## Overview

Organic Valley and Gundersen Health System chose WES Engineering Inc. (WES), for complete wind project services on their two turbine, 5MW project. These WES services included: feasibility studies, permitting, design and construction oversight. In more detail, these services included, onsite shear measurement with SODAR and instrumenting a nearby radio tower for long term wind speeds, selecting the most suitable wind turbine for the project based on budget and siting criteria, and overseeing the bidding and construction of the project. This is an excellent example of a community wind project, delivering clean energy to the local substation in the Cashton business park.

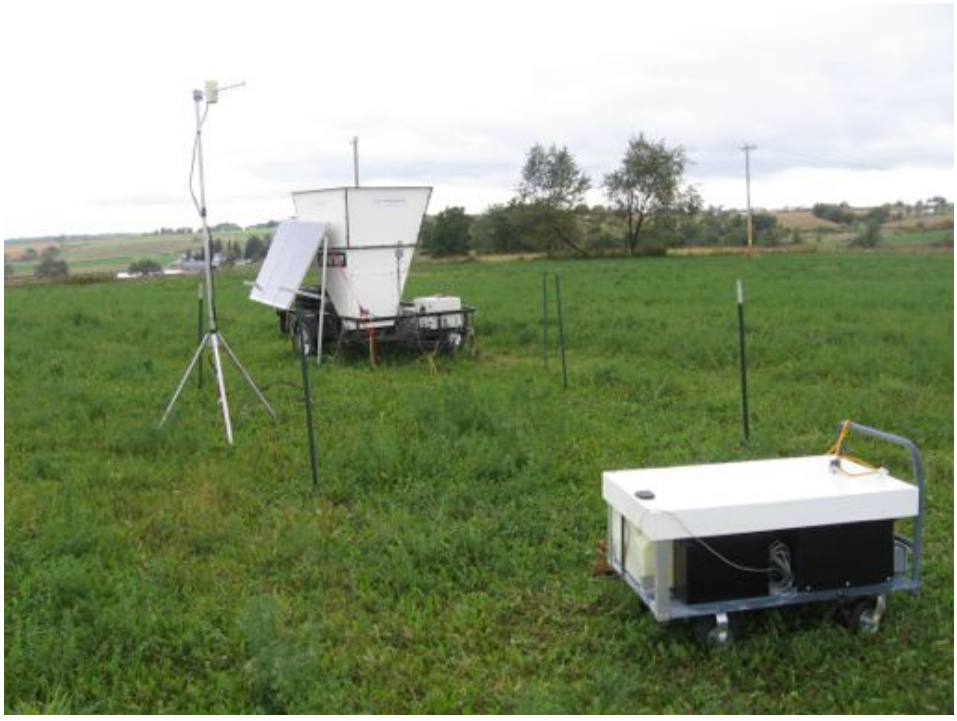
## WES Engineering's Solutions

WES Engineering recommended SODAR site shear verification which led to the selection of 100m tall towers for maximum utilization of the wind resource and a better long term economic return to the Owners. WES worked closely with owners to site two large turbines on their own property within the existing Village business park, minimize impact to neighbors, and maximize production.

**Cashton North Turbine Foundation Concrete Pour- Fall 2011**

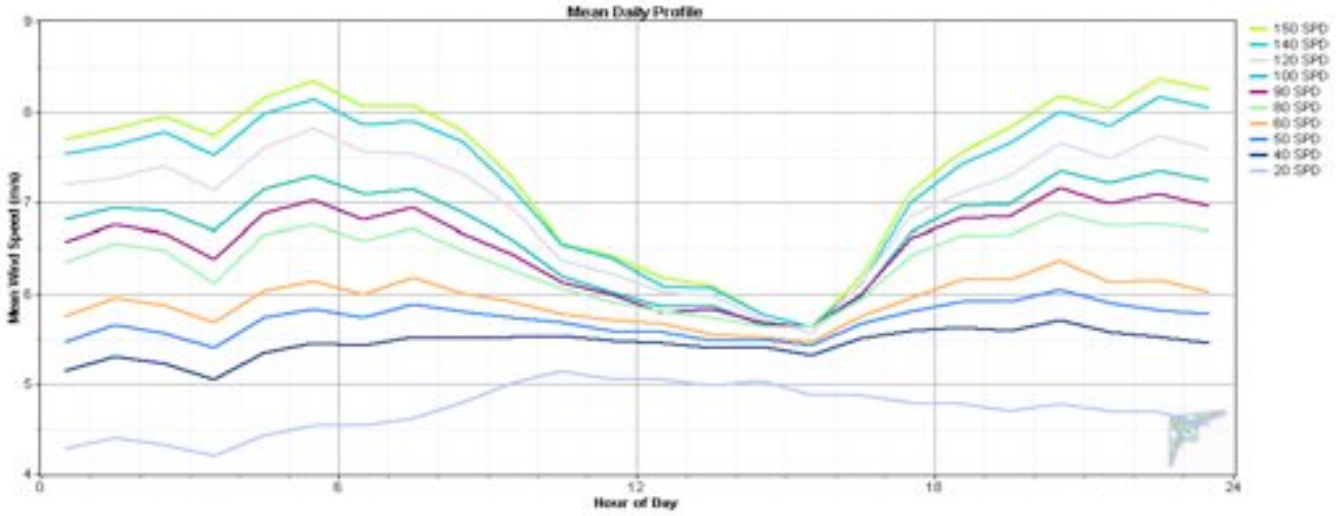
**Delivered to CGWF Wind Farm LLC:**

- Project Feasibility Study
- Wind Resource Assessment Report based on 4 years met tower data and 3 months SODAR data
- Technical reports for USDA and FOE grants totaling $414,867
- Interconnection Studies- Oversight of Design and Studies
- Permitting Documentation:
  - shadow and sound studies, including ambient noise monitoring
  - site plan and setback maps
  - visual simulations
  - fact book on wind turbine impacts
- Bid Specification for construction, erection and substation work
- Project Engineer, to provide oversight during construction and during final commissioning



**SODAR at Cashton South Turbine Location Fall 2009**

WES Engineering found that there was significant increase in wind speed at the site above the height the fixed anemometers were installed at (50m or 165'). The results shown on the next page were then used to economically justify a 100m tall tower rather than the standard 80m tall turbine the turbine is normally supplied with at Midwest project sites. The extra 20m tower height yields another 10% in energy per year.




**Daily Profile at Cashton**

| | Power Law Exponent by month | | | |
|---|---|---|---|---|
| Windshear | Nov | Dec | Jan | Feb |
| SODAR ALL DATA | 0.256 | 0.238 | 0.274 | 0.247 |
| SODAR Up to 60m | 0.262 | 0.196 | 0.151 | 0.228 |
| SODAR above 90m | 0.289 | 0.302 | 0.405 | 0.269 |
| Tower 8553 up to 50m | 0.297 | 0.268 | 0.289 | 0.272 |

**Power Law Exponent by Month**