



//FACT SHEET

/SOLAR PHOTOVOLTAIC POWER



What is It?

- > Solar photovoltaic (PV) power is the conversion of sunlight into electricity via solar cells within a solar panel or module.
- > The PV cell consists of one or two layers of a semi-conducting material and when light shines on the cell it creates an electric field across the layers, causing electricity to flow.
- > A PV system does not need bright sunlight and can generate electricity on cloudy days.
- > Solar PV systems are scalable to provide a wide range of power requirements from watts (W) and kilowatts (kW) to megawatt (MW) size.
- > The photovoltaic effect was observed as early as 1890, but in 1954, Bell Labs in the U.S. introduced the first solar PV device that produced a useable amount of electricity and by 1958, solar cells were used in a variety of small-scale scientific and commercial applications.
- > The 97 MW Sarnia Photovoltaic Power Plant in Canada, is the world's largest photovoltaic plant

Why Solar?

- > The sun is a clean, renewable, energy resource proven and cost competitive.
- > Areas in Canada (where 90% of the population lives) receive more solar radiation than Germany which is the world leading nation per capita in PV use.
- > Increased use of solar energy builds energy security, reduces greenhouse gas emissions, and moves us toward a sustainable energy future.
- > Using solar PV systems help reduce peak loads, postponing or preventing the need for additional baseload energy generation and distribution infrastructure (hydroelectric dams, coal-fired power generation stations, and underwater electrical cables).
- > Solar requires no fuel or moving parts, makes no noise and produces zero emissions with minimal maintenance.
- > In remote sites, solar PV competes aggressively with the costs of electricity derived from conventional sources and areas requiring extensive power line construction may find solar PV to be more cost effective.
- > So far, energy has been very cheap in Canada, but with oil & gas prices bound to rise within the next 20 years, more people are recognizing that clean energy such as solar energy has an important role to play.

The Technology

- > Approximately 90% of the market today uses crystalline silicon PV technology with over 14 different types of PV cells including thin film, amorphous cells and concentrated solar power.
- > The performance of a solar cell is measured in terms of its efficiency at turning sunlight into electricity, with the efficiency of a typical commercial solar crystalline PV module ranging between 11 and 19 percent.
- > Improving solar cell efficiencies while holding down the cost per cell is a main objective of the PV industry.
- > Solar PV modules in Canada currently retail in the \$6-\$8 per watt. Additional costs include "balance of system" components such as mounting hardware, wire, controllers, batteries, etc.

British Columbia's Potential

- > The T'Souke First Nation community located just west of Victoria, hosts three photovoltaic systems, with a total capacity of 75 kW, comprising the largest solar PV project to date in British Columbia.
- > B.C.'s best solar energy resources are located in the northeast and southern interior of the province, with additional potential in areas along the southeast coast of Vancouver Island and lower mainland.
- > Currently, PV modules largest use in BC is for remote areas that have no access to grid power, such as radio repeater stations, remote monitoring stations and off-grid communities.
- > Several regions throughout the province have received funding through the Solar BC program to develop solar installations, increase awareness and create bylaws and development guidelines to remove barriers for the installation of solar systems at the community level.

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