

# Pipestone

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I just drove through Pipestone, Mn. It was after dark, and I came across a red light on the horizon, like an isolated small airport. Then more. Then they ran from horizon to horizon. There was some type of huge installation that I had not known anything about.

On the way back, from curiosity, I drove back through in the daytime. These appear to be Zond Z-750 windmills. I drove on gravel roads for 30 miles, taking pictures. There is a swath mile wide, that has more windmills than I will give a number for.

I have put a brief annotation and some of the photos at <http://aubrey.vima.austin.tx.us/pipestone.html>

I googled for "Pipestone wind farm" and read a bit. If I comprehended correctly, these are Zond Z-750 (750Kw) units. There is information dated about 2000 that Enron bought Zond, and the installed price of the units went from \$1.00/watt to \$1.25/watt. The design life is 30 years, and the utilization factor at this location is about 23%.

Check my numbers for some decimal mismanagement here. Thirty (30) years is about 946,728,000 seconds, or 262,980 hours. This gives an ideal energy output of 197,235,000 Kwhr, or accounting for the utilization factor, 45,364,050 Kwhr. At \$0.06/Kw-hr this gives \$2,721,843 of electricity.

By happenstance I saw some blades on the ground outside a manufacturing facility on I-35 just south of the Texas border, and I saw a nacelle loaded on a truck just north of Ft. Worth, both on the return drive from the same trip. Perhaps this means the manufacturer is nearby.

(Jim, that exotic color is all over Minnesota. I don't think Garrison Keillor has ever mentioned it. They call it "green.")