



Hydroelectric assets provide electricity that is readily available, reliable, clean and cost-effective.

What is Large Hydro Power?

- Large Hydro generates electricity by harnessing the power of moving or falling water to produce mechanical/electrical energy.
- In British Columbia, Large Hydro is defined as a hydroelectric power plant greater than 50 MW in size.



WHY LARGE HYDRO?

- Hydro power uses the power of flowing water, without wasting or depleting it in the production of energy; therefore, all Large Hydro projects meet the definition of renewable.
- Large Hydro is a clean source of electricity because it produces very few greenhouse gases, no other air pollutants, and it does not generate any toxic waste by-products.
- Greenhouse gas emissions from Large Hydro projects in Canada are about 60 times less than those from coal-fired power plants and approximately 18-30 times less than natural gas power plants.
- The feasibility of developing a site for hydroelectric generation depends on geography and water supply. The most favourable areas for hydroelectric development are mountainous regions, with rivers and heavy rainfall that are not too far from industrial centres, making it an advantageous technology to serve British Columbia's energy requirements.
- With an average life span of 50 to 100 years, Large Hydro projects are long-term investments that can be upgraded to take advantage of the latest technologies. Large Hydro is an electricity source with long viability and low operation and maintenance costs that span generations.

THE TECHNOLOGY

- In a Large Hydro facility, electricity is generated from water released from a storage reservoir and passed through turbines. This would typically involve the construction of a dam on a river.
- A hydroelectric generating plant consists of a dam to store the water in a reservoir, a penstock to deliver the falling water (with its kinetic energy) to a turbine, which converts the kinetic energy into mechanical energy; and an alternating-current generator, which converts that mechanical energy into electric energy.
- The electric energy, produced by the generators at low voltage levels, is transformed to high voltage energy and carried to the demand centres by high voltage transmission lines. Terminal stations control energy flow in the transmission system and reduce voltage levels.
- Large industrial consumers can accept electricity at medium voltages. At distribution substations, voltages are reduced again for the needs of residential and commercial customers, and for small and medium industrial customers.

Hydroelectricity is BC's largest source of electric power generation.



354-409 Granville Street
Vancouver, BC V6C 1T2, Canada
Office 604.568.4778
Fax 604.568.4724

www.cleanenergybc.org



Our mandate is to develop a viable independent power industry in BC that serves the public interest by providing cost-effective electricity through the efficient & environmentally responsible development of the province's energy resources.



LARGE HYDRO IN BC

- Hydroelectricity is British Columbia's largest source of electric power generation.
- Hydroelectric projects in British Columbia are typically located in remote areas or smaller communities.
- BC Hydro is the largest electric utilities in British Columbia, operating 31 hydroelectric facilities and three thermal generating plants.
- Most of BC Hydro's 11,800 megawatts (MW) of installed generating capacity is located away from the province's major population centres and delivered to customers through a network of nearly 80,000 km of transmission and distribution lines.
- BC Hydro's hydroelectric facilities provide over 95 per cent of the total electricity generated – between 42,000 and 52,000 gigawatt hours (GWh) of electricity per year during the past five years – and are located throughout the Peace, Columbia and Coastal regions of B.C.

ENVIRONMENTAL & REGULATORY CONSIDERATIONS

- The British Columbia Utilities Commission (BCUC) is the agency responsible for regulating public utilities in British Columbia, and ensures that customers receive safe, adequate and fair services.
- The BCUC operates under and administers the Utilities Commission Act, which aligns with the objectives of the Clean Energy Act and the BC Energy Plan. The Act requires the BCUC and utilities to consider the goals of:
 - reducing GHG emissions
 - pursuing energy conservation and efficiency
 - producing and acquiring electricity from clean or renewable resources, and
 - providing technology and information to customers to encourage conservation.
- All utilities must manage their impact on the environment. This includes meeting the regulatory requirements set out by federal, provincial and local governments.
- Provincial legislation reinforces the commitment to reducing BC's greenhouse gas emissions and highlights that our low-carbon electricity generation is to remain at least 93 per cent clean or renewable, which can also help customers contribute to provincial greenhouse gas reduction targets.
- The Clean Energy Act also raises the bar for our reliance on demand-side measures: Demand Side Management will be crucial for meeting the Act's requirement to meet 66 per cent of all new power demand through conservation by 2020.

SOCIOECONOMIC BENEFITS

- Large Hydro facilities bring electricity, roads, industry and commerce to communities, developing the economy, improving access to health and education, and enhancing the quality of life.
- Large Hydro projects are developed in collaboration with local communities and First Nations to identify ways to protect the local environment and to minimize any negative impacts that might arise from changes in habitat. Local communities are involved in projects from their beginning.



KEY LINKS

BC Hydro
www.bchydro.com