

MathWalk

#17) The Wind Turbine (At the top of Bodenheimer Drive)

You might have noticed the Broyhill Wind turbine as you entered the campus of the Appalachian state University today. This Wind Turbine is located on 755 Bodenheimer Drive which is the highest point on our campus. Wind is one of the forms of renewable energy employed at Appalachian State University. The uneven heating of the atmosphere by the sun, the irregularities of the earth's surface, and rotation of the earth cause wind. Wind flow patterns are modified by the earth's terrain, bodies of water, and vegetative cover. This wind flow, or motion energy, when "harvested" by a wind turbine, is converted from kinetic energy to mechanical power. This mechanical power is then converted by a generator into useable, and in our case, grid-tied electricity.



Fig 21. The Broyhill Wind Turbine

The ASU wind turbine has become the iconic symbol of Appalachian's commitment to renewable energy. The 100-kW facility is the largest wind turbine in the state of North Carolina. It is situated on the highest point on campus and stands more than 152 feet tall. Funding for the turbine came predominately from the student-backed ASU Renewable Energy Initiative with generous support from New River Light & Power Company (<https://sustain.appstate.edu/initiatives/renewable/wind/>).

You can use the following link to get to the Real Time Output Data for the wind Turbine.

(<https://rei.appstate.edu/pagesmith/61>). On average, the turbine produces 104,000 kWh yearly. This is enough energy to power about 8 North Carolinian homes each year.

You may use the following link for a map of the locations of wind turbines throughout the state of North Carolina. (<https://wind.appstate.edu/turbine-map>)