



The Future of Wind Energy Education

Meet your Panelists

- **Michael Arquin, KidWind**
K-12 perspective
- **Brent Summerville, Appalachian State University**
College/University perspective
- **Jenny Heinzen, Midwest Renewable Energy Association**
Private/Non-profit perspective

Installers, Manufacturers, Dealers, Employers – Pay attention!

We want audience participation! Here are your questions:

- Where are you finding (or looking for) good employees?
- What training do you expect them to have (entry-level)?
What's in your job descriptions and postings?
- What training do you provide (in-house or otherwise)?
- How valuable are degrees, diplomas, certificates & certifications? From where?

Small Wind Training:

What skills should a windsmith have?

- Climbing & rescue
- Safety awareness (OSHA)
- Mechanical skills
- Electrical skills
- Rigging & crane work
- Working with tools & construction equipment
- Troubleshooting
- Reading & writing
- Communication skills

The Job Market

- **Where are the jobs?**
- **Who's hiring?**
- What skills, experience, and educational requirements are in the job descriptions?
- What makes a job in small wind attractive? Who would choose to work in small wind, and why?
- How do employers attract good employees?

Degrees & Certifications

- How valuable are degrees, diplomas, certificates & certifications?
- Who are the reputable trainers?
 - Technical & Community Colleges?
 - Universities?
 - Private/Non-profit training organizations?

NABCEP Certification

- No longer offers Small Wind Installer Certification
- FIVE active Installers listed on their website:

NABCEP Certified Small Wind Installers

Name	Certification Number	City, State
Joe Crecca	SW032412-1	N. Cape May, NJ
Randy Faller	SW032412-2	Random Lake, WI
Timothy Olsen	SW091110-4	Denver, CO
Roy Rakobitsch	SW091110-5	La Farge, WI
Arthur Toy	SW032412-3	Lawrence, MI

Source: <http://www.nabcep.org/certification/small-wind>

NABCEP Associate Program

Learning Objectives are available on the NABCEP website:

NABCEP Small Wind Associate Learning Objectives

The NABCEP Small Wind Associate Learning Objectives include ten (10) knowledge content domains:

1. Fundamentals of Electricity
2. Applications and End Uses
3. Fundamentals of Small Wind Turbines
 - 3a. System components
 - 3b. Science and theory
4. Towers, Foundations, and Installation Considerations
5. Resource Assessment
6. Site Assessment
7. System Sizing Principles and Economics
8. Operation, Maintenance, and Troubleshooting
9. Safety and Best Practices
10. Impacts and Challenges of Small Wind







Michael Arquin,
KidWind

Brent Summerville,
Appalachian State University

The Non-Profit Perspective

- Midwest Renewable Energy Association (MREA) has been offering small wind training since its inception
 - **The Energy Fair**, since 1990
 - Installation workshops – MREA & neighbors' turbines
- Formal training (courses) began in... 2003-ish
- Electronic records (FileMaker) began in 2005. Lots of paper still in boxes... Data has some errors.

Intro to Wind (W 101)

- 2006 – 34 students
- 2007 – 32 students
- **2008 – 163 students**
- **2009 – 200 students**
- **2010 – 96 students**
- 2011 – 32 students
- 2012 – 16 students

- Lots of classes & train-the-trainer programs at technical and community colleges
2008-2010
- 2012: Classes starting to get cancelled for low enrollment
- Online courses begin in 2013

Small Wind Site Assessor Training (W 201)

- 2005 – 16 students
- 2006 – 23 students
- 2007 – 34 students
- **2008 – 54 students**
- **2009 – 94 students**
- **2010 – 70 students**
- 2011 – 8 students
- 2012 – 5 students

- Same trend as W 101
- Went online in 2013

Intro to Tower Climbing & Safety

- September 2009 – 17 students
- July 2010 – 11 students
- July 2011 – 9 students
- Cancelled in 2012 & 2013 for low enrollment
- September 2014 – 2 students
- September 2015 – 3 students
- Cancelled in 2016 & 2017 for low (o) enrollment

Small Wind System Repair & Maintenance

- July 2005 – 14 students
- July 2006 – 12 students
- July 2007 – 4 students
- **July 2008 – 15 students**
- **July 2009 – 14 students**
- **July 2010 – 19 students**
- July 2011 – 7 students
- Cancelled in 2012 & 2013 for low enrollment
- September 2014 – 2 enrolled
- September 2015 – 1 enrolled
- September 2016 – 1 enrolled
- Cancelled in 2017 for low enrollment

Homebrew Wind Workshop

- May 2006 – 14 students
- May 2008 – 15 students
- **May 2010 – 19 students**
- May 2011 – 13 students
- June 2012 – 9 students
- June 2014 – 8 students
- June 2015 – 5 students
- Cancelled in 2016 & 2017 for low enrollment

Wind Turbine Design Considerations

- May 2004 – 22 students
- July 2005 – 17 students
- July 2006 – 23 students
- July 2007 – 8 students
- **July 2008 – 31 students**
- **July 2009 – 28 students, August 2009 – 28 students**
- July 2010 – 16 students
- July 2011 – 7 students
- Cancelled for low enrollment in 2012... and died.

Residential Wind Turbine Installation Workshops

- October 2006 – 18 students
- August 2007 – 13 students
- September 2007 – 11 students
- May 2008 – 15 students

Recent Trends: W 101 & W 201 – Online

W 101

- 2013 – 7 students
- 2014 – 14 students
- 2015 – 11 students
- 2016 – 12 students
- 2017 – 6 students
- 2018 – 3

W 201

- 2013 – 5 students
- 2014 – 3 students
- 2015 – 4 students
- 2016 – 3 students*
- 2017 – 1 student*
- 2018 – 0

Compared to PV

PV 101

- 2016 classroom – 187
- 2016 online – 137
- 2017 classroom – 169
- 2017 online – 208

PV 201

- 2016 classroom – 99
- 2016 online – 63
- 2017 classroom – 81
- 2017 online – 119

Regarding Site Assessment

- WI Focus on Energy program used to REQUIRE a site assessment to be eligible for any incentives
- NABCEP was working on SW SA Certification
- **Demand is dead.**
- Now offered as independent study course, per request
- MREA dropped Small Wind Site Assessment Certificate Program in 2018.
 - *Solar Thermal Site Assessment Certificate gone too*
 - *We have no Technical Mentors to grade reports!*

To Summarize:

MREA's (my) perspective on the future of wind energy education

- Wind is not dead. But demand is too low to devote any serious time developing, updating & delivering courses.
- Keeping W 101 & 201 available online
- Offering Homebrew Wind Workshop in July
- “Wind Week” scheduled for September
 - W 101 – Wednesday, Sept. 5
 - Tower Climbing & Safety – Thursday, Sept. 6
 - Maintenance & Repair – Friday, Sept. 7 (MREA turbine)

Accreditation, Professional Credentials & Continuing Education

- MREA **PV** courses are accredited by Interstate Renewable Energy Council (IREC). Not ST. Not Small Wind.
- Not pursuing NABCEP Small Wind Associate Registered Exam Provider status anytime soon
- No longer offering Small Wind Site Assessment Certificate
- W 101 & Homebrew Wind Workshop are approved for Continuing Ed. in WI for licensed electricians
- Homebrew Wind Workshop is approved by the VA for those with GI benefits

OK, Audience – It's your turn!

- **Where are you finding (or looking for) good employees?**
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