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Office of Energy Efficiency
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From: Greg Kremer, Grantee for Distributed Energy Resources Grant Number 04-26

Subject: September 2004 Status Report for Distributed Energy Resources Project # 04-26

Summary: The hybrid wind and solar system continues to perform well, with the solar production currently dominating over the wind. Since the meters that directly track the energy production have all been operation since August 22nd, this month's report includes the first true monthly measured production numbers (91.5 KWH).

The following items are being reported in accordance with the project agreement:

Photographs of the DER system installation site (before, during, and after installation):

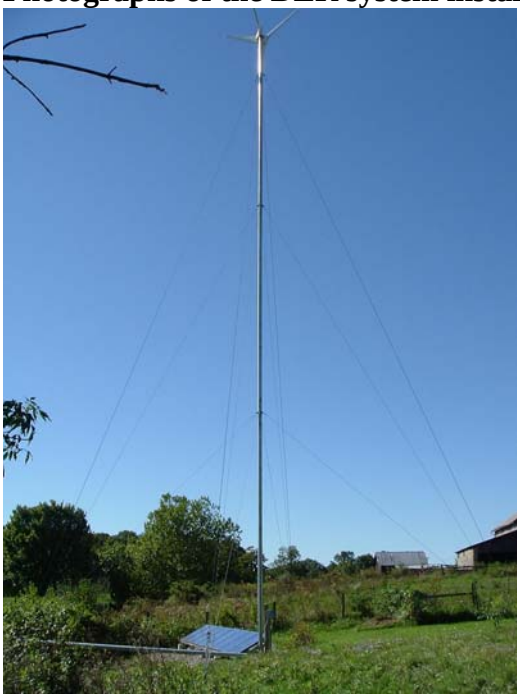

Photo of the solar panels and wind generator in a slight wind .

Log of activities performed to get approval for installation of the DER system (siting, permitting, zoning, interconnection, and net metering agreements):

- The net metering agreement is in place but we are still working out billing issues with AEP.

Actual Project Costs [system design, equipment (itemized), installation, fees (itemized)]:

- $21,797 as previously reported.

Electric bill usage information (starting one year before system installation, and noting major changes to the project site's energy profile):

[All values in KWh, E indicates Estimated reading]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	267	229_E	178	165	135	139	183	183	124_E	185_E	52	158
2004	130	130	66	72	47	5	-59.4[1]	-42.1[2]	-40[2]			
12 mo. avg	167	155	146	138	130	119	98.6	79.8	69.8			

Notes: All values for May 2004 and earlier are from the electric bill (with a meter reading day in the middle of the month). The solar portion of the renewable energy system became operational on May 31 2004 so its effect begins to show in the electric bill reading for June 2004. For informational purposes, the meter reading at 6AM June 1 2004 was 29204.2 and the reading on September 30th at 8:30 PM was 29046.8.

[1] : This is the difference between the meter reading on Aug 1st and the last actual reading from the June electric bill (6/18/04).

[2] : This is the difference between my readings of the electric company meter for the month (rather than the mid-month readings by the electric company) to correspond to the values reported below for system energy production.

Monthly Energy production measured by the DER system metering equipment:

- The system has two meters, the "AC IN" meter that feeds the core loads that are attached to the battery backup system, and the "AC Out" meter that measures the energy provided to all other loads and the grid. The addition of the two values indicates the net energy production at the output of the inverter.

Date	AC In Meter (KWH)	AC Out Meter (KWH)	Total Monthly Energy Production	Total Energy Produced Since System Installation
June 04	NA	NA	75 KWH[1]	75 KWH[1]
July 04	22 [2]	NA	75 KWH[1]	150 KWH[1]
Aug. 04	60.5	18.5 [3]	80.35 KWH[4]	230.35 KWH
9/30/04	100.5	70	91.5 KWH[5]	321.85 KWH

Notes:

[1] : Estimated based on the net decrease in the metered usage from the electric company's meter between June 1 and August 1 (-74.6 KWH) plus a conservative estimated energy use of 38KWH per month for June and July.

[2] : Meter installed in late July, reading from 3:30 PM August 1st.

[3] : Meter repaired on August 21, reading from 7:15 AM September 1st.

[4] : Estimated total value using the actual value for the core loads (60.5-22=38.5 KHW) plus a ratioed number based on 10 days of metered usage between Aug. 22 (5 KWH) and Sept. 1 (18.5 KWH), ((18.5 - 5 KWH)/10 days)* 31 days = 41.85 KWH.

[5] :This is the first value taken directly from the meters, and all subsequent values should be directly from the meters.

Notes on System Performance (downtime, maintenance, repair costs, weather, etc.):

- The solar system is still operating well. The solar system monitor usually reads from 12-17.5 amps in full sun around midday, and with a 48 Volt system that corresponds to a power output of 576 to 840 Watts.
- The wind system is working, but the summer winds are generally light. The system often turns slowly in light winds and outputs about 3 amps (144 Watts), but there were several stormy days this month where the daily energy production exceeded 5 KWH with very low solar contribution.

Public Education Activities:

- I have registered to have my home included in the Ohio Solar Tour October 2, 2004.
- I have updated my web site with pictures and more info and linked it more prominently from my personal Ohio University home page.
- I have given other faculty in the ME department a tour of the facility and discussed incorporating site tours and performance data from the renewable energy system in Ohio University Mechanical Engineering classes in the upcoming academic year.