



midwest renewable energy association

# Guidelines for Installer Training

Best Practices for Distributed Wind Project  
Development and Installation

# Big wind and small wind: How and why training is similar

## Work at height and fall protection

- OSHA and ANSI standards apply once you're 6' off the ground

## Electrical competence

- Measuring DC and AC values, resistance checks
- NEC rules, electrical safety, arc flash awareness
- Electrical controls, isolation, and troubleshooting

## Mechanical skills

- Hand and power tools
- Hydraulic and pneumatic systems
- Safety and troubleshooting

# Big wind and small wind: How and why training is different

## **Governing and control of the machine**

- Lockout/Tagout procedures and equipment
- Rotor and yaw locks... ropes, straps, and slings

## **Evacuation, rescue, and emergency response**

- Controlled descent devices, anchor points, procedures

## **Manufacturer and customer service**

- Small wind = smaller, often now non-existing companies
- Remanufactured machines
- Finding manuals, parts, repair shops, telephone support

# Machine Controls and Isolation

SMALL WIND = ROPES,  
STRAPS AND SLINGS



BIG WIND = LOTO,  
YAW & ROTOR LOCKS



# Evacuation and Rescue Training



# Skills needed to complete a small wind turbine installation

- Electrical
- Mechanical
- Working with cranes
- Working with tilt-ups and guy wire tensioning
- Climbing and working at height
- Foundation and concrete work
- Surveying
- Proper bolt torquing tools and techniques
- Math (up to and including trigonometry)
- Troubleshooting
- People skills, paperwork, computer (data) entry and collection
- Equipment inspection
- Attention to detail
- SAFETY!!!**

# How to do it right

- Have the skill sets covered by one or more installers
- Have access to manuals, manufacturer training, and telephone support
- Hire factory or experienced dealer personnel to supervise early installations – specifically for turbine and tower types being installed
- Use commissioning checklists and post-commissioning follow-up checklists
- Keep a good rapport with the client

# Types of Training

- Community and technical colleges
- Non-profit renewable energy organizations
  - Minnesota Renewable Energy Society (MRES), Windustry
  - [Minnesota Small Wind Training Network](#) (mn.gov)
  - [Small Wind Installer Training Curriculum](#) (windustry.org)
- Courses from accredited programs or IREC Certified/Master Trainers
- Manufacturer trainings

# MREA Small Wind Installer Training Courses

- W 101: Introduction to Wind Systems
- W 201: Small Wind Site Assessor Training
- W 306: Wind Turbine Design and Construction
- W 307: Introduction to Tower Climbing and Safety
- W 401: Wind System Repair and Maintenance
- W 409: Math and Code for Small Wind

# MREA Site Assessment Certificate Programs

## MREA Small Wind Site Assessment Certificate



# Community and Technical Colleges

- OSHA training
- First aid and CPR certification
- Electrical and mechanical courses/degrees
- Programmable Logic Controllers
- Machining, welding, auto shops...
- Wind programs!
  - Minnesota West, Iowa Lakes, LTC (WI), Columbia Gorge (OR), Laramie (WY), Texas State, etc.

# Installer Certification

**For the most part, it doesn't exist.**

- NABCEP Small Wind Installer Certification no longer offered, but is still recognized for most who earned it
- NABCEP Small Wind Entry Level Exam not yet available
- Most manufacturers/installers have their own training programs, policies, and procedures
- A wind energy degree from a technical or community college may be the best “certification” available

# Guidelines for Installer Training: Summary

1. Electrical and mechanical training or background
2. First aid, CPR, emergency response training
3. OSHA 10/30 card
4. Fall protection and rescue training
5. Wind energy “101” and similar courses
6. Wind energy degree: Technical or Community Colleges
7. Manufacturer training and support
8. EXPERIENCE!

# Contact Info

Jenny Heinzen

Curriculum and Training Coordinator

Midwest Renewable Energy Association (MREA)

7558 Deer Road

Custer, WI 54423

[jennyh@midwestrenew.org](mailto:jennyh@midwestrenew.org)

715-592-6595 x-108