socially -- in energy development and use.

Therefore, *BC Clean Electricity* is a policy standard. The interpretation provided herein attempts to be consistent with independent energy certification systems (e.g., Environment Canada's Environmental Choice<sup>M</sup> Program), but is not a specific endorsement of a particular program. *BC Clean Electricity* may recognize a variety of energy sources and technologies that may or may not be accepted by other jurisdictions or energy certification programs.

Further, this document does not constitute a legislative or regulatory interpretation, and does not affect the application of the *Waste Management Act*, *Environmental Assessment Act* or any other relevant environmental protection statutes and regulations.

### **Defining "Conventional" Energy**

In this document there are references to "conventional" energy sources. For the purposes of this guideline, a reference to "conventional" energy refers to electricity generated from coal, oil, natural gas, other hydrocarbon fuels or large hydro sources.

### **Inclusiveness**

The Energy Plan emphasizes development of British Columbia's energy resources, stimulating private sector opportunities and encouraging employment growth within the province. Thus, distributors should note that for the purposes of meeting the Energy Plan target of acquiring 50 percent of new supply from clean energy sources, *BC Clean Electricity* includes only those energy resources developed within British Columbia. This is in no way intended to discourage the acquisition of cost-competitive, clean energy produced in neighbouring jurisdictions. These acquisitions complement the Province's domestic clean energy objectives and, recognizing that environmental responsibility is not confined to geo-political borders, represent a prudent means to help British Columbia meet broader social, economic and environmental goals.

### **Timeframe**

Progress in acquiring *BC Clean Electricity* is to be measured by distributors as the percentage of total net, new electricity supply acquisitions made over the ten-year period beginning November 25, 2002 through to December 31, 2012 (i.e., net electricity supply means total new supply requirements less demand-side management efficiency savings). Therefore, it is not expected that distributors will necessarily meet the 50 percent *BC Clean* target on an annual basis.

### **Reporting**

Electricity distributors are requested to provide an annual report to the Ministry of Energy and Mines highlighting progress made in acquiring *BC Clean Electricity* supply. The first report should be submitted by July 1, 2004 for the period November 25, 2002 to March 31, 2004. Subsequent reports are requested each July 1 for the preceding fiscal year ending March 31.

### **Conservation and Efficiency**

Supply-side efficiency measures, such as BC Hydro's Resource Smart, and demand-side management (DSM) programs such as BC Hydro's PowerSmart and Fortis' Powersense programs are recognized as an important means of reducing the need for new electricity supplies. The Energy Plan encourages investments in efficiency and conservation programs through the following Policy Actions:

#21 - New rate structures will provide better price signals to large electricity consumers for conservation and energy efficiency;

#22 - The Province will update and expand its *Energy Efficiency Act*, and will work with the building industry, governments and others to improve energy efficiency in new and existing buildings; and

#23 - The *Utilities Commission Act* will be amended to remove a disincentive for energy distributors to invest in conservation and energy efficiency.

Further, recent amendments to the *Utilities Commission Act*, section 45 (6.1), requires public utilities to file plans with the British Columbia Utilities Commission (BCUC) that describe how they intend to reduce the demand for energy and the costs required for that purpose. Section 60 (b) requires the BCUC to have due regard for these expenditures in the setting of rates for the utility.

Supply-side efficiency gains are considered *BC Clean Electricity* if they meet 1) and either 2) or 3) of the following criteria:

1. the upgrade creates an incremental supply of electricity from an existing facility; and,
2. the upgrade occurs at an existing facility that uses renewable energy
3. the upgrade results in a demonstrable net environmental improvement relative to the operation of the facility prior to the enhancement; or,

DSM program savings are not considered *BC Clean Electricity*. However, distributors may deduct annual energy efficiency savings from their forecast supply requirements in calculating a *BC Clean Electricity* acquisition target.

Example: A distributor forecasts its incremental supply requirements for a defined period as 1000 GWh. The distributor also forecasts demand-side savings of 200 GWh for the same period. The *BC Clean* target is then calculated as:  $(1000 - 200) * 50\% = 400$  GWh.

## **Renewable Energy Resources and Technology**

The following energy resources and technologies are considered *BC Clean Electricity*:

**Fuel Cells** - Electrochemical devices that continuously convert the chemical energy of a fuel (e.g. hydrogen, hydrocarbons) and an oxidant into electricity. Fuel cells can be used to power vehicles or to generate electricity in stationary applications.

**Geothermal Energy** - Energy extracted from the earth usually in the form of steam that can be used for ground source heat pumps, water heating or electricity generation.

**Micro- and Small Hydro Energy** - Electricity produced by harnessing the kinetic energy of moving water in a stream or river whereby the stream flow passing through the powerhouse is basically the same as the natural stream flow (i.e. "run-of-river"), implying that there is no (or minimal) reservoir storage. Included in this category are: micro hydro (hydroelectric generation capacity of less than 2 megawatts), small hydro (generation capacity greater than 2 megawatts but less than 50 megawatts).

**Large Hydro** - Electricity produced from a hydroelectric power plant with generating capacity greater than or equal to 50 megawatts.

**Photovoltaic Energy** - Electricity produced directly from sunlight using semiconductors built into solar panels or roofing materials.

**Solar Energy** - The radiant energy of the sun that can be converted into other forms of energy, such as heat (e.g., for water heating) or electricity.

**"Free-Flowing" Tidal Energy** - Electricity produced by harnessing the natural rise and fall of the tide in an estuary or bay of the ocean, provided the system does not utilize technology that may substantially interfere with the natural ebb and flow of tidal waters and result in negative impacts to marine life and ecosystems.

**Wave Energy** - Electricity produced by harnessing the natural rise and fall of waves in the ocean.

**Wind Energy** - Electricity produced from a system of airfoils or blades that spin a drive shaft to capture the kinetic energy of the wind.

### **Thermal Resources and Technology**

Thermally generated electricity is highly energy intense and, depending on the primary fuel source and type of energy transformation technology utilized, can have varying impacts on the receiving environment through its air and water emissions. Even with the emergence of lower-emitting technologies, a significant proportion of incremental electricity generation capacity is likely to remain thermal-based for the foreseeable future. The following fuel types and technology are accepted as *BC Clean*:

**Biogas** - means gaseous products (primarily methane and carbon dioxide) produced by the anaerobic decomposition of organic wastes. Facilities producing biogas include landfill sites, sewage treatment plants and anaerobic digestion organic waste processing facilities. Biogas-fuelled electricity is generated from a system in which biogases are captured for combustion and conversion to electricity.

**Biomass** - Energy derived from organic matter, such as wood residue, agricultural waste or other organic wastes. *BC Clean* includes the energy derived either at dedicated biomass combustion or gasification facilities, or the energy component related to biomass utilized in conjunction with the combustion of conventional energy resources.

**BioOil, Bioethanol and Biodiesel** - Liquid fuels produced from biomass resources such as wood waste, agricultural waste and other organic residues for use in stationary power applications.

**Cogeneration** - Cogeneration aims to maximize the efficiency of energy resource combustion by producing electricity and heat from one or more boilers, combustion turbines or engines at a single facility. Facilities typically include industrial plants, large commercial and institutional buildings. While the electricity can be used within the facility, it can also be made available to the grid. Similarly, the heat (i.e., liquid or steam) can be used for processes within the facility or for applications in neighboring facilities. A range of fuels can be used for cogeneration - biomass, municipal solid waste (MSW), natural gas, coal bed methane, coal, and fuel oil are all typically utilized.

Cogeneration is widely recognized as an attractive alternative to simple-cycle and combined-cycle generation because of the increased energy efficiency obtained by using the waste from one process in the production of the other. Therefore, in principle the cogeneration process should demonstrate a higher overall fuel conversion efficiency than the separate production of electricity, heat or cooling energy.

Energy from a cogeneration project, or a proportion thereof, may be considered *BC Clean Electricity* if:

- The energy output (thermal and electrical), or a calculated proportion thereof, is

attributable to a fuel source or technology defined as *BC Clean*; or,

- An existing simple-cycle or combined-cycle generation facility is retrofitted and the incremental energy produced meets the *BC Clean* criteria for supply-side efficiency gains.

**Hydrogen** - Usually recognized as an energy currency, hydrogen can also be used as a primary fuel source for internal combustion engines.

**Municipal Solid Waste (MSW)** - Incineration of MSW to produce energy has both positive and negative environmental impacts. The release of carbon dioxide and other emissions is a negative impact; but reducing the amount of material in landfills has benefits as methane and leachate from the MSW are reduced. The combustion of MSW for electricity generation may be considered *BC Clean* provided the project can be demonstrated to provide a net environmental improvement.

### **Other Potential BC Clean Electricity Sources and Technology**

Environment Canada's eco-labelling program provides a market incentive to manufacturers and suppliers of environmentally preferable products and services, and thereby helps consumers identify products and services that are less harmful to the environment. The Environmental Choice<sup>M</sup> Program defines "Renewable Low-impact Electricity" as electricity from renewable energy sources that are apt to impose relatively low impacts on the environment and produce potential benefits including, *inter alia*, low net GHG emissions, limited or no depletion of non-renewable resources, reduced emissions of other pollutants and reduced impacts on aquatic, riparian and terrestrial ecosystems and species.

A project proponent or electricity distributor may choose to demonstrate that a project or application of technology, otherwise excluded by this guideline, qualifies for certification by the Environmental Choice<sup>M</sup> Program. The Ministry of Energy and Mines will receive such submissions and if satisfied that the project could qualify for labelling under the Environmental Choice<sup>M</sup> Program, it will be classified as a source of *BC Clean Electricity*.