

**Integrated Resource Plan**

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**Appendix 1A**

**Glossary and Abbreviations**

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## Glossary and Abbreviations

### A

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<b>AAC</b>	Annual Allowable Cuts
<b>Achievable Potential</b>	Refer to Conservation Potential Review
<b>ACP</b>	Alternative Compliance Payment
<b>AEO</b>	Annual Energy Outlook
<b>Action Plan</b>	A 10-year plan that is the outcome of the IRP and identifies the steps that BC Hydro will take to meet its customers' need.
<b>Alberta Electric System Operator (AESO)</b>	As an independent system operator, the AESO leads the operation and planning of Alberta's interconnected power system. AESO also facilitates Alberta's competitive wholesale electricity market.
<b>Alcan</b>	Alcan Inc.
<b>Alternating Current (AC)</b>	Electric current that reverses at regular intervals and has alternately positive and negative voltage. It normally has a standard frequency of 50 or 60 hertz ( <b>Hz</b> ) or cycles per second. Most of the power transmission in North America is AC transmission at 60 Hz.
<b>Ampere (A)</b>	Basic unit of measurement for the strength of an electric current
<b>Ancillary Services</b>	Services required to support the safe, reliable and stable operation of the interconnected system.
<b>Annualized cost Method</b>	The method adopted to calculate the resource option unit costs which the direct capital plus interest during construction is calculated as the basis of a uniform annual payment, based on the project life and the opportunity cost of capital (referred to as the annualized cost of capital). The annualized cost is combined with the annual operating costs, and then divided by the annual energy benefit of the project to derive the unit energy cost or divided by the resource's dependable capacity to derive the unit capacity cost.
<b>Apparent Power</b>	Voltage multiplied by current, normally measured as megavolt amperes ( <b>MVA</b> ).

<b>ATC</b>	Available Transfer Capability
<b>Attribute</b>	A characteristic that describes a resource option or portfolio, used to assess its performance in meeting the planning objectives.
<b>Average Water Conditions</b>	As amended on February 3, 2012, Special Direction No. 10 to the BCUC defines average water conditions as the average stream flows occurring in BC Hydro's historical record. Specifically, Heritage hydroelectric capability for 2011/2012 is defined as 48,200 GWh/year.

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<b>Base Load</b>	An amount of electricity required to meet minimum demands based on reasonable expectations of customer requirements.
<b>Base Resource Plan (BRP)</b>	BC Hydro's proposed action plan for meeting its current and future customers' electricity needs on a reliable and cost-effective basis.  Refer also to Action Plan and Contingency Resource Plan.
<b>BBO</b>	Billion barrels of oil
<b>B.C.</b>	British Columbia
<b>BC Energy</b>	The name of a proposed LNG export terminal in Kitimat led by Royal Dutch Shell PLC
<b>BC Hydro</b>	British Columbia Hydro and Power Authority
<b>BC Hydro Service Area</b>	The parts of B.C. that receive retail electricity service from BC Hydro. Approximately 80 per cent of B.C.'s electricity demand is in the BC Hydro service area. It excludes the area served by FortisBC (previously known as Aquila Networks Canada, West Kootenay Power and Utilicorp Networks Canada).
<b>BC Transmission Corporation (BCTC)</b>	The Crown corporation created by the government of B.C. in 2003 to plan, operate and maintain BC Hydro's high voltage transmission system. The 2010 <i>Clean Energy Act</i> consolidated BC Hydro and BC Transmission Corporation.
<b>BCEAA</b>	<i>British Columbia Environmental Assessment Act</i>
<b>BDT</b>	Bone-dry tones

<b>BHT</b>	Bottom Hole Temperature
<b>Binary Loads</b>	A load forecast terminology to refer to large, single point loads that are not conducive to a probabilistic assessment
<b>Bioenergy Phase 2 Call Request for Proposals</b>	A completed power acquisition process where BC Hydro awarded electricity purchase agreements to four biomass projects totalling 754 GWh/year of firm energy and 104 MW of capacity in 2011.
<b>BIPV</b>	Building integrated photovoltaics
<b>Blackout</b>	An accidental loss of electricity to an area.
<b>Bonneville Power Administration (BPA)</b>	Headquartered in Portland, Oregon, BPA is a federal agency under the U.S. Department of Energy. It serves the Pacific Northwest through operating an extensive electricity transmission system and marketing wholesale electrical power from federal and non-federal generation facilities.
<b>British Columbia Energy Objectives</b>	Section 2 of the 2010 <i>Clean Energy Act</i> sets out the self-sufficiency requirement and 15 objectives that BC Hydro is to respond to in the IRP.
<b>British Columbia Utilities Commission (BCUC)</b>	An independent regulatory agency of the provincial government operating under and administering the <i>Utilities Commission Act</i> . The BCUC regulates BC Hydro's domestic supply and rates and the safety and reliability of the BC Hydro system, as well as operating, management and administrative costs, and also assesses concerns from ratepayers regarding BC Hydro's service.
<b>British Thermal Unit (BTU)</b>	Imperial unit for heat energy (1 BTU = 1,055 J or $2.928 \times 10^{-4}$ kWh).
<b>Bulk Transmission</b>	The transfer of electricity on the major high-voltage transmission system that carries the majority of power from the generators to the lower-voltage distribution systems.

**Burrard Thermal Electricity Regulation**

Burrard Thermal Generating Station’s firm energy contribution is zero GWh/year as a result of subsections 3(5), 6(2)(d) and 13 of the *Clean Energy Act*. Section 2 of the Burrard Thermal Electricity Regulation states that Burrard’s dependable capacity of 900 MW is to be phased out as Mica Units 5 and 6, the Interior-to-Lower Mainland Transmission Reinforcement Project and the third transformer at Meridian Substation come into service.

**Burrard Thermal Generating Station (BGS)**

A conventional natural gas-fired, steam electric station located in Port Moody, at the western edge of the Fraser Valley, that consists of six 150 MW units, the first of which were installed in the early 1960’s.

**C**

**CAES**

Compressed Air Energy Storage

**California Energy Commission (CEC)**

The State of California’s primary energy policy and planning agency responsible for forecasting future energy needs, promoting energy efficiency through appliance and building standards, and supporting renewable energy technologies.

**Call for Tenders (CFT)**

Specified processes and procedures to award energy purchase contracts to bidders.

**Canadian Council of Ministers of the Environment (CCME)**

Comprised of environment ministers from the federal, provincial and territorial governments. These 14 ministers meet to discuss national environmental priorities and determine work to be carried out.

**Canadian Entitlement (CE)**

The Canadian 50 per cent share of the computed increase in downstream energy and capacity benefits (**DSBs**) on the Columbia River in the U.S. due to the construction and coordinated operation of Duncan, Keenleyside and Mica storage dams in Canada, as provided for under the Columbia River Treaty (1964).

**Canadian Environmental Protection Act (CEPA), 1999**

CEPA is intended to protect the environment and human health from the risks posed by harmful pollutants and to prevent new ones from entering the Canadian environment.

<b>Cap and Trade</b>	A form of regulation used to reduce the cost of pollution control by providing economic incentives for achieving emissions reductions. In a cap-and-trade system, the regulator sets limits or "caps" on emissions. Groups that intend to exceed the limits may buy emissions credits from entities that are able to stay below their designated limits. This transfer is normally referred to as a "trade".
<b>Capability</b>	The quality of being able to do a given task or to achieve a given target. In relation to the integrated electricity system, it refers to facilities that can be used under specified conditions for a given purpose. Energy capability is the amount of energy that can be generated under specified conditions by a generating unit or by the electric system over a period of time, typically expressed in GWh/year.
<b>Capacity</b>	<ol style="list-style-type: none"> <li>1. The instantaneous power output of a generator at any given time, normally measured in kilowatts (<b>kW</b>) or megawatts (<b>MW</b>), of a power plant.</li> <li>2. The instantaneous <i>electricity</i> demand at any given time, normally measured in kW or MW.</li> <li>3. A <i>transmission</i> facility's ability to transmit electricity, at any instant.</li> </ol>
<b>Capacity Credit</b>	A monetary credit applied to supply resources based on consideration of dependable generating capacity and proximity to load centres.
<b>Capacity Factor</b>	The ratio of the average annual power output to the rated power output of generating plants.
<b>Carbon Monoxide (CO)</b>	A colorless, odourless and tasteless gas, which results from incomplete oxidation of carbon in combustion.
<b>Carbon Capture and Sequestration (CCS)</b>	Capture and long term storage of carbon in forests/soils/ocean.
<b>Carbon Tax Act</b>	The <i>Carbon Tax Act</i> comes into force on July 1, 2008 and imposes the revenue neutral carbon tax announced on February 19, 2008 as part of the Government of B.C.'s budget.
<b>CBG</b>	Customer-Based Generation
<b>CBK</b>	Cranbrook Substation

<b>CBM</b>	Coal-Bed Methane
<b>CBT</b>	Columbia Basin Trust
<b>CCE</b>	Cost of Conserved Energy
<b>CEA</b>	Refer to <i>Clean Energy Act</i>
<b>CEAA</b>	<i>Canadian Environmental Assessment Act</i>
<b>CEA Objectives</b>	Refer to British Columbia Energy Objectives
<b>Certificate of Public Convenience and Necessity (CPCN)</b>	A certificate/permit issued by a public body, such as the B.C. Utilities Commission, that is charged with the supervision of public facilities, e.g., transmission carriers or public utilities. The certificate authorizes the holder of the permit to operate, or construct a public facility (such as a generating plant or transmission facilities) within a particular area. The issuance of the certificate is made after application, notice and hearing.
<b>CF DSM</b>	Capacity-Focused Demand Side Measures
<b>CFB</b>	Canadian Forces Base
<b>CFL</b>	Compact Fluorescent Lamp
<b>CH<sub>4</sub></b>	Methane (natural gas)
<b>CHC</b>	Canadian Hydraulic Centre
<b>Cheekye</b>	BC Hydro's 500 kV transmission station near Squamish; the effective Mainland terminal for the 500 kV AC interconnection to Vancouver Island
<b>CHP</b>	Combined Heat and Power (cogeneration)
<b>CI</b>	Central Interior Transmission Planning Region
<b>CIFT</b>	Cost of Incremental Firm Transmission
<b>Circuit</b>	An arrangement of connected components forming the complete path followed by an electric current. In an electric power system, it refers to specific three-phase AC transmission lines, submarine or underground cables, or a combination of them, operating as one element.
<b>Clean Development Mechanism (CDM)</b>	An arrangement under the Kyoto Protocol allowing industrialized countries with a greenhouse gas reduction commitment to invest in emission reducing projects in developing countries as an alternative to what is generally considered more costly emission reductions in their own countries.

<b>Clean Electricity</b>	Defined pursuant to the B.C. Government's Clean or Renewable Electricity Guidelines
<b>Clean Energy Act (CEA)</b>	The legislation that sets the foundation for electricity self-sufficiency, job creation and reduced greenhouse gas emissions. The Act also describes the consideration of investments in clean, renewable energy across the province.
<b>Clean or Renewable Energy</b>	Defined by the Clean Energy Act as including biomass, biogas, geothermal heat, hydro, solar, ocean, wind or other prescribed resources.
<b>Climate Action Plan</b>	A policy document produced by the B.C. Government that describes actions that will be undertaken as government moves to its target of reducing greenhouse gas emissions by 33 per cent below 2007 levels by 2020 and 80 per cent by 2050.
<b>CNC</b>	Canada – Northwest – California Project
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>CO<sub>2</sub>e</b>	Carbon dioxide-equivalent. A unit that measures the climate change potential of each of the six greenhouse gases identified in the Kyoto Protocol.
<b>Cogeneration</b>	The simultaneous production of electrical or mechanical energy and useful heat energy from a single fuel source.
<b>Columbia River Treaty (CRT)</b>	A treaty ratified in 1964 between Canada and the U.S. that enabled storage reservoirs to be built and operated in British Columbia to regulate Columbia River flows to the U.S. for power production and flood control.
<b>Combined Cycle Gas Turbine (CCGT)</b>	The combination of combustion and steam turbines to generate electricity from two thermodynamic cycles. Exhaust gases from a combustion turbine flow to a heat recovery steam generator ( <b>HRSG</b> ) that produces steam to power a steam turbine, resulting in higher thermal efficiency than achievable by operating the combustion or steam turbines individually.
<b>Commercial Operation Date (COD)</b>	The date on which a power producer begins to generate electricity for sale.

<b>Committed Resources</b>	Resources that have received BCUC and Environmental Assessment Office approval, or Board of Director approval, if required, but are not yet in-service.
<b>Community-Based Biomass Program</b>	A current acquisition process for innovative, community-level biomass energy supply solutions (5 MW or less).
<b>Conservation</b>	Reducing the level of energy service to reduce energy consumption. For example, turning off unused lights.
<b>Conservation Potential Review (CPR)</b>	<p>An assessment of the potential for electricity savings in BC Hydro’s service area under certain defined conditions compared with the expected level of electricity consumption in the absence of any new demand-side measure initiatives. The 2007 CPR estimated potential electricity savings over the 2006-2026 period through changes in technology, behaviour, lifestyle, fuel switching and customer-supplied renewable energy.</p> <p><b>Economic potential.</b> An estimate of the reduction in electricity consumption, relative to the reference case, that would occur if all electricity-saving measures costing less than a threshold value were undertaken.</p> <p><b>Achievable potential.</b> The portion of the savings identified in the economic potential that study participants estimated could be achieved within the study period through demand-side measures.</p>
<b>Contingency Resource Plan (CRP)</b>	A plan that identifies alternative sources of supply and transmission components that could be required should the Base Resource Plan not materialize as expected.
<b>CPC</b>	Columbia Power Corporation
<b>CPI</b>	Consumer Price Index
<b>CPP</b>	Critical-Peak-Pricing
<b>CPUC</b>	California Public Utilities Commission
<b>Critical Period or Water Conditions</b>	<p>The most adverse sequence of stream flows occurring within the adopted historical record. During a critical period, hydroelectric reservoirs would be drawn down to minimum levels in order to maintain service.</p> <p>Refer also to Secondary Energy, Firm Energy.</p>
<b>CSP</b>	Concentrating Solar Power

<b>CST</b>	Condensing Steam Turbine
<b>CTG</b>	Combustion Turbine Generator
<b>Current</b>	Flow of electricity passing through a conductor, measured in amperes ( <b>A</b> ). Current can be alternating ( <b>AC</b> ) or direct (unidirectional) ( <b>DC</b> ).
<b>Curtailement</b>	A reduction in demand as a result of demand-side measures or a decrease in generation output.
<b>CWS</b>	Canada Wide Standard

**D**

<b>DCAT</b>	Dawson Creek/Chetwynd Area Transmission
<b>Definition Phase</b>	The project development phase when preliminary design occurs, project scope is defined and licensing/regulatory approvals are received.
<b>Demand</b>	Customers' requirement for electric power.
<b>Dependable Capacity</b>	The maximum generator output that can be reliably supplied coincident with the system peak load, taking into account the physical state and availability of the equipment, and on water or fuel constraints. Same as Dependable Generating Capacity.
<b>Demand-Side Measures (DSM)</b>	The definition, as set out in section 1 of the <i>Clean Energy Act</i> , is “a rate, measure, action or program undertaken; (a) to conserve energy or promote energy efficiency, (b) to reduce the energy demand a public utility must serve, or (c) to shift the use of energy to periods of lower demand, but does not include (d) a rate, measure, action or program the main purpose of which is to encourage a switch from the use of one kind of energy to another such that the switch would increase greenhouse gas emissions in British Columbia, or (e) any rate, measure, action or program prescribed.”
<b>DSM Regulation</b>	B.C. Regulation 326/2008 (Ministerial Order M 271)

<b>DSM Regulation Amendment</b>	December 2011 Ministerial Order No. M335 amending the DSM Regulation, B.C. Reg. 228/2011. In addition to amending certain defined terms in the DSM Regulation, B.C. Reg. 228/2011 made substantial changes to the total resource cost test prescribed in section 4 of the regulation, which increase the benefits of demand-side measures for total resource cost test purposes.
<b>DG</b>	Distributed Generation
<b>Dependable Generating Capacity (DGC)</b>	Same as Dependable Capacity
<b>Differential Rate Impact Analysis</b>	The analysis to determine the change in average rates between different portfolios. The differential annual costs represent costs from a regulatory accounting perspective, and the resultant differential rate impact is presented as a percentage of F2011 rates.
<b>Direct Current (DC)</b>	A steady electric current that flows in one direction. A non-pulsating current, as from a battery. DC transmission, frequently referred to as high-voltage direct current ( <b>HVDC</b> ), is used in specialized applications.  Refer also to Alternating Current.
<b>Discount Rate</b>	A rate used to determine the present value of cash flows (expenses and revenues) that will occur over a period of time, reflecting the cost of capital.
<b>Discounted Cash Flow (DCF)</b>	A financial evaluation method that uses future free cash flow projections and discounts them to arrive at a present value.
<b>Dispatchable</b>	A resource whose output can be adjusted to meet various conditions including fluctuating customer demand, weather changes, outages, market price changes and non-power considerations.
<b>Distribution</b>	Delivery of electricity to retail customers, generally at voltages lower than 69 kV.
<b>Distribution Losses</b>	Refer to Line Losses
<b>Distribution System</b>	Electrical lines, cables, transformers and switches used to distribute electricity over short distances from substations to the customer, generally at voltages lower than 69 kV.

<b>Diversity</b>	In an electricity system, a relative measure of the likelihood that a series of connected loads will reach peak demand at the same time. A high diversity implies that the individual connected loads will reach their peak demand at different times while a low diversity implies that they will reach peak demand at the same time.  Refer also to Demand.
<b>DLC</b>	Demolition and Land Clearing Waste
<b>Douglas Channel LNG</b>	One of the first two LNG projects to be announced and advanced through the permitting process. The Douglas Channel LNG facility is a smaller facility than some of the other proposed LNG projects.
<b>Downstream Benefits (DSB)</b>	Refer to Canadian Entitlement.
<b>DP</b>	Dynamic Pricing
<b>E</b>	
<b>E3</b>	Energy and Environmental Economics, Inc.
<b>EA</b>	Environmental Assessment
<b>EAC</b>	Environmental Assessment Certificate
<b>EAO</b>	British Columbia Environmental Assessment Office
<b>EC&amp;E Committee</b>	Energy Conservation and Efficiency Committee
<b>Economic Potential</b>	Refer to Conservation Potential Review.
<b>Effective Load Carrying Capability (ELCC)</b>	The maximum peak load that a generating unit or system of units can reliably supply such that the Loss of Load Expectation will be no greater than one day in ten years.
<b>Efficiency</b>	The effective rate of conservation of a natural resource (e.g., electricity) to usable energy; the effective rate of conversion of electricity to an end use (e.g., heating).
<b>EGS</b>	Enhanced Geothermal Systems
<b>EIA</b>	U.S. Department of Energy Information Administration
<b>EK</b>	East Kootenay Transmission Planning Region
<b>Electric Capacity</b>	The maximum electric power that a device or system is capable of producing or transferring, measured in watts, kilowatts, megawatts, etc.

<b>Electric Energy</b>	The cumulative amount of electricity produced or consumed over a period of time, measured in kilowatt hours, megawatt hours, gigawatt hours, etc.
<b>Electric Power</b>	The instantaneous rate that electrical energy is produced, transmitted or consumed, measured in watts, kilowatts, megawatts, etc.
<b>Electricity</b>	A term defined as the combination of energy and capacity
<b>Electricity Demand</b>	Refer to Demand
<b>Electricity Purchase Agreement (EPA)</b>	The contract that defines the terms and conditions by which BC Hydro purchases electric energy from Independent Power Producers.
<b>Electricity Self-Sufficiency Regulation</b>	A regulation issued by the B.C. Government which provides that the water conditions prescribed for purposes of the Heritage hydroelectric capability are average water conditions.
<b>EMA</b>	<i>B.C. Environmental Management Act</i>
<b>Emerging Technologies</b>	Technology at the first stages of development or demonstration. Not readily available in commercial markets.
<b>Emissions</b>	Any direct or indirect discharge of solid, liquid or gaseous pollutants into the air.
<b>Emissions Standards Act</b>	The <i>Greenhouse Gas Reduction (Emissions Standards) Statutes Amendment Act, 2008</i>
<b>End use</b>	An amenity or service produced by energy and other components or equipment such as buildings, motors or lights. e.g., lighting is an end use produced by electricity and lighting equipment. End use is often used interchangeably with energy service.
<b>Energy</b>	The amount of electricity produced or used over a period of time, usually measured in kilowatt hours, megawatt hours and gigawatt hours.
<b>Energy and Mines Statutes Amendment Act</b>	The legislation introduced by the B.C. Provincial Government via Bill 30 in March 2012 to streamline and clarify regulations in four existing acts – the <i>Oil and Gas Activities Act</i> , the <i>Utilities Commission Act</i> , the <i>Clean Energy Act</i> and the <i>Strata Property Act</i> .

<b><i>Energy and Water Efficiency Act</i></b>	The legislation introduced by the B.C. Provincial Government via Bill 32 in March 2012; the legislation replaces the <i>Energy Efficiency Act</i> .
<b>Energy Capability</b>	Energy Capability is the amount of energy that can be generated under specified conditions by a generating unit or by the electric system over a period of time, typically expressed in GWh/year.
<b>Energy Efficiency (EE)</b>	A reduction in energy usage to provide the same level of energy service, such as lighting, cooling or motor torque.
<b>Energy Efficiency Programs</b>	A subset of demand-side measure programs, which excludes Load Displacement.
<b>Energy Service</b>	An amenity or service produced jointly by energy and other components or equipment such as buildings, motors and lights. Examples of energy services include residential space heating, commercial refrigeration, aluminium smelting and public transit. The same energy service can frequently be supplied with different mixes of equipment and sources of energy.
<b>ENGO</b>	Environmental Non-Governmental Organization
<b>Environmental Attributes</b>	Attributes used to provide high level descriptions of the environmental footprint of resource options used in the IRP portfolio analysis
<b>EPRI</b>	Electric Power Research Institute
<b>EPVs</b>	Electric Plug-in Vehicles
<b>EU</b>	Evidentiary Update
 <b>F</b>	
<b>F12/F14 RRA</b>	F2012/F2014 Revenue Requirements Application
<b>F2006 Call for Tenders (CFT)</b>	An all-source call for tenders ( <b>CFT</b> ) targeting approximately 2,500 GWh per year of firm energy. A proportion of non-firm energy will also be purchased.
<b>FACOS</b>	Fully Allocated Cost Of Service
<b>Federal Energy Regulatory Commission (FERC)</b>	A U.S. agency that regulates the interstate transmission of natural gas, oil, and electricity.

<b>Firm Energy</b>	Firm energy refers to electricity that is available at all times.
<b>Firm Energy Load Carrying Capability (FELCC)</b>	The maximum amount of annual energy that a hydroelectric system can produce under critical water conditions.
<b>Firm Gas</b>	The assured supply of natural gas as fuel for thermal generating stations.
<b>Firm Gas Contract</b>	A contract to supply or purchase a specified volume of gas at a fixed price.
<b>Firm Transmission</b>	Transmission service that is reserved and/or scheduled with a priority that will not be interrupted for economic reasons.  Refer to also Non-Firm Transmission Service.
<b>Fiscal Year (F)</b>	BC Hydro's fiscal year ending March 31. Dates marked with an F refer to the year ending March 31 in the year given.
<b>Fixed Cost Resource</b>	Supply- or demand-side resources, in which unit energy costs are considered constant regardless of whether the plant is actually dispatched. Examples of fixed cost resources include IPP contracts subject to a take or pay clause and resources that cannot be dispatched to follow the load.
<b>FNG</b>	Fort Nelson Generating Station
<b>FN/HRB</b>	Fort Nelson/Horn River Basin. Refer to Horn River Basin.
<b>Fort Nelson Generating Station Upgrade (FNGU)</b>	A proposed upgrade to BC Hydro's Fort Nelson Generating Station resulting in the plant being converted from a SCGT to a CCGT.
<b>Frequency</b>	The number of cycles per second (hertz or Hz) at which an alternating current oscillates. The standard frequency of AC transmission systems in North America is 60 cycles per second, or 60 hertz.
<b>Fuel Substitution</b>	The ability to use a different fuel to produce the same energy service. For example, natural gas can be used for space heating instead of electricity.

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**G**

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<b>G</b>	Potential generation plant gate area
<b>Gap</b>	Refer to Load Resource Gap.
<b>Gas Transportation Cost</b>	The amount paid for gas delivery service.
<b>Generation</b>	The production of electricity.
<b>Generator</b>	A machine that converts mechanical energy into electric energy.
<b>Geothermal Energy</b>	Energy that is generated by converting hot water or steam from geothermal reservoirs in the earth's crust into electricity.
<b>GH</b>	Garrad Hassan Canada Inc.
<b>GHG Emissions Intensity</b>	Refers to GHG emissions per unit of electrical production, measured in units of tonnes of CO <sub>2</sub> e/GWh.
<b>GHG Offset</b>	Reducing total emissions of greenhouse gases by decreasing emissions from sources other than a given source. For example, reducing methane emissions from landfill sites can be an offset for a thermal generation plant.
<b>Gigajoule (GJ)</b>	One billion joules of energy.
<b>Gigawatt Hour (GWh)</b>	One billion watt hours; one million kilowatt hours (an amount of electric energy that will serve about 100 residential customers for one year).
<b>GIS</b>	Geographical Information System
<b>GJ/h</b>	Gigajoule per hour (1.055 GJ/h = 1 million BTU/h)
<b>GLN</b>	Glenannan Substation
<b>Global Energy</b>	Global Energy Decisions, Inc.
<b>Good Utility Practice</b>	Any of the practices, methods and acts engaged in by significant portion of the electric utility industry.

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<b>Gordon M. Shrum (GMS) Generating Station</b>	Located on the Peace River 23 km upstream from Peace Canyon Dam. Together with W.A.C. Bennett Dam it comprises the Portage Mountain Project. The first three units were in service in 1968 and all 10 units in service by 1980. GMS is undergoing various unit upgrades to improve its efficiency, safety, and the reliability of unit operations.
<b>GPG</b>	Green Power Generation
<b>GPS</b>	Geographical Positioning System
<b>Green Energy</b>	Energy produced from a green power project. BC Hydro uses the EcoLogo standard to determine green projects.
<b>Greenfield Site</b>	Land on which no development has previously taken place
<b>Greenhouse Gas Reduction (Cap and Trade) Act (GHG Cap and Trade Act)</b>	The <i>Greenhouse Gas Reduction (Cap and Trade) Act</i> comes into force by regulation. The purpose of this Act is to enable the reductions of GHG emissions through a cap-and-trade system.  Refer also to Cap and Trade.
<b>Greenhouse Gas Reduction (Emission Standards) Statutes Amendment Act, 2008 (Emission Standards Act)</b>	The <i>Greenhouse Gas Reduction (Emission Standards) Statutes Amendment Act, 2008</i> amends the <i>B.C. Environmental Management Act</i> to require all new electricity generating facilities and expansion to existing facilities using fossil fuels other than coal to have net zero GHG emissions as soon as the Act comes into force.
<b>Greenhouse Gas Reduction Targets Act (GGRTA)</b>	The <i>Greenhouse Gas Reduction Targets Act</i> was brought into force on January 1, 2008 and sets into law British Columbia's greenhouse gas emissions target of at least 33 per cent below 2007 levels by 2020, and at least 80 per cent below 2007 levels by 2050.
<b>Greenhouse Gases (GHG)</b>	Greenhouse gas – any of the atmospheric gases that contribute to climate change such as water vapour, methane, or carbon dioxide
<b>Grid</b>	A network of distribution or transmission lines
<b>Gross Domestic Product (GDP)</b>	All economic activity (i.e., the monetary value of all goods and services produced) taking place in the geographical region of B.C. Provincial GDP is one of the key drivers in the BC Hydro Electric Load Forecast.
<b>GS</b>	Generating Station

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<b>GVRD</b>	Greater Vancouver Regional District
<b>GW</b>	Gigawatt
<b>GWh/year</b>	Gigawatt hours per year

**H**

<b>ha</b>	Hectares
<b>HDR</b>	Hot Dry Rock
<b>Head</b>	The vertical distance between the water levels immediately upstream and downstream of a turbine or discharge structure, representing the potential energy of the water that can generate electricity as the water falls to the lower elevation.
<b>Heat Content</b>	<p>A measure of the energy released when a fuel is burned, and the basis for calculating the energy efficiency of a thermal process.</p> <p><b>Higher heating value (HHV)</b> includes the heat released when water produced by combustion of the fuel’s hydrogen condenses.</p> <p><b>Lower heating value (LHV)</b> excludes the heat released by condensing water, assuming it stays in vapour form. For natural gas, LHV is about 90 per cent of HHV.</p>
<b>Heat Rate</b>	A measure of generating station thermal efficiency, computed by dividing the heat content of the fuel used for generating electricity by the resulting net electric energy generated. Typically expressed in GJ/GWh or kJ/kWh.
<b>Heat Recovery Steam Generator (HRSG)</b>	An electricity generator that takes heat from high-temperature exhaust gases and uses it to power a steam turbine, often as part of a combined cycle gas turbine.
<b>Heavy Load Hours (HLH)</b>	The time of day in which peak demand occurs. On BC Hydro’s system, Heavy Load Hours are from 6 am to 10 pm, Monday to Friday, excluding statutory holidays. For electricity trading activity, most contracts define Heavy Load Hours according to U.S. standards defined by the North American Electric Reliability Council, from 6 am to 10 pm, Monday to Saturday, excluding U.S. holidays.

<b>Henry Hub</b>	One of the major pipeline hubs of the North American natural gas market, located in Louisiana. Used as a reference point for quoting the market price of gas.
<b>Heritage Assets/Resources</b>	BC Hydro's generation and storage assets as identified in Schedule 1 of the <i>Clean Energy Act</i> .
<b>Heritage Contract</b>	A contract between BC Hydro's generation and distribution lines of business to ensure BC Hydro customers benefit from the existing low-cost heritage resources in the BC Hydro system.
<b>Hertz (Hz)</b>	Cycles per second. Unit for measuring the frequency of an AC system.
<b>Higher Heating Value (HHV)</b>	Refer to Heat Content
<b>High-Voltage Direct Current (HVDC)</b>	Direct (non-alternating) current for transmission at high voltage.  Refer also to Direct Current.
<b>Horn River Basin (HRB)</b>	A geographic area in Northeast B.C. where there is a large natural gas shale field.
<b>Hub</b>	A location where many pipelines interconnect.  Refer also to Sumas Hub and Henry Hub.
<b>HV</b>	High Voltage
<b>Hydraulic Fracturing</b>	The propagation of fractures in a rock layer caused by the presence of a pressurized fluid. Hydraulic fracture is one means by which gas and petroleum from source rocks may migrate to reservoir rocks. This process is used to release petroleum, natural gas, coal seam gas, or other substances for extraction, via a technique called induced hydraulic fracturing, often shortened to fracking or hydrofracking.
<b>Hydro and Power Authority Act [RSBC 1996]</b>	Provides the legislative requirements within which BC Hydro acts.
<b>Hydroelectric Generation</b>	Production of electricity by using turbines propelled by falling water and connected to a generator.

**Hydro Simulation Model (HYSIM)** BC Hydro’s in-house deterministic monthly time-step dispatch model for simulating the year-to-year variability in stream flow conditions and energy storage capability of the system, where the resources are dispatched economically to meet load and serve export. Main applications include analyzing the economics of potential resources acquisitions alternatives and sequences; evaluating proposed system operating criteria and constraints; estimating future operating costs and fuel/market requirements and determining system capability.

**I**

**IBA** Impact Benefits Agreement

**ICE** Internal Combustion Engine

**ICG** Island Generation Plant (formerly Island Cogeneration Plant)

**Identification Phase** The phase when a project is conceptualized and feasibility is determined.

**IEPR** Integrated Energy Policy Report

**ILM** Interior to Lower Mainland

**Implementation Phase** The phase in which detailed design is performed, equipment is procured, and the project is constructed and commissioned.

**Independent Power Producer (IPP)** A non-utility-owned electricity generating facility that produces electricity for sale to utilities or other customers.

**Inflow** Water that flows into a reservoir.

**Ingledow Substation** 500 kV substation situated in Surrey, B.C.

**Integrated Coal Gasification Combined Cycle (IGCC)** Coal gasification is the process of converting coal to a gaseous fuel through partial oxidation. The coal is fed into a high-temperature pressurized container along with steam and a limited amount of oxygen to produce a gas. IGCC systems combine a coal gasification unit with a gas fired combined cycle power generation unit, which increases thermal efficiency.

<b>Initial LNG</b>	Two LNG projects that are the initial industrial LNG loads being considered in the mid 2011 Load Forecast and the IRP: (1) Kitimat LNG, proposed by Apache Canada Ltd., EOG Resources Canada Inc. and Encana Corporation; and (2) Douglas Channel LNG, proposed by Douglas Channel Energy Partnership.
<b>Integrated Electricity Plan (IEP)</b>	The documented plan resulting from the 2006 Integrated Electricity Planning process.
<b>Integrated Electricity System</b>	An interconnected network of transmission lines, distribution lines and substations linking generating stations to one another and to customers throughout a utility's service area. Excludes customers located in remote locations who are connected via non-integrated generating plants.
<b>Integrated Resource Plan (IRP)</b>	The document describing BC Hydro's long term plan to meet customers' needs using existing and new resources and demand-side measures.
<b>Integrated Resource Planning</b>	The process of long-term planning of electricity generation, transmission facilities, and demand-side resources to reliably meet forecast requirements.
<b>Interior-to-Lower Mainland Upgrade Project (5L83)</b>	A new 500 kV transmission line from Nicola substation near Merritt to Meridian substation near Coquitlam, which is starting construction in 2012 and planned in-service date is January 2015.
<b>Intermittent Resource</b>	A source of energy that has varying output due to natural changes, and is not dispatchable; can also be referred to electricity supply that fluctuates or is not available at all times.
<b>Interruptible Energy</b>	A supply of electricity that is subject to short- or long-term discontinuation with or without notice.  Refer also to Firm Energy, Curtailment.
<b>Intertie</b>	The transmission connections between BC Hydro and external electric systems (e.g., BC Hydro – U.S. and BC Hydro – Alberta).
<b>Intervener</b>	An individual or organisation who registers with BCUC to be involved in the review of a regulatory application.
<b>IR</b>	Information Request

<b>ISD</b>	In-Service Date
<b>ISO</b>	Independent System Operator
<b>IUPs</b>	Investigative Use Permits

**J**

<b>Joule (J)</b>	Metric unit of measurement for heat energy (1 J = 9.4821 x 10 <sup>-4</sup> BTU)
John Hart Generating Station ( <b>JHT</b> )	A 125 MW facility located on the Campbell River on Vancouver Island. The generating station was designed and built circa 1940. The replacement project CPCN Application was filed in May 2012. The replacement project is an initiative to reduce risk exposure which could result from significant environmental implications stemming from “forced outages”.

**K**

<b>Kelly Lake</b>	Location of one of BC Hydro’s main transmission substations near Merritt (between Lillooet and Clinton) which is also close to a major gas pipeline. It is used to represent the interconnection point for new generic thermal generation located in the interior of B.C.
<b>Kerr Wood Leidal (KWL)</b>	Kerr Wood Leidal Associates Ltd.
<b>Kilovolt (kV)</b>	One thousand volts.
<b>Kilovolt Ampere (kVA)</b>	One thousand volt amperes; the unit of measure of apparent power.
<b>Kilovolt Ampere Reactive (kVAr)</b>	One thousand VAr. The unit of measure of reactive power.
<b>Kilowatt (kW)</b>	One thousand watts; the commercial unit of measurement of electric power. A kilowatt is the flow of electricity required to light ten 100-watt light bulbs.
<b>Kilowatt Hour (kWh)</b>	One thousand watts used for a period of one hour; the basic unit of measurement of electric energy. On average, residential customers in B.C. use about 10,000 kWh per year.
<b>KL</b>	Kelly Nicola Transmission Planning Region

**Kyoto Protocol** An international agreement with the objective of industrialized countries reducing their collective emissions of greenhouse gases by 5.2 per cent compared to the year 1990. The goal is to lower overall emissions from six greenhouse gases – carbon dioxide (**CO<sub>2</sub>**), methane (**CH<sub>4</sub>**), nitrous oxide, sulphur hexafluoride, HFCs and PFCs – calculated as an average over the five-year period of 2008-2012.

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**L**

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**Large Hydro (Site C)** Site C is a proposed third dam and hydroelectric generating station on the Peace River in Northeast B.C.

**LGIC** Lieutenant Governor in Council

**Levelized Cost/Price** Levelizing is a method of converting a non-uniform stream of energy costs (or prices) into a present value equivalent uniform cost (or price) series.

**Landfill Gas (LFG)** Approximately 50 per cent methane and 50 per cent CO<sub>2</sub>, as well as a small amount of other organic compounds. Biogas is produced by the anaerobic decomposition of organic materials in landfills.

**LFV** Lower Fraser Valley

**LGS** Large General Service

**Light Load Hours (LLH)** The time of day in which off-peak demand occurs. On BC Hydro's system, Light Load Hours are from 10 pm to 6 am, Monday to Friday, and all hours on Saturday, Sunday, and Statutory holidays.  
Refer also to Heavy Load Hours.

**Li-ion** Lithium Ion

**Line Losses** Reduction in capacity and energy transferred as resistance converts electricity to heat in electrical equipment and along transmission lines.

**Liquefaction** The process by which natural gas is converted to liquid through refrigeration. Liquefaction facilities are important infrastructure in the LNG production and transportation process. Liquefaction reduces the volume by approximately 600 times, making it more economical to transport between continents in specially designed ships.

<b>Liquefied Natural Gas (LNG)</b>	Natural gas in a liquid form. When natural gas is cooled to minus 259 degrees Fahrenheit (minus 161 degrees Celsius) through liquefaction, it becomes a clear, colorless, odourless liquid.
<b>LM</b>	Lower Mainland Transmission Planning Region
<b>LM/VI</b>	Lower Mainland/Vancouver Island
<b>LNG Strategy</b>	A term used to describe the B.C. Government's Natural Gas Strategy as announced on February 3, 2012.
<b>Load</b>	The amount of electricity required by a customer or group of customers.
<b>Load Centre</b>	An area with a significant number of electricity customers, which makes it an important point for power delivery.
<b>Load Displacement (LD)</b>	A reduction in electricity sales due to customer self-generation. Refer also to Curtailment, Load Shifting.
<b>Load Factor</b>	The ratio of the average demand supplied during a given period to the peak demand occurring during the same period.
<b>Load Forecast</b>	The expected load requirements that an electricity system will have to meet in future years.
<b>Load Forecasting</b>	The process to determine the expected amount of electricity required to meet customer needs in future years.
<b>Load-Resource Balance/Gap (LRB)</b>	The difference between B.C. Hydro's Load Forecast and existing and committed resources available to meet the load.
<b>Load Shape</b>	The variation in electrical load over time, usually hour-by-hour. A load shape can be for the electricity system, a customer, or an end-use over a set period of time such as a day or a year.
<b>Load Shifting</b>	A utility demand-side measure program to move energy consumption from one period of time to another, usually from periods of high consumption to periods of low consumption (i.e., from on-peak to off-peak).

<b>Long-Term Acquisition Plan (LTAP)</b>	BC Hydro's 2008 plan of resource development actions over the next 10 years that, when added to the existing base of resources, will meet its customers' electricity needs through the LTAP study period.
<b>Loss of Load Expectation (LOLE)</b>	The sum, over a year, of the probability of not meeting the peak loads on all days.
<b>Lower Heating Value (LHV)</b>	Refer to Heat Content.
<b>LRDW</b>	Land and Resource Data Warehouse
<b>LRMC</b>	Long-Run Marginal Cost
<b>LTETI</b>	Long-Term Electricity Transmission Inquiry
<b>LV</b>	Low Voltage

**M**

<b>M</b>	Million
<b>MAD</b>	Mean Annual Discharge
<b>Maintain Burrard</b>	Maintaining Burrard as currently configured
<b>Market Heat Rate</b>	A measure of the relationship between electricity and gas markets, obtained by dividing the market electricity price (in \$/GWh) by the market cost of gas (in \$/GJ).
<b>Market Price Scenario</b>	The analysis based on a set of Natural Gas, GHG, Whole Sale Electricity and REC Prices that have internally consistent assumptions.
<b>Market Transformation</b>	Refers to a permanent change in the structure or functioning of markets, including more energy efficient behaviour among customers and higher market penetration of energy-efficient products, as a result of demand-side measure programs that reduce barriers to energy efficiency. These market changes are likely to persist in the absence of continued program activity.
<b>MCA</b>	Mica Transmission Planning Region
<b>MCFC</b>	Molten Carbonate Fuel Cell
<b>MCR</b>	Marginal Cost Recovery
<b>MEM</b>	British Columbia Ministry of Energy and Mines
<b>Megajoule (MJ)</b>	One million joules

<b>Megawatt (MW)</b>	A unit of electrical power equal to one million watts.
<b>Mica</b>	Earthfill dam and four-unit 1,792 MW underground power house located 135 kilometres north of Revelstoke. Two additional generation units are under construction and planned to be in service in 2014 and 2015 respectively.
<b>Mica Units</b>	Mica Unit 5 and Mica Unit 6
<b>Mid-Columbia (Mid-C)</b>	Wholesale electricity trading hub located in the U.S. Pacific Northwest.
<b>MMBTU</b>	One Million British Thermal Units
<b>MMK</b>	MMK Consulting Inc.
<b>MoF</b>	British Columbia Ministry of Finance
<b>MoFML</b>	Ministry of Forests, Mines and Lands
<b>MoFR</b>	British Columbia Ministry of Forests and Range
<b>Monte Carlo Simulation</b>	<p>A Monte Carlo simulation is a looped modelling application used to characterize the impacts of uncertain parameter input values on the output value of a model.</p> <p>A simple, single variable Monte Carlo application could be described through 5 basic steps:</p> <ol style="list-style-type: none"><li>1. Specify the model with fixed and uncertain parameter values.</li><li>2. Specify a probability distribution describing possible values for the uncertain parameter(s).</li><li>3. Run the model through a loop, each time drawing a random sample from the probability distribution and assigning that value for the fixed parameter(s).</li><li>4. Collect the outputs from all of the model runs into a distribution of possible model values.</li><li>5. Characterize the distribution through either figures (e.g., a cumulative distribution function) and/or statistics (e.g., mean, 10<sup>th</sup> percentile, etc.).</li></ol>
<b>MPA</b>	Marine Protected Area
<b>Multi-Attribute Portfolio Analysis (MAPA)</b>	A spreadsheet-based model used to tabulate the environmental and economic development attributes of the portfolios.

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<b>Municipal Solid Waste (MSW)</b>	Organic material derived from plants used as a fuel source for thermal generation.
<b>MVA<sub>r</sub></b>	Megavolt Ampere Reactive
<b>MWh</b>	Megawatt hour
<b>MWA<sub>s</sub></b>	Marine Wildlife Areas
<b>N</b>	
<b>N<sub>2</sub></b>	Nitrogen
<b>N<sub>2</sub>O</b>	Nitrous Oxide
<b>NaS</b>	Sodium Sulphur
<b>NC</b>	North Coast Transmission Planning Region
<b>Near Commercial Technologies</b>	Leading-edge and emerging technologies that are not yet being utilized at a utility scale or do not yet have operational project experience. Examples in the context of the IRP include: Ocean wave, tidal, fuel cells and IGCC.
<b>NEB</b>	Non-Energy Benefits related to demand-side resource benefits, an example of NEBs can be the operation and maintenance savings resulting from the installation of an energy efficient measure.
<b>NEO</b>	North East Oregon Substation
<b>Net Metering</b>	A system that allows customers with their own small on-site generation facilities (such as solar panels) to "bank" electricity that they generate in excess of their needs and consume electricity from the grid when they need it.
<b>Net Present Value (NPV)</b>	The difference between the present value of benefits and the present value of costs (including capital, operating, maintenance and administration costs) for a given discount rate.
<b>NETL</b>	Northeast Transmission Line
<b>Network Integration Transmission Service (NITS)</b>	A type of transmission service that allows transmission customers to transmit electricity across the network to their customers using existing, planned and purchased resources.
<b>NGO</b>	Non-Governmental Organization

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<b>Nominal Growth/ Nominal Price</b>	<p>Growth or price measured in current dollars at the time the goods are produced; change including the amount of inflation.</p> <p>Refer also to Real Growth/Real Price.</p>
<b>Non-Firm Energy</b>	<p>In the case of hydroelectric projects, energy that is available when stream flow exceeds the flow in the critical period.</p> <p>In the case of thermal resources, incremental energy that is available when plant availability exceeds estimates.</p> <p>In the case of Energy Purchase Agreements, energy that is available in addition to the amount under contract that is considered reliable.</p> <p>Refer to Energy.</p>
<b>Non-Firm Transmission Service</b>	<p>Point-to-point transmission service that is scheduled and paid for on an as-available basis and is subject to interruption for economic reasons.</p>
<b>Non-Firm/Market Allowance</b>	<p>The amount of energy from non-firm sources, external to BC, that BC Hydro previously determined that it could rely on with a high degree of confidence during periods of low water conditions on the BC Hydro system.</p>
<b>Non-Integrated Areas (NIA)</b>	<p>BC Hydro service areas that are not connected to the transmission grid.</p>
<b>Non-Participant Test</b>	<p>A DSM benefit-cost test that indicates the impact of a DSM initiative or portfolio from the perspective of BC Hydro customers who do not participate in that program or portfolio (also referred to as the Ratepayer Impact Measure). The benefit-cost ratio is calculated as follows:</p> $\frac{\text{PV (Avoided electric energy costs + avoided electric capacity costs)}}{\text{PV (BC Hydro program costs + BC Hydro incentive costs + BC Hydro allocated supporting initiative costs + BC Hydro lost revenues)}}$
<b>Non-Power</b>	<p>Those features of electric system operations that are not related to the production of electricity, such as marketing and billing, fish and wildlife preservation, and recreation uses.</p>

<b>North American Electric Reliability Corporation (NERC)</b>	NERC's mission is to ensure that the bulk electric system in North America is reliable, adequate and secure. Amongst other things, NERC sets standards for the reliable operation and planning of the bulk electric system and monitors and enforces compliance with reliability standards.
<b>NOx</b>	Oxides of Nitrogen
<b>NPP</b>	Net Primary Productivity
<b>NRCan</b>	Natural Resources Canada
<b>NSA</b>	Negotiated Settlement Agreement
<b>NSP</b>	Negotiated Settlement Process
<b>NTL</b>	Northwest Transmission Line
<b>NYMEX</b>	New York Mercantile Exchange

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**O**

<b>Off-Peak</b>	Refer to Light Load Hours.
<b>OMA</b>	Operation, Maintenance and Administration
<b>Open Access Transmission Tariff (OATT)</b>	The rates, terms and conditions for Point-to-Point Transmission Service ( <b>PTP</b> ), Network Integration Transmission Service ( <b>NITS</b> ), Ancillary Services and Interconnection Service. These rates apply to wholesale transmission customers. The OATT replaces BC Hydro's Wholesale Transmission Services Tariff ( <b>WTS</b> ).
<b>OREG</b>	Ocean Renewable Energy Group
<b>Outage</b>	A planned or unplanned interruption of one or more elements of an integrated power system.

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**P**

<b>Particulate Matter (PM)</b>	A complex mixture of extremely small particles and liquid droplets. It is made up of a number of components, including acids, organic chemicals, metals, and soil or dust particles.
<b>Peak Capacity</b>	The maximum amount of electrical power that generating stations can produce in any instant.
<b>Peak Demand/Load</b>	The maximum instantaneous demand on a power system. Normally, the maximum hourly demand.

<b>Peaking</b>	Meeting peak system loads
<b>Peaking Capability</b>	The highest peak demands that part or all of the integrated system can generate and transmit
<b>Persistence</b>	The timeframe during which demand-side measures produce electricity savings that are attributable to the utility's actions.
<b>PGTC</b>	Prince George to Terrace Capacitors
<b>Photovoltaic (PV)</b>	Direct conversion of light into electricity by semi-conductor diodes called photovoltaic cells, especially using sunlight.
<b>Planned Resource</b>	A planned resource is one that BC Hydro is planning to pursue and is taking actions to acquire or develop. Planned resources have not necessarily received regulatory or Board of Director approval.
<b>Planning Period/Planning Horizon</b>	Period over which the operation of the various elements of the power system are modelled.
<b>PM10</b>	Particulate Matter 10 microns or less in diameter
<b>PM2.5</b>	Particulate Matter 2.5 microns or less in diameter
<b>POI</b>	Point of Interconnection
<b>Policy Action</b>	References specific B.C Government energy-related goals from the 2007 Energy Plan.
<b>Portfolio</b>	A group of individual resource options to be acquired in a sequence over time to fill customers' future electricity needs.
<b>Portfolio Analysis</b>	A process of developing and evaluating resource portfolios, each consisting of a combination of supply side and demand-side resources, which meet customers' electricity needs.
<b>Portfolio Attribute</b>	Refer to Attribute.
<b>Power</b>	The instantaneous rate at which electrical energy is produced, transmitted or consumed, typically measured in watts, kilowatts ( <b>kW</b> ), or megawatts ( <b>MW</b> ).

<b>Power Factor</b>	The power factor is the ratio of usable power ( <b>kW</b> ) to reactive power ( <b>kVAr</b> ) in a circuit. It varies between zero and one, and is normally given as a percentage (zero to 100 per cent). BC Hydro applies a power factor surcharge to customers whose power factor drops below 90 per cent.
<b>Power Smart</b>	The brand name of BC Hydro's demand-side measure initiatives.
<b>Power Transfer Capability</b>	The ability of a given section of a transmission system to safely and reliably transfer power, typically measured in watts ( <b>W</b> ), kW, or MW.
<b>Powerex</b>	Powerex Corp.
<b>Powertech</b>	Powertech Labs Inc.
<b>PR</b>	Peace River Transmission Planning Region
<b>Present Value (PV)</b>	Today's discounted value of future receipts or expenditures.  Refer also to Discount Rate and Net Present Value.
<b>Procedural Conference</b>	Under section 12 of the <i>Administrative Tribunals Act</i> , the BCUC may arrange a procedural conference for more complex or detailed applications and give notice to parties to attend.
<b>PSP</b>	Power Smart Partner
<b>PTR</b>	Peak Time Rebate
<b>Pumped Storage (PS)</b>	The use of electricity generated during off-peak hours to pump water from a lower elevation reservoir to a higher reservoir. The stored water is then released during peak demand periods and used to propel a reversible pump/turbine generator before returning to the lower reservoir.
<b>Purchases</b>	The acquisition of electricity from other utilities or independent power producers.

## **R**

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<b>R</b>	New road corridor linking to existing road infrastructure
<b>Rate</b>	Term used for a utility's unit price of service.
<b>Rate Impact</b>	Refer to Differential Rate Impact Analysis.

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<b>Rate Option</b>	Same as Rate Structure
<b>Rate Structure</b>	Represents the set of rates paid by a class of customers (e.g., residential) for use of electricity.
<b>Ratepayer Impact Measure (RIM)</b>	Refer to Non-Participant Test.
<b>Reactive Compensation</b>	Provides additional reactive power to support voltage and increase the power transfer capability of the transmission system.
<b>Reactive Power</b>	<p>Power that supplies the electromagnetic fields necessary to maintain the flow of electrical energy. The energy associated with reactive power is zero. The unit of reactive power is the VAR or kilovar (<b>kVAr</b>). Most load types require some reactive power along with the active power that produces useful work. When the reactive power supply in a transmission system is insufficient, voltages decline to unacceptable levels.</p> <p>Refer also to Reactive Compensation, Power Factor.</p>
<b>Real Growth/ Real Price</b>	<p>Growth or price measured in constant dollars; change discounted by the amount of inflation.</p> <p>Refer also to Nominal Growth/Nominal Price.</p>
<b>RECs</b>	Renewable Energy Credits
<b>REEPS</b>	Residential End-Use Energy Planning System
<b>Regasification</b>	Regasification is the process of converting LNG back to gas by passing the liquid through vaporizers that warm it.
<b>Reinforcement</b>	Improvements in the transmission system to maintain or increase reliability and security of supply.
<b>Relative Likelihood Factors</b>	The measure of probability or likelihood of a scenario will occur in relation to other scenarios; same as Weighting Factors
<b>Reliability</b>	A measure of the adequacy and security of electric service. Adequacy refers to the existence of sufficient facilities in the system to satisfy the load demand and system operational constraints. Security refers to the system's ability to respond to transient disturbances in the system.

<b>Reliability-Must Run (RMR) Generation</b>	Generation resources that can be run dependably whenever required for operational safety reasons, including maintaining the stability and reliability of the system. In B.C., reliability-must run generation resources are essentially located in the coastal generation region, which includes the Vancouver Island, Lower Mainland, and Bridge River areas.
<b>Remote Community Electrification Program (RCE)</b>	A BC Hydro program which offers off-grid service to remote communities in the province that are not currently served by BC Hydro.
<b>Renewable Portfolio Standards (RPS)</b>	Standards established in 25 U.S. states requiring electricity supply portfolios of utility providers to have an increased proportion of renewable resources.
<b>Repowering</b>	Rebuilding and replacing major components of a power plant instead of building a new one.
<b>Reserve</b>	System generating capacity beyond that required to meet peak demand, ensuring sufficient generation is available if some generating units are not available; necessary to meet reliability criteria for planning and operation.
<b>Reservoir Storage</b>	The volume available in a reservoir to hold water for power generation or flood control.
<b>Residential Inclining Block (RIB) Application</b>	A two-step inclining block rate application BC Hydro filed with the BCUC on February 26, 2008 designed to encourage energy conservation in the residential sector.
<b>Resource Option</b>	A source of electricity that is available to help meet or reduce electricity demand, including generation, purchases, demand-side measures and transmission facilities.
<b>Resource Options Report (ROR)</b>	Identifies a broad range of resources and technologies that could potentially be used to meet future electricity demand. The 2010 ROR is Appendix 3A to the IRP.
<b>Resource Planning Guidelines</b>	The B.C. Utilities Commission's mandate includes the evaluation of the resource plans of energy utilities to facilitate the cost-effective delivery of secure and reliable energy services. Issued in December 2003, the Resource Planning Guidelines outline a comprehensive process to assist the development of such plans.

<b>Resource Smart</b>	BC Hydro's program, introduced in the late 1980s, promotes the identification, study and implementation of projects that provide cost-effective energy and capacity gains at existing BC Hydro facilities.
<b>REV</b>	Revelstoke Ashton Creek Transmission Planning Region
<b>Revelstoke</b>	Concrete gravity dam with a five-unit powerhouse capable of a total of 2,500 MW. There is provision for one additional generating unit ( <b>Revelstoke Unit 6</b> ). The power plant takes advantage of regulation provided by Mica Dam.
<b>Revenue Requirements Application (RRA)</b>	Application before the B.C. Utilities Commission expected to determine the revenues BC Hydro will need for its operations, to ensure a safe and reliable supply of electricity to its customers.
<b>REZ</b>	Renewable Energy Zone
<b>RFEOI</b>	Request For Expression of Interest
<b>RFP</b>	Request For Proposals
<b>Right-Of-Way (ROW)</b>	Rights to make use of land owned by another to allow the construction and operation of electrical transmission or distribution facilities.
<b>Risk Framework</b>	The general approach by which BC Hydro incorporated uncertainty into the IRP analysis.
<b>RODAT</b>	Resource Options Database
<b>ROMAP</b>	Resource Options Mapping Database
<b>ROU</b>	Resource Options Update
<b>RPCP</b>	Regional Planning Contingency Plan
<b>Run-Of-River (RoR)</b>	A hydroelectric facility that operates with no significant storage facilities.
<b>Ruskin Dam &amp; Powerhouse Upgrade Project (Ruskin)</b>	The facility is located on Stave River, Mission; and is the third most downstream generating facility on the Stave River System. The seismic upgrade and powerhouse improvements project submitted its CPCN Application in 2011 and final approval granted in April 2012.

**S**

<b>S. 1766</b>	Senator Bingaman's and Senator Spector's <i>Low Carbon Economy Act</i>
<b>S. 2191</b>	Senator Lieberman's and Senator Warner's <i>America's Climate Security Act</i>
<b>S. 280</b>	Senator McCain's and Senator Lieberman's <i>Climate Stewardship and Innovation Act</i>
<b>SB</b>	Senate Bill
<b>Scenario Analysis</b>	A set of planning assumptions to test the long-term performance of a portfolio.
<b>SCGTA</b>	SCGT "F" class machines
<b>SCGTB</b>	SCGT aero-derivative machines
<b>SCR</b>	Selective Catalytic Reduction
<b>SD 10</b>	B.C. Government's Special Direction No. 10
<b>Secondary Energy</b>	Refer to Energy, Non-Firm Energy.
<b>Sector</b>	A group of customers having a common type of economic activity. BC Hydro divides its customers into three principal sectors: residential, commercial and industrial.  Refer also to Sub-sector.
<b>SEL</b>	Selkirk Substation
<b>Self-Generation</b>	Generation of electricity by an industry or commercial enterprise whose principal product is not electricity. Self-generation can reduce the amount of electricity purchased from the utility, or surplus electricity may be sold to the utility as a supply side resource.
<b>Sequence</b>	The order in which resources should be scheduled or acquired to meet the demand growth.
<b>Shale Gas</b>	Natural gas formed from being trapped in shale formations. Due to new drilling technologies, shale gas is becoming an economic source of new natural gas supply.  Also hydraulic fracturing.
<b>Simple-Cycle Gas Turbine (SCGT)</b>	A stand-alone generating plant that uses combustion gases to propel a turbine similar to a jet engine connected to an electrical generator.

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<b>Site C</b>	A proposed 1100 MW, hydroelectric generating station downstream from the existing Williston Reservoir and two existing generating facilities in the Peace River region.
<b>SKA</b>	Skeena Substation
<b>SL</b>	Selkirk Transmission Planning Region
<b>SMD</b>	Standard market design
<b>SMI</b>	BC Hydro’s Smart Metering & Infrastructure Program
<b>SO</b>	System Optimizer
<b>SO2</b>	Sulphur dioxide
<b>Social License to Operate</b>	The notion is derived from the fact that every company needs tacit or explicit permission from governments, communities, and other stakeholders to do business.
<b>SOP</b>	BC Hydro’s Standing Offer Program
<b>South Meager Geothermal Project</b>	A potential geothermal project located near Meager Creek, B.C.
<b>SOx</b>	Oxides of Sulphur
<b>Special Direction No. 10 (SD 10)</b>	A regulation under the <i>Utilities Commission Act</i> put into force on June 25, 2007 that directs the BC Utilities Commission, in regulating BC Hydro, that BC Hydro is to achieve electricity self-sufficiency by 2016 and each year thereafter, and is to exceed self-sufficiency by at least 3,000 GWh/year as soon as practicable but no later than 2026.
<b>Spot Market</b>	<ol style="list-style-type: none"> <li>1. Real-time and day-ahead purchases and sales of electricity or other commodities.</li> <li>2. Any market purchases or sales outside of long-term contracts.</li> </ol>
<b>Staged Process</b>	The five stage process for the evaluation and development of Site C
<b>Stakeholder</b>	Individuals, groups or representatives of groups who have a stake in the IRP process.
<b>Steam Turbine Generator (STG)</b>	<p>A generating plant that uses a fuel or other source of heat to boil water and produce steam to drive a turbine connected to a generator.</p> <p>Refer also to Combustion Turbine Generator.</p>

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<b>Storage</b>	The volume available in a reservoir to hold water for power generation or flood control.
<b>Streamflow</b>	The rate at which flowing water passes a given point, measured in cubic metres per second ( <b>m<sup>3</sup>/s</b> ).
<b>Sub-sector</b>	<p>A classification of customers within a sector by common features.</p> <ul style="list-style-type: none"> <li>• Residential sub-sectors are generally by type of home (single family, duplex, apartment, etc.)</li> <li>• Commercial sub-sectors are generally by type of commercial service (office, retail, warehouse, etc.)</li> <li>• Industrial sub-sectors are generally by product type (pulp and paper, solid wood products, chemicals, etc.)</li> </ul>
<b>Substation</b>	An electrical switching station to terminate transmission lines and/or a station at which a substation transforms voltage from high to low, or the reverse, to a level suitable for sub-transmission or distribution systems.
<b>Sumas Hub</b>	One of the major pipeline hubs of the North American natural gas market, located in Sumas, Washington, just south of the Canada-U.S. border. Used as a reference point for quoting the market price of gas.
<b>Supply Curve</b>	Shows the relationship between each possible price of the good (i.e., energy supplied) and the quantity that would be supplied at that price.
<b>Supply Side Resources</b>	Refers to BC Hydro generation and transmission resources or electricity purchased from IPPs.
<b>Sustaining Capital Expenditures</b>	Investments required to maintain the electric system so as to ensure that it will sustain its safe and reliable performance in the long term.
<b>SVC</b>	Static VAR Compensator
<b>Synchronous Condenser</b>	An electric machine that can function as a motor or as a VAR generator. It is used to change the power factor by generating and absorbing VARs on the power system. It is basically a synchronous motor with no mechanical load or a synchronous generator with no prime mover. It has a control circuit that provides voltage control by controlling the field excitation
<b>Syngas</b>	Synthetic Gas

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**T**

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<b>T</b>	New transmission corridor to point of interconnection
<b>Technical Advisory Committee (TAC)</b>	A committee that provides expert advice and feedback to assist BC Hydro in creating a thorough and well considered IRP.
<b>Take or Pay</b>	A contract clause that requires a purchaser to pay for a product, such as electricity, whenever the seller makes the product available regardless of whether the buyer is capable of receiving the product or not.
<b>Tariff</b>	A statement that explicitly defines the rate and the terms and conditions of sale for electric power and energy between a utility and its customer, including the type of service, delivery point(s), limitations of obligations to serve, minimum charges and any other terms.
<b>TCPs</b>	Transmission Contingency Plans
<b>Thermal Generation</b>	Generation of electricity by converting heat energy into electric energy through the controlled combustion of fossil fuels or biomass.
<b>TMR</b>	Transmission Must Run
<b>Total Resource Cost (TRC) Test</b>	<p>A DSM benefit-cost test that indicates the impact of a DSM initiative or portfolio from the perspective of all utility customers (also referred to as the All Ratepayers Test). The benefit-cost ratio is calculated as follows:</p> <p>PV (avoided electric energy costs + avoided electric capacity costs + avoided non-electric fuel costs + customer non-energy benefits/</p> <p>PV (BC Hydro program costs + BC Hydro allocated supporting initiative costs + customer costs + partner organization program costs)</p>
<b>TOU</b>	Time-Of-Use

<b>Transfer Capability</b>	<p><b>Total Transfer Capability (TTC):</b> The amount of electric power that can be transferred over the interconnected transmission network in a reliable manner while meeting all of a set of defined system conditions.</p> <p><b>Available Transfer Capability (ATC):</b> The transfer capability of a specific portion of the interconnected transmission network that remains available for general service after taking into account specific limitations created by other users.</p>
<b>Transformer</b>	An electrical device for changing electricity from one voltage to another.
<b>Transmission</b>	The transportation or conveyance of electricity in bulk, usually at voltages over 69 kV.
<b>Transmission Constraint</b>	The physical limitation of a certain transmission facility or combination of facilities, such as transmission lines and/or transformers, to carry additional load without endangering the reliability of the network
<b>Transmission Losses</b>	Refer to Line Losses
<b>Transmission Regions</b>	Subdivisions of the BC Hydro Service Area for the purposes of planning transmission. Transmission regions are: Peace River ( <b>PR</b> ), North Coast ( <b>NC</b> ), Central Interior ( <b>CI</b> ), Kelly/Nicola ( <b>KN</b> ), Lower Mainland ( <b>LM</b> ), Vancouver Island ( <b>VI</b> ), Selkirk Area ( <b>SE</b> ) and East Kootenays ( <b>EK</b> ). The PR, NC, and CI regions comprise BC Hydro’s Northern Service Area, while the KN, SE, EK regions comprise BC Hydro’s Southern Interior Service Area.
<b>Transmission System</b>	Electrical facilities used to transmit electricity over long distances, usually at voltages greater than 69 kV.
<b>TRM</b>	Transmission Reliability Margin
<b>TSR</b>	Transmission Service Rate

**U**

<b>U.S.</b>	United States
<b>Unit Capacity Cost (UCC)</b>	Present value of the total annual cost of a capacity resource divided by the resource’s dependable capacity. It is measured in dollars per kilowatt per year.

<b>Unit Energy Cost (UEC)</b>	Present value of the total annual cost of an energy resource divided by the present value of its annual average energy benefit. It is calculated using either a discounted cash flow method or annualized cost method, and is measured in dollars per MWh.
<b>Upgrade</b>	An improvement to an existing facility, which generally results in an increased performance of the integrated system.
<b>Utility Cost Test</b>	A DSM benefit-cost test that indicates the impact of a DSM initiative or portfolio from the utility’s perspective. The benefit-cost ratio is calculated as follows:  $\text{PV (Avoided electric energy costs + avoided electric capacity costs) /}$ $\text{PV (BC Hydro program costs + BC Hydro incentive costs + BC Hydro allocated supporting initiative costs)}$
<b>Utilities Commission Act (UCA)</b>	B.C. legislation creating and empowering the B.C. Utilities Commission, which regulates BC Hydro and other utilities. Refer also to 2008 <i>UCA</i> Amendments

**V**

<b>Vancouver Island Transmission Reinforcement (VITR) project</b>	Consists of replacing one of the existing 138 kV transmission lines between the Mainland and VI with a new 67 km 230 kV AC transmission line.
<b>VAr</b>	Volt-Ampere Reactive
<b>VI</b>	Vancouver Island
<b>Volatile Organic Compound (VOC)</b>	Are emitted as gases from certain solids or liquids.
<b>Volt (V)</b>	The basic unit of measurement of electromotive force, the force required to change the random motion of electrons into an electric current.  Refer to also Voltage.
<b>Voltage</b>	The strength of electromotive force ( <b>EMF</b> )
<b>Voltage Support</b>	An ancillary service which is required to maintain the voltage on the grid within acceptable limits.
<b>VPS</b>	Vanport Sterilizers Inc.
<b>VVO</b>	Voltage and Var Optimization

**W**

<b>WACC</b>	Weighted Average Cost of Capital
<b>Waneta Expansion Project</b>	Currently under construction, Columbia Power Corporation’s hydroelectric expansion project at Waneta on the Pend D’Oreille River.
<b>Water License</b>	The authority granted by the Comptroller of Water Rights of the Province of British Columbia to use, store and divert water.
<b>Water Use Plan (WUP)</b>	A plan, authorized under the <i>B.C. Water Act</i> , describing operating rules and boundaries for facilities on public waterways. BC Hydro’s water use plans are developed from a multi-stakeholder review process designed to address the varied interests for water use (e.g., fish, recreation and habitat management) associated with existing and new electricity generation and storage facilities.
<b>Watt (W)</b>	The basic unit of measurement of electric power, indicating the rate at which electric energy is generated or consumed. (1 watt = 1 joule per second)
<b>WBS</b>	Work Breakdown Structure
<b>WCI</b>	Western Climate Initiative
<b>Weighting Factor</b>	Refer to Relative Likelihood Factors
<b>Western Electricity Coordinating Council (WECC)</b>	The body that sets electricity system operating performance and reliability standards for members in Western Canada and the Western United States (formerly Western Systems Coordinating Council).
<b>Wheeling</b>	<p>The transmission of electric power from one system to another through a third party, usually the owner or operator of the transmission facilities.</p> <p><b>Retail wheeling</b> – the wheeling of power from electricity suppliers to customers.</p> <p><b>Wholesale wheeling</b> – the wheeling of power from electricity suppliers to utilities.</p>
<b>Williston Reservoir</b>	Is the largest body of freshwater in B.C. It was created in north-central B.C. by the construction in 1968 of the W.A.C. Bennett Dam across the Peace River.

<b>Wind Integration Costs</b>	Costs that will be incurred by BC Hydro in managing and operating its system to regulate the intermittent variability of generation from wind resources.
<b>Woodwaste</b>	The wood remaining after processing logs and having no marketable use as a lumber or pulp product. About half of B.C.'s wood-waste is already used in cogeneration or stand-alone power plants, but large quantities are incinerated without energy recovery, with the biggest surpluses in the Central and Southern Interior regions.
<b>WREGIS</b>	Western Renewable Energy Generation Information System
<b>WREZ</b>	Western Renewable Energy Zones
<b>WSC</b>	Water Survey of Canada
<b>WSN</b>	Williston Substation
<b>WSPP</b>	Western Systems Power Pool
<b>WTE</b>	Waste-to-Energy
<b>WW – RSD/SMW</b>	Wood Based – Roadside Debris & Sawmill Wood Waste
<b>WW – ST</b>	Wood Based – Standing Timber

## **Other**

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<b>2006 IEP/LTAP Decision</b>	In the Matter of British Columbia Hydro and Power Authority's 2006 Integrated Electricity Plan and 2006 Long-Term Acquisition Plan, Decision, May 11, 2007.
<b>2007 Energy Plan</b>	"The BC Energy Plan: A Vision for Clean Energy Leadership"
<b>2008 UCA Amendments</b>	<i>Utilities Commission Amendment Act, 2008</i>