

*Mount Wachusett Community
College*

“Wind Turbine Project”

*Massachusetts Wind Working
Group*

May 11, 2012




Overview of College


- ▶ *287acre site located in a snow belt at the highest elevation in north-central Massachusetts*
- ▶ *450,000 s.f. of classrooms, laboratories, library, theater, gymnasium, etc.*
- ▶ *When built, the College utilized electricity as its sole source of climate control*
- ▶ *Enrollment 9,000 day & evening students*



MWCC Projects

- ▶ *Biomass Conversion*
 - ▶ *Biomass Gasification – Combine Heat & Power*
 - ▶ *Photovoltaics – 100kW*
 - ▶ *Solar Thermal –Domestic Hot Water*
 - ▶ *Energy Conservation Measures (ECMs)*
 - ▶ *Geothermal (Veteran's Rehabilitation Center)*
 - ▶ *Plug in Hybrid*
 - ▶ *Wind Turbines*
- 

WIND TURBINE PROJECT TEMPLATE: COMPONENT PROCESSES & PROCEDURES

- ▶ *This document reflects the overall processes and procedures utilized by Mount Wachusett Community College in the erection of two 1.65 MW wind turbines.*
 - ▶ *Because of the complexities of wind project development, the College conducted a full set of initial resource, environmental and permitting studies as well as an assessment of the feasibility of actual wind project development. A full NEPA review was completed and in compliance with the National Environmental Policy Act of 1969, the U.S. Department of Energy (DOE) undertook an Environmental Assessment (EA) which lead to the College being granted a “Finding of No Significant Impact” (FONSI).*
- 

Template Outline

- ▶ *Feasibility Study*
- ▶ *Wind Resource Assessment*
- ▶ *Wind Power Assessment & Turbine Review*
- ▶ *Wind Turbine Selection*
- ▶ *Electrical*
- ▶ *Wind Project Development Modeling & Economic Assessment*
- ▶ *Forecasting Markets (Energy, RECs, etc.)*
- ▶ *Environmental Evaluation*
- ▶ *Permitting*
- ▶ *Public Opinion Consideration & Impacts*
- ▶ *Pending Legislative Issues*
- ▶ *Public Relations*
- ▶ *Request for Information (RFI)*
- ▶ *Issue RFP & Award Contract*
- ▶ *Turbine On-Line*

WIND TURBINE PROJECT TEMPLATE: COMPONENT PROCESSES & PROCEDURES

- ▶ *This document is intended to serve as a guide for other organizations contemplating similar projects so that they might be able to fully comprehend the intricacies of the total project development and be able to navigate through these issues as expeditiously as possible.*
- ▶ *In addition to the information provided in this document, individuals are encouraged to review the College's web site (mwcc.edu) or its blog: <http://greenongreenstreet.blogspot.com/>. At these locations readers will have full access to all relevant documents associated with the project.*

Wind Turbines

MWCC was awarded \$3,200,000 from the U.S. Department of Energy (Energy and Water Development Appropriation Bill) to install two 1.65 MW wind turbines and to work with surrounding communities to develop implementation strategies for the installation of turbines across the state's northern tier.



Wind Turbine Finances

- ▶ *Total Project Cost:* *\$9,300,000*
- ▶ *Less U.S. D.O.E Grant:* *\$3,200,000*
\$6,100,000
- ▶ *Low Interest CREBS:* *\$2,100,000*
- ▶ *Mass Clean Energy Investment Bonds* *\$4,000,000*

Cash Flow From Turbines

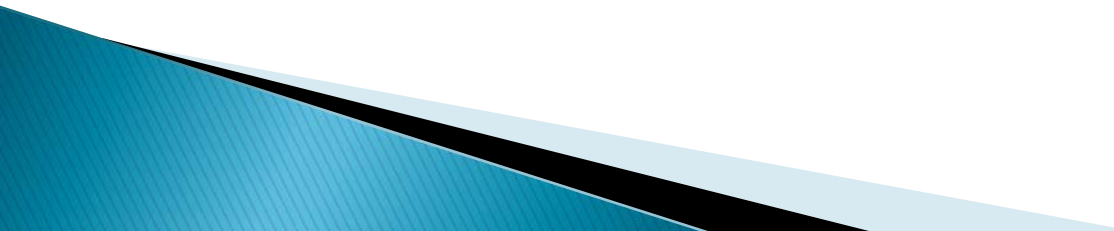
Electric Cost Savings	\$700,000
Sale of REC's	<u>115,000</u>
<i>Total Savings/Revenue</i>	\$865,000
CREB Bond	\$200,000
Clean Energy Bond	<u>350,000</u>
<i>Total Debt Service</i>	\$550,000
NET CASH FLOW	\$265,000

The Green Behind the Green

From a financial perspective, the \$265,000 annual cash flow represents an 8% return on the original \$3.2 million investment by the Department of Energy.



Wind Turbine Production

- ▶ *Annual Est. Production:* 4,977,422 kWh
 - ▶ *Actual Production:* 5,027,023 kWh
 - ▶ *Actual Consumption:* 4,838,036 kWh
 - ▶ *Percent of College Demand:* **104%**
- 



Energy intelligence. Anywhere.

[Home](#)

[Services](#)

[Support](#)

[About Us](#)

my powerdash

[HOME](#) / [MY POWERDASH](#) / [ACCOUNT OVERVIEW](#)

Account Overview

Current Alerts

The following systems are currently reporting a problem. For more information, please select the alert:

System	Problem	Last Checked (UTC)	Status
No systems are currently reporting a problem. View your alert settings.			

Your Systems

Showing systems 1-3 of 3 sorted by **Last Reported** (descending)

Site/System	City	State	Last Reported
Mount Wachusett Community College	Gardner	MA	
» Mount Wachusett Wind North			4/27/12 3:16PM
» Mount Wachusett Wind South			4/27/12 3:16PM
MWRA Charlestown Pumping Station	Charlestown	MA	
» MWRA Charlestown Wind			4/27/12 3:16PM
<div> « Previous <div>1</div> Next » </div>			

MY POWERDASH

- * Account Overview
- * Systems
 - o All Systems
 - o System Collections
 - o Energy Performance Models
 - o Data Download
- * Operations/Maintenance
 - o System Alerts
 - o System Event Log
- * Third-Party Reporting
 - o Meter Data Validation
 - o Reporting Tools/Status
- * Account Management
 - o Personal Info/Preferences
 - o Change Password
 - o Billing/Subscriptions

PowerDash Support

support@powerdash.com

888-797-3274

ginman@jksclan.com | sign out



Energy intelligence. Anywhere.

Home

Services

Support

About Us

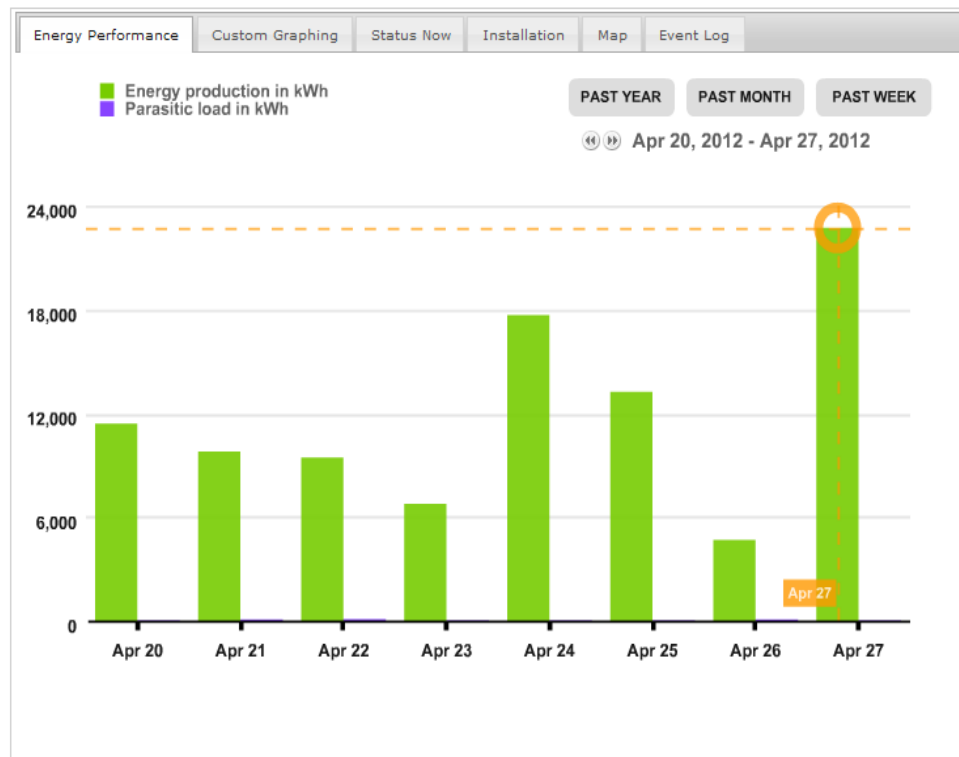
my powerdash

HOME / MY POWERDASH / MY SYSTEMS / SYSTEM PROFILE

Mount Wachusett Wind North

Mount Wachusett Community College
444 Green Street
Gardner, MA 01440

Related Systems ▾



Public URL

Mount Wachusett Wind North: <http://www.powerdash.com/systems/1000368/>

MY POWERDASH

- * Account Overview
- * Systems
 - All Systems
 - System Collections
 - Energy Performance Models
 - Data Download
- * Operations/Maintenance
 - System Alerts
 - System Event Log
- * Third-Party Reporting
 - Meter Data Validation
 - Reporting Tools/Status
- * Account Management
 - Personal Info/Preferences
 - Change Password
 - Billing/Subscriptions

PowerDash Support

support@powerdash.com

888-797-3274

Operations Summary

The site was commissioned 22 Mar 2011, with an on line run date of 22 March 2011.

Unscheduled Repairs;

- None for the reporting period

Scheduled Repairs;

-

Scheduled Service;

- C-Service scheduled March 2012

PAD #	Start Grace (-17)	Spring C Service Date	End Grace (+30)	Date Completed 2011	Status or Days Over
1 North	3/3/2012	3/20/2012	4/19/2012		Awaiting

PAD #	Start Grace (-17)	Spring C Service Date	End Grace (+30)	Date Completed 2011	Status or Days Over
2 South	3/3/2012	3/20/2012	4/19/2012		Awaiting

Manpower

Current Vestas-AWT Maple Ridge service organization manpower:

Site Manager	1
Assistant Site Manager	1
Office Coordinator	1
Inventory Coordinator	1
Service Planner	1
Lead Technicians	3
Technicians	23

Total	31
-------	----

Service Vehicles:	15
-------------------	----

MWCC Production

Production Report — The following tables contain production data from (VOC)
Total production calculated as total run production.

	Total kWh	WTG on grid [h]
WTG01	2694910	9454
WTG02	2441454	9364
Total/Avr.	5136364	18818

Current Special Projects

None

Future Special Projects

None

Main Component Failures

None for the current period

Safety and Environmental Summary:

Safety Incidents: None to Report

Environmental: None to Report

Faults Active Alarm

Current active alarms.

ACTIVE ALARMS WTG 1			
Turbine	Level	No.	Text
Active	No.	Event text	Alarm time
	0	Turbine OK	3/31/2012 21:44
	205	Short untwist CCW	3/31/2012 21:15
	0	Turbine OK	3/28/2012 12:28
	621	Service key	3/28/2012 6:50
	621	Service key	3/27/2012 6:56

ACTIVE ALARMS WTG 2			
Turbine	Level	No.	Text
Active	No.	Event text	Alarm time
	380	Platform switch	3/28/2012 12:11
	603	Safety stop	3/28/2012 12:11
	440	Hub hatch open	3/28/2012 12:04
	515	Emergency relay open	3/28/2012 12:00
	469	Pitch ac. press. sensor fault	3/28/2012 11:29

Faults by Service Log

Top 5 Service Alarms from last Service

SERVICE LOG WTG 1			
Unit	Code	Description	Alarmtime
Active	No.	Event text	Alarm time
	380	Platform switch	3/28/2012 12:11
	603	Safety stop	3/28/2012 12:11
	440	Hub hatch open	3/28/2012 12:04
	515	Emergency relay open	3/28/2012 12:00
	469	Pitch ac. press. sensor fault	3/28/2012 11:29

SERVICE LOG WTG 2			
Unit	Code	Description	Alarmtime
Active	No.	Event text	Alarm time
	379	Gear oil pressure too low	3/27/2012 14:51
	380	Platform switch	3/27/2012 14:44
	397	Overspeed guard TAC85	3/27/2012 14:22
	254	Rotor overspeed	3/27/2012 14:22
	397	Overspeed guard TAC85	3/27/2012 14:16

Appendix: Parts consumed

No parts consumed during this period.

Wind Turbine Environmental Impact

- ▶ *The turbines will reduce greenhouse gas emissions by an additional 61%*
- ▶ *Over the life expectancy of the turbines (20yrs) the greenhouse gas reduction would equate to*
 - *Planting 16,440 acres of trees*
 - *Eliminating 11,380 automobiles from our roads*

Cumulative Impact of College Efforts

- ▶ *With renewable and efficiency projects in place, MWCC will have reduced its carbon emissions by 2900 metric tons, a reduction of 92% from baseline.*
- ▶ *MWCC is one of a few campuses in the world that is approaching Zero Net Energy & Zero Net Carbon*
- ▶ *This total reduction is equivalent to annual emissions from:*
 - *569 passenger cars*
 - *Electricity use at 352 homes*
 - *Sequestered by 618 acres of trees*
 - *16 railcars of coal*

For Additional Information

- ▶ *Robert LaBonte, Vice President of Finance & Administration, 978-630-9272*

rlabonte@mwcc.mass.edu

- ▶ *William Swift, Director of Facilities Maintenance & Mechanical Systems, 978-630-9267*

wswift@mwcc.mass.edu

- ▶ *Ed Terceiro, Executive Vice President Emeritus & Resident Engineer, 978-630-9103*

eterceiro@mwcc.mass.edu

