

## **Wind turbine at Carleton College**

Tower: The height to the hub of the turbine is 256 feet. To measure from the ground to the tip of the blade if the blade is tip up is 390 feet.

Blades: Three blades, each 134 feet. The diameter or wingspan is 270 feet.

Turbine: 1.65 Megawatts, produced by NEG Micon in Denmark

### **Location**

1.5 miles east of Carleton College on Wall Street Road

### **Construction schedule**

July 29	Foundation construction starts.
August 28	Tower, turbine and base arrive on site. Base is set.
August 30	Turbine prepared for installation.
August 31	Tower completed, turbine and base installed.
September 1	Electrical work completed.

### **Energy production**

Carleton's turbine is expected to produce more than 5 million kilowatt-hours of electricity annually, and over the 25-year life of the turbine about 100-120 million kilowatt-hours of non-polluting energy will be produced. This is equivalent to about 40 percent of Carleton's energy usage, or power for 500 to 600 houses.

A wind turbine produces electricity without the greenhouse gases that are produced by a coal-fired power plant. Over the 25-year life of a wind turbine, a coal-fired plant would produce 1.5 million tons of carbon dioxide.

### **Transmission of power**

The turbine is connected to an Xcel Energy distribution line. Xcel has contracted to buy the produced energy for .033 cents per Kilowatt-hour for all energy produced. This energy price can be contracted at a fixed rate for 20 years.

### **Reimbursement**

In addition to Xcel's energy payment, the college qualifies for a Minnesota Department of Commerce production credit of .015 cents per kilowatt-hour for a 10-year period. The Department of Commerce also awarded Carleton a \$150,000 grant to help with costs. These sources of funding will allow Carleton to offset the cost of the turbine in 10-12 years. Another potential source of funding is the Federal Production Credit, but to date, the federal energy bill included this credit hasn't been approved. The production credit is approximately .018 per kilowatt-hour for 10 years funded annually. The Production Credit is an alternative for the Federal Tax Credit for non-profits.

### **Carleton's investment**

Carleton has invested about \$1.8 million to pay for the cost of the turbine, land lease, transmission lines to the distribution line, interconnection equipment, transformers, property, and business interruption insurance, taxes, and maintenance.

### **Education**

A computer interface within the turbine will relay data to a computer on campus to track and display the wind speeds at each moment, the amount of energy being generated, and the capacity of the turbine. The turbine data also will be posted on a campus Web site.