TIDAL POWER – CLEAN, RELIABLE AND RENEWABLE

Among the alternative to fossil fuels, tidal power is among the most promising and reliable for coastal areas where tides are large as in the northeastern United States and southeast Canada and in the Pacific Northwest.

Though the costs for set-up are initially high, the maintenance costs are very low.

Whereas wind power requires the wind to blow, and solar power the sun to shine, and wave driven turbines both wind and wave action, tidal turbines require only the tides which dependably cycle twice daily with water on the move in a significant way at least 10 hours a day.

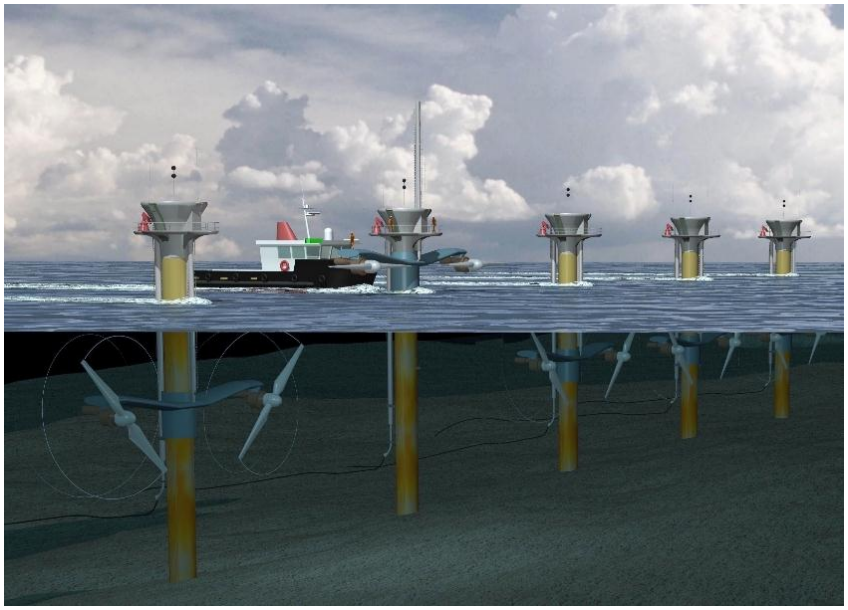
Technologies

Tidal power technologies include the following:

- **Barrage or dam**
  A barrage or dam is typically used to convert tidal energy into electricity by forcing the water through turbines, activating a generator. Gates and turbines are installed along the dam. When the tides produce an adequate difference in the level of the water on opposite sides of the dam, the gates are opened. The water then flows through the turbines. The turbines turn an electric generator to produce electricity.

- **Tidal fence**
  Tidal fences look like giant turnstiles. They can reach across channels between small islands or across straits between the mainland and an island. The turnstiles spin via tidal currents typical of coastal waters. Some of these currents run at 5–8 knots (5.6–9 miles per hour) and generate as much energy as winds of much higher velocity. Because seawater has a much higher density than air, ocean currents carry significantly more energy than air currents (wind).

- **Tidal turbine**
  Tidal turbines look like wind turbines. They are arrayed underwater in rows, as in some wind farms. The turbines function best where coastal currents run at between 3.6 and 4.9 knots (4 and 5.5 mph). In currents of that speed, a 15-meter (49.2-feet) diameter tidal turbine can generate as much energy as a 60-meter (197-feet) diameter wind turbine. Ideal locations for tidal turbine farms are close to shore in water depths of 20–30 meters (65.5–98.5 feet).



It is estimated that tides can meet up to 20% of Great Britain's needs. The first turbines are in place. And New Zealand's Northern Advocate reports that a US $402 million (NZ $600m) proposal to generate electricity with 200 tidal-powered turbines submerged at the entrance to the Kaipara Harbour could get under way next year. The harbour is one of the largest in the world. The tidal energy is expected to get the turbines generating 200 megawatts of power - enough for 250,000 homes.

There is a testbed project underway in New York Harbor by Verdant Power which has plans for other states even in California where the water flow through canals may be used.

The eventual field of underwater turbines, in NY's East River, will have a capacity of up to 10 MW. The Company's business partner is the New York State Energy Research & Development Authority (NYSERDA), which has invested more than $2 million to date in the RITE Project. New York University has identified nearly 600 MW of potential kinetic hydropower in the State of New York. NYSERDA has identified a potential of more than

1,000 MW of capacity. The Company has targeted half of this potential, or about 500 MW, for development in New York State.

This site has some excellent information on tidal energy and other alternative energy sources. http://home.clara.net/darvill/altenerg/tidal.htm