

This paper was prepared for a course in technical writing at Fanshawe College, London, Ontario.

### Problem

To show that wind power can be run on a local scale, which does not need a large wind farm or a lot of transmission lines. The idea is to give local control in which community members have a say in the source of their power.

### Situation

Windshare is a co-op, which was set up in 1999 by the Toronto Renewable Energy Cooperative. Windshare's purpose is to develop, own, and direct a local source of energy. In January of 2003, the co-op installed the first urban wind turbine on the Toronto waterfront at the CNE. Figure 1 shows the Windshare turbine. This is the first of two, which are planned for the Toronto waterfront.

Windshare has 257 shareholders. Each member of the coop has purchased shares and receives a dividend from the power the turbine generates. The co-op currently has a three-year contract to supply power to Toronto Hydro<sup>1</sup>. The turbine has a capacity of 0.75 Mw and over the past year generated a total of 1.178 MH (1.178 million kilowatts). The tower is 65m in height and the rotor blades are 25m in length. The extra height of the tower places the rotor at a height for optimum wind speed. The generator is direct-drive so it doesn't have a gearbox and this allows the rotor to turn in a wind as low as 2.5m/sec (7 mph). The turbine achieves its maximum output at wind speeds of 14 m/s (29 mph); however, at speeds of 25m/sec (55 mph) the turbine will shut down automatically to prevent damage to itself. The rotor blades feather, and the computer turns the blades out of the wind. <sup>1</sup>

A 0.75 MW turbine was chosen because that size matches the wind capacity of the site. The capacity of the site was determined from two years of tests at the location and 25 years of data from the nearby Island Airport.