



Wind Turbine by the Numbers

On Tuesday, August 28, the blades and hub for the district's 750kW Aeronautica Wind Turbine were hoisted to the top of the 65 meter (213 feet) tower. The turbine is expected to produce approximately 1.3 million Kilowatt hours per year or approximately 70% of the high school's annual electric consumption.

The wind turbine will undergo a 2-4 week commissioning period. During this time, all the mechanical systems will be tested before it spins/works on a continuous basis. Final inspection and approval is needed from Cleveland Electric Illuminating (CEI) before the turbine becomes fully operational.

The project meets the "Buy America" goals and requirements of the Federal American Recovery and Reinvestment Act of 2009. The tower came from Michigan, the nacelle from New England and the blades from Indiana. The electrical, foundation and crane services were all sourced from Ohio.

OUR WIND TURBINE

TURBINE TYPE: Aeronautica 54-750

SIZE: 750 kW (Medium Utility Class)

FOUNDATION FOOTPRINT: 18' x 18' Exposed, 40' x 40' underground (10' Deep), with eight (8), 2 ½' foot by 14' deep piers

TOWER HEIGHT: 65 Meters (213 feet)

BLADE/ROTOR DIAMETER: 54 Meters (177 feet)

INDIVIDUAL BLADE LENGTH: 26 Meters (85 feet)

OVERALL HEIGHT (Ground to Blade Tip): 92 Meters (302 feet)

WEIGHTS: Overall Weight: 278,450 lbs. (Does not include Foundation)

Rotor (Blades & Hub): 24,250 lbs.

Nacelle (Section located at top of Tower): 51,800 lbs.

Tower: 202,400 lbs.

START SPEED: Generation starts at approximately 7 mph, reaches maximum generation (750 kW) at 26 mph

DATA COLLECTED: Wind Speed, Wind Directional, Temperature, Power Output, Rotation Speed and Energy Produced

POWER: Our Turbine produces approximately 1.3 million Kilowatt Hours per year or approximately 70% of the High School's annual electric consumption. This is enough to power 121 conventional or 242 energy efficient Ohio homes.

The majority of funding comes from state and federal grants.



Solar Project by the Numbers

Project Website: www.kw4ed.org/Kenston

OUR SOLAR PHOTOVOLTAIC

FIXED ARRAY SIZE: 2,160 square feet, 126 Panels, 30,240 watts

FIXED REFERENCE ARRAY SIZE: 103 square feet, 6 Panels, 1,440 watts
(Located on the last row closest to the flag pole)

DUAL AXIS TRACKER ARRAY SIZE: 103 square feet, 6 Panels, 1,440 watts

TOTAL PANELS: 138 Sunmodule 240 Watt Poly-Crystalline Panels

POWER: 33.12 Kilowatts (33,120 watts)

INVERTERS: Three (3) Aurora Commercial three-phase 10,000 watts (for Fixed array) and twelve (12) Enphase Microinverters three-phase 215 watt (for Reference and Tracker Array)

LIFE EXPECTANCY: 30+ Years (Panels Warranted 25 Years)

POWER: Our Solar produces approximately 35,484 Kilowatt Hours per. This is enough to power 3 conventional or 6 energy efficient Ohio homes for a year.

Notes: 1,000 Watt equals 1 Kilowatt

All major components of the Solar PV System were manufactured in the United States.

OUR SOLAR THERMAL BOOSTER SYSTEM

ARRAY SIZE: 8 feet by 10 feet

PANELS: Two (2) Alternative Energy Technologies AE-Series Model 40 Collectors

POWER: 79,200 British Thermal Units (BTU)

TANK SIZE: 119 Gallons

LIFE EXPECTANCY: 30+ Years (Collectors Warranted 10 Years)

POWER: This is enough to supply 1 conventional Ohio home with domestic hot water.

All major components of the Solar Thermal System were manufactured in the United States.

Did you know? Every day, more solar energy falls on the earth than we use in an entire year!

Funding for the Solar Project comes from a \$250,000 Federal Race to the Top Innovation Grant.