



*Canadian Hydropower
Association
Association canadienne
de l'hydroélectricité*

5 THINGS YOU NEED TO KNOW ABOUT HYDROPOWER CANADA'S NUMBER ONE ELECTRICITY SOURCE





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1 ■ HYDROPOWER IS CLEAN AND RENEWABLE.

Hydropower draws energy from falling or flowing water and converts it into electricity, without consuming, wasting or depleting water in the process.

Hydropower produces no air pollutants and has ultra-low greenhouse gas emissions. From a full life cycle assessment basis, hydropower's GHGs are as low as wind power and are even lower in many cases.

In Canada, all hydropower projects are subject to a comprehensive environmental assessment. Each stage of a project – planning, construction, operation – is assessed to avoid, minimize, mitigate or compensate any negative impacts, and to optimize positive effects on the environment.

Converting over 90% of available energy into electricity, hydropower is the most efficient source of electrical energy. By comparison, the best fossil fuel power plants operate at approximately 60% efficiency.

Hydropower facilities have a very long service life, which can be extended indefinitely, and further improved. Some operating facilities in Canada are 100 years and older. This makes for long-lasting, affordable electricity.

THAT'S RENEWABLE.

2. ■ THERE IS ADDITIONAL HYDROPOWER POTENTIAL ACROSS CANADA.

Thanks to generation that is predominantly hydro, Canada has the cleanest and most renewable electricity system of the G8 countries.

Even with the conservation efforts that the hydropower industry promotes, electricity demand will continue to grow in Canada, North America and the world because of population and economic growth. A greater number of electric vehicles on the road could also drive significant new demand.

Canada's hydropower potential – more than double our current capacity – can help meet demand while reducing GHGs and air pollutants. All regions of Canada have hydropower resources available for development, making it a truly national resource.

With a reservoir to store energy, hydropower becomes more flexible than any other energy source and can support the integration of other renewable but variable power sources such as wind or solar power.

THAT'S POTENTIAL.

3. PROVIDING 60% OF OUR ELECTRICITY, HYDROPOWER IS A CORNERSTONE OF CANADA'S ECONOMY.

The clean electricity that hydropower supplies to Canadians supports the growth of industry, commerce, infrastructure and communities.

Over the next twenty years, hydropower project development will benefit Canada with over \$125 billion in investments and a million jobs.

Able to satisfy most of its own needs, Canada is one of the world's few net energy exporters. Most of our electricity exports are clean and renewable because they come from hydropower.

Canada is a net exporter of electricity to the United States and the majority of Canada's exports come from hydropower. This helps eliminate millions of tons of CO2 emissions each year as Canadian hydropower displaces generation in the United States that can be much higher in greenhouse gas emissions.

THAT'S POWERFUL.

4. AFTER MORE ■ THAN 130 YEARS OF PROVEN TECHNOLOGY, HYDROPOWER IS STILL CUTTING EDGE.

Each hydropower project is unique because it is developed according to site-specific needs. Because hydropower projects are made to measure, each requires innovation and improvement. Canada is a global leader in this field and is recognized both as a pioneer and an innovator in state-of-the-art hydropower technology.

New innovative hydro technologies such as in-stream kinetic and Ocean wave and tidal designs are being studied and tested. So are technologies that improve the efficiency, flexibility, and environmental performance of conventional hydroelectric generation. The industry constantly improves its ecological profile by developing new technologies, such as fish-friendly ladders, intake gates and turbines.

While hydropower is a powerful ally in the fight against climate change, it is not immune from its effects. Canadian hydropower developers are leaders in weather and climate-modelling technologies. This is to ensure that current and future hydropower projects can continue operating if weather and hydrological patterns begin to change.

THAT'S INNOVATION.

5. HYDROPOWER BENEFITS LOCAL AND ABORIGINAL COMMUNITIES.

The Canadian hydropower industry works closely with host communities in the planning, construction, and implementation of projects. This is key to the success of project development, ensuring that local and aboriginal communities benefit from the project through improved quality of life, employment, business opportunities, capacity building, and long-term revenues.

With more than 130 years of history, the Canadian hydropower industry constantly strives to improve its practices.

Hydropower brings much more than electricity, jobs and development to communities. Hydropower can provide unique flexibility and energy storage capacity. It provides stability to the electricity system and can instantly meet increases in demand. Moreover, it can help control floods and store water for irrigation.

THAT'S SUSTAINABLE.

HYDRO BY THE NUMBERS

0

Air pollutants and ultra-low greenhouse gas emissions

1

Electricity source in Canada

3rd

Largest hydro producer in the world

60

Percent of Canada's electricity generation

50-100

Years of facility life

500

Generating facilities

355

Terawatt hours per year of electricity produced

74,000

Megawatts of installed capacity

163,000

Megawatts of technical potential available

1,000,000

Canadian jobs over the next twenty years

125

Billion dollars invested over the next twenty years