

# Clean alternatives

Despite Ontario's stated commitment to renewable and low-carbon energy alternatives, and despite a number of readily available approaches, the Ontario Power Authority's 20-year electricity plan for the province submitted Aug. 29 has largely excluded alternatives that can begin transforming our electricity system today. The alternatives:



## Offshore wind

**1,000 m/w potential**

**0 m/w planned**

We already have several hundred megawatts of onshore wind farms throughout Canada. But offshore wind, such as putting turbines in the Great Lakes, could significantly contribute to Ontario's renewable power needs. The wind tends to be more consistent offshore, meaning greater power output. The turbines can be located far enough out that they can hardly be noticed from shore, making them less intrusive to communities that consider them unsightly.



## Solar power

**1,000 m/w**

**88 m/w**

Solar photovoltaics is the direct conversion of the sun's rays into electricity. When the sun shines on a specially designed cell made of silicon, it excites electrons and results in an electric current. The amount of electricity is dependent on the number of cells, the quality of sunlight and the length of days. It's an expensive way today to produce electricity, but some expect the price will be on par with the cost of grid electricity as early as 2012.



## Co-generation

**3,000 m/w**

**<1,000 m/w**

The basic principle is that "waste" heat or gas from an industrial or power-generation process is recycled, whether to produce more power, support another industrial application, or feed a district-heating system. The idea is to take an energy source, such as natural gas or biomass, and extract as much power and heat from it as possible by using it onsite where the energy is needed.



## Energy-from-waste

**1,600 m/w**

**100 m/w**

Municipal solid waste is ground up or shredded and passed through a closed system at high temperatures, breaking down the molecular bonds of the material. Metals are taken out with a huge magnet and other bad materials, such as mercury, are filtered out. The end product is a hard slag that can be used as road aggregate or put safely into landfill, and a synthetic gas that can be used to generate low-emission electricity.



## Forest, agricultural bioenergy

**1,000 m/w**

**300 m/w**

Forest waste, crop residue and livestock droppings can be a source of carbon-neutral fuel for generating electricity. The material can be directly burned, converted into pellets or processed into liquid biofuel or clean-burning gas. Ontario has huge reserves of forest, crop and livestock waste, and much of it can be economically harvested and converted into bioenergy.



## Pumped storage

**2,500 m/w**

**0 m/w**

Water is pumped from a lower reservoir to a higher reservoir during periods of low demand when electricity prices are cheap. During periods of high peak demand the water from the upper reservoir is released, spinning turbines as it falls and generating electricity when we need it. The reservoirs tend to be natural formations or abandoned mines.

## The final tally

**Potential**

**10,100 megawatts**

**Planned**

**1,488 megawatts**