

Energy and Capacity

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Info sheet

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Seasonal and daily patterns of customer use determine how electric utilities like BC Hydro plan and operate their energy supply.

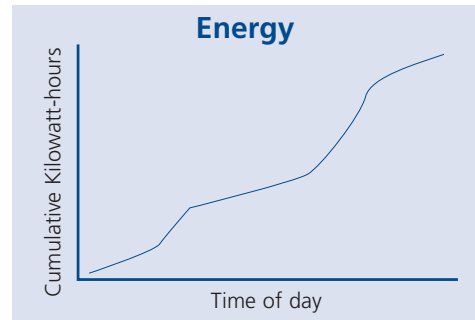
Some electricity customers, such as large industries, need a steady amount of electricity delivered throughout each day. Others need a large amount delivered at once. Residential customers, for example, need the most electricity in the early evening when they are home from work and preparing dinner or watching television. They need very small amounts of electricity late at night and moderate amounts throughout the day.

Similarly, the demand for electricity varies through the year. In British Columbia, demand is highest in December and January, when people use more electricity for heating and lighting than in other months. In fact, the highest demand on BC Hydro's electrical system usually falls on a late afternoon around the Christmas/New Year period. On January 5, 2004, British Columbians set a new one-hour peak demand record of 9,619 megawatts (MW).

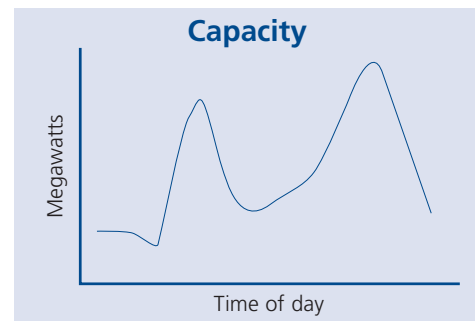
At BC Hydro, we must address two types of demand:

- **Energy (or consumption)** refers to the total amount of electricity that the utility supplies throughout the year. In the home, the amount of energy used is measured in kilowatt-hours (kWh), and typically averages about 10,000 kWh per year per household. The energy supplied

to all BC Hydro customers is measured in gigawatt-hours (GWh). A gigawatt-hour is equivalent to one million kilowatt-hours.



- **Capacity (or peak)** refers to the highest level of electricity that the utility can supply at any one time. For residential customers, capacity is measured in kilowatts (kW). Peak demand on the electrical system is measured in megawatts (MW), or millions of watts.





As the table below demonstrates, the peak demand for electricity is much greater than the average amount used daily or annually.

2003/04*	
BC Hydro Total Yearly Domestic Energy	48,685 GWh
January 5, 2004 Peak Demand**	9,619 MW

* Most recent data available

** Peak for 2003/04 to date, as of January 2004

These variations mean that we must be able to supply both the total number of kWh that customers want over the year as well as the kW required during peak demand times.

BC Hydro can meet customer demands for more electricity by building new generators or running existing generators for additional hours. We can store water in periods of low demand and use that water to generate electricity in periods of high demand. We can also use our gas-fired Burrard generating station or purchase electricity from the marketplace to meet electricity needs.

To meet both peak (capacity) and energy (consumption) demands at a reasonable cost, we use a variety of strategies:

- *Demand-side strategies*, such as Power Smart, aimed at reducing the total amount of energy customers use
- *Planning*, to increase both the energy capability and the peak capacity of the whole electrical system (including generation, transmission and distribution) to respond to new demands

- *Low-cost peaking capacity*, such as hydro peaking units and gas-fired generators (e.g., Burrard Generating Station) that operators can use to produce power when demand peaks and can shut down when demand slows, and
- *Water storage*, holding water behind dams to generate electricity when demand is greatest.

To outline how we plan to meet anticipated customer needs using a combination of existing and new energy resources and energy conservation programs, BC Hydro prepares an Integrated Electricity Plan (IEP) every two years. An IEP ensures that we are able to supply reliable electricity to customers at a reasonable cost while factoring in key environmental and social considerations.

In developing the 2005 IEP, we will consider our customers' long-, medium- and short-term needs for energy and capacity, and determine the most effective ways to meet these needs.

