

Project:
Subject:

Glen Jacobsen, Bird Island, MN
Emission Reduction from Wind vs. Coal

Wind Turbine Description:	Jacobs 31-20
Rated Turbine Capacity:	20 kW
Predicted Power Output:	28,000 kW-Hr/Yr
Predicted Power Output:	2,333 kW-Hr/Month
Predicted Power Output:	95,536,000 Btu/Yr
Coal Heat Content:	12,300 Btu/Lb
Energy Conversion Efficiency (estimate):	33%
Equivalent Coal Usage:	11.77 Tons/Yr
Coal Sulfur Content:	3 % by wt.
Electrostatic Precipitator Control Efficiency:	95%

Pollutant	Emission Factor¹ (lb/ton)	Emission Reduction (tons/yr)
Particulate Matter (controlled by ESP)	66.0	0.0194
Particulate Matter less than 10 microns (controlled by ESP)	13.2	0.0039
Carbon Monoxide	5.0	0.0294
Hydrogen Chloride	1.2	0.0071
Hydrogen Fluoride	0.15	0.0009
Total Nonmethane Organic Compounds	0.05	0.0003
Sulfur Dioxide	114.0	0.6708
Nitrogen Oxides	8.8	0.0518
Carbon Dioxide	4810	28.3030
Antimony	0.000018	0.000000
Arsenic	0.00041	0.000002
Beryllium	0.000021	0.000000
Cadmium	0.000051	0.000000
Chromium	0.00026	0.000002
Chromium (VI)	0.00008	0.000000
Cobalt	0.00010	0.000001
Lead	0.00042	0.000002
Magnesium	0.01100	0.000065
Manganese	0.00049	0.000003
Mercury	0.00008	0.000000
Nickel	0.00028	0.000002
Selenium	0.00130	0.000008
Total Emissions		29.0867

¹ Emission factors taken from USEPA, Compilation of Air Pollutant Emission Factors for Bituminous and Subbituminous Coal Combustion, AP-42, Section 1.1