What we know after six months of turbine data

I wanted to report on our first half-year with the UMPI wind turbine. We have learned a great deal. Some things have gone very well. Others have been a struggle. Overall, however, we are delighted with the performance of our turbine and with the response to it from the community. Recall that when we first proposed the turbine project in Spring 2007 we had four objectives: 1) to provide "greener" energy sources for the campus, 2) to reduce our electric costs, 3) to assist with our educational programs on campus and beyond and, 4) to serve as a source of information for others the community. Here is a quick summary of how we are doing:

Operation. We have been pleased with the operation of the 600 kW turbine. We have shut down for about one week for adjustments and repairs. The most serious problem has been a tendency for wires to get tangled (putting complex engineering in simple President's language) when the turbine turns too frequently to catch better wind. The good news is that our excellent Physical Plant staff has learned quickly and is able to reset the turbine without help from the manufacturer or general contractor. At other times, the turbine is down for routine maintenance or to allow people to climb the tower. We are especially pleased to assist the Northern Maine Community College wind technology program in this regard. And, then there are just times when there isn't enough wind to move the blades.

We are pleased that the turbine appears to operate up to the predicted 70 MPH wind speed and at temperatures well below zero Farenheit. We have also tested it out in some typical Maine winter weather.

We are also pleased that good planning has reduced some of the legitimate complaints about wind turbines to next to nothing. We have had no noise complaints. The President's House is about as close to the turbine as is any residence. Only once have I heard turbine noise from an open window at the house. We also have only one reported bat fatality that was probably caused by the turbine. Professor Jason Johnston and his students are watching this closely as part of their research. Any threats to birds and bats on campus are far more likely to come from vehicles, collisions with buildings, raptors, and cats. And, those losses appear to be small.

Production. Our most common prediction, based on the prior study of our wind quality by the University of Massachusetts-Amherst wind experts, was that we would save about $100,000 yearly in our power bill. We now have seven months of comparative data for 2009-10 compared with the prior two years. Our savings this year currently stand at $57,000. Several of the best wind months are coming up. We are cautiously optimistic we will reach our target.

We also have discovered that there are tradeoffs in the wind business. A horrible, cold day with biting wind can be the day that we generate over 10,000 kWh in 24 hours (we have had three such days). An unusually fine day for November or January (and we have loved those this year) probably reduces our wind production. Small price to pay for avoiding foul weather gear and icy roads. We also save considerably more in reduced oil heating costs than we gain from extra generation of electricity from the wind.

Teaching and Research on Campus. We continue to be fascinated by how much there is to learn from renewable energy technologies. Professors Kevin McCartney and Carolyn Dorsey are teaching energy courses this semester. Professors Chunzeng Wang, David Putnam, and Jason Johnston will offer further courses next Fall. We are also working closely with the University of Maine and the rest of the University

of Maine System to create an entire renewable energy curriculum to serve the needs of the state. Our turbine becomes a piece of the teaching and the research. I've also had the pleasure of talking about our wind project around the state and at the Washburn Law School in Kansas (Kansas is the fourth windiest state in the U.S.). An article I wrote for Washburn examines all aspects of our two-year adventure to contract for, license, and construct the turbine. I've had numerous opportunities to share that with other wind pioneers or wind skeptics.

Service to the Community. Our major frustration so far has been in the slowness of access to all the wind power data that we were promised in our contracts. We do have some of the basic data discussed above. The loss of data so far has not reduced our production of electricity. But, it has seriously hampered our ability to get information to folks who have requested it. We continue to work with the combination of the turbine manufacturer, the general contractor, and the Honeywell Corporation to secure and operate all of the instrumentation we were promised. We think we are close to success. We are particularly impressed by Honeywell's statement that this will be a set of information well in advance of other wind projects. We want to add that to the information we have already shared with businesses, governments, and individual citizens around Maine and beyond.

And the Adventure Continues. The wind turbine keeps company with two other renewable energy or energy efficiency projects on campus. The new heat pump technology in Folsom Hall classrooms is working wonderfully and has cut in half our oil heat consumption for the building. The swimming pool cover in Gentile Hall has likewise reduced the costs of both energy and pool chemicals.
Our next addition will be the variety of solar energy projects allowed by the $800,000 grant from the United States Congress and the U.S. Department of Energy (DOE). In the last week, we have begun work with the DOE on this exciting venture.

Don Zillman
President, University of Maine at Presque Isle