



Session Title: Design, Installation and Monitoring of Small Wind Systems

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ABSTRACT: Small wind systems — usefully defined as horizontal-axis wind turbines (HAWTs) with peak outputs less than 100 kW — have become extremely appealing to property and building owners seeking to supplement or even entirely offset their electric use. Vertical-axis wind turbines (VAWTs) have also received enormous attention from building owners who overlook one important point — they don't work. The popularity of small wind is due, in large part, to the visibility of utility-scale wind projects, net metering legislation and available incentives and tax credits. Nevertheless, for the vast majority of property owners in NY state, a grid-connected small wind system is not a feasible renewable energy option. The reasons for this are system economics and available wind resource — several examples will be shown. For the few for whom a small wind system might be viable, more than half of them will either not have the financial resources (even with current incentives) or will not have the tenacity to follow through with the burdensome regulation imposed by AHJs and objections from NIMBYs. These factors conspire to make NY state less than hospitable to the deployment of small wind systems. Further, many small wind projects that have been completed (and received NYSERDA funding) have failed to perform to anywhere near expectations. Reasons for this include inaccurate, incomplete or misleading performance data from small turbine manufacturers, poor matching of balance-of-system components to the wind turbine (bad system design) and, most importantly, inaccurate wind resource assessment. All of these technical problems are avoidable with greater knowledge on the part of system owners and designers. In contrast, public fears and government overregulation are not easily changed. If designed by an expert, sited appropriately and diligently monitored, small wind is an environmentally benign and beautiful source of renewable energy. Examples of well- and not-so-well performing small wind systems will be shown.