A Knowledge Sharing Model to Advance Solar Training in the Midwest

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About the MREA

Promote Renewable Energy, Energy Efficiency, and Sustainable Living Through Education and Demonstration

- 22nd Annual Energy Fair    June 17-19, 2011
- Hands-on Workshops
- Site Assessment Certification
- Demonstration Site
- Solar Thermal Conference (2011 TBA)
- Wisconsin Solar Tour

www.midwestrenew.org
Accelerate market adoption of solar technologies by ensuring that high-quality installations are standard and to promote sustainable jobs within the solar installation industry.

• Solar Instructor Training
• Solar Program Development Assistance

www.midwestsolarsolartraining.org
Network Development

Step 1 – Establish Baseline and Principles
Step 2 – Create a Shared Vision
Step 3 – Develop Core Services and Relationships
Step 4 – Grow Network Breadth and Depth
Step 5 – Sustain
Baseline
Solar of the State

- 7 State Partnership
- Webinar Series
- Solar State of the Region

Midwest Solar Training Network’s Solar State of the Region November 2010
Principles
Instructor Support

Essential Understandings
• Instructor comfort with the technology is the primary limitation for program implementation
• The PV and ST marketplace is rapidly changing

Training Principles
• Provide an environment to share, discuss, develop, and review curriculum
• Provide installation opportunities to instructors
• Provide a support framework for continuous instructor development
Principles
Program Support

Essential Understandings
• There are a variety of approaches to PV and ST training at technical and community colleges
• All of them have value, but some are proving to be more successful

Training Principles
• Provide a framework for instructors and administrators to share, discuss, and refine model program approaches
• Support program development at the administrative level (beyond instructor training)
Principles
Training Labs

Essential Understandings
• Hands-on training labs are a priority for most program administrators and instructors
• Lab development requires experienced instructors and appropriate context to be effective

Training Principles
• Provide a framework for instructors to share, discuss, and refine lab ideas
• Provide a method for instructors to develop, maintain, and expand training labs
Principles
Market Connection

Essential Understanding
• Training program sustainability requires connections to and support from local/regional market stakeholders

Training Principle
• Create an advisory network to help guide and support training programs
Principles
Professional Certification

Essential Understanding
• Most training institutions encourage instructors to pursue professional certification in their field(s) of instruction

Training Principle
• Create a program model that provides the breadth and depth required for instructors to gain certification
Network Development

Step 1 – Establish Baseline and Principles

**Step 2 – Create a Shared Vision**

Step 3 – Develop Core Services and Relationships

Step 4 – Grow Network Breadth and Depth

Step 5 – Sustain
Create a Shared Vision

Solar Training Pillars

- A professional standard provides the foundation for curriculum
- Accreditation provides the framework for program development
- The workforce demand provides the initiative for educational institutions
Solar Training Pillars
Professional Standard

www.nabcep.org
Solar Training Pillars
Accreditation

ISPQ Training Program Accreditation

- Training Programs
- Continuing Education
- Instructors
Solar Training Pillars
Workforce Demand

American Council on Renewable Energy
http://www.acore.org/
Solar Foundation
http://www.thesolarfoundation.org
Bureau of Labor Statistics
http://www.bls.gov/green/
American Solar Energy Society
http://www.ases.org
Apollo Alliance
http://apolloalliance.org/reports/
Green for All
http://www.greenforall.org/resources/reports-research
Solar Training Pillars
Workforce Demand

The 2-Year Degree Conundrum
Create a Shared Vision
Solar Market Pillars

- An educated consumer population provides the foundation for building a solar market

- Significant, long-term financial incentives provide the initiative for consumers and businesses

- Commitment to professional standards and quality training promotes the sustainable growth of solar businesses
Solar Market Pillars
Educated Consumers

- Site Assessment
- Technical Sales
Solar Market Pillars

Significant Financial Incentives and Instruments

- RPS
- Net Metering
- Public Benefits
- Grants and Loans
- Tax Incentives
- PACE
- RRCs
- Etc.
Solar Market Pillars
Commitment to Standards and Training
Network Development

**Step 1** – Establish Baseline and Principles

**Step 2** – Create a Shared Vision

**Step 3 – Develop Core Services/ Relationships**

**Step 4** – Grow Network Breadth and Depth

**Step 5** – Sustain
National Relationships

**CATEGORY 2: National Administrator**
- Identifies and convenes solar experts, educators and industry representatives
- Facilitates the development of model curricula, establishment of best practices and the definition of career pathways
- Conducts national communication and outreach

*Funded by the U.S. Department of Energy*

**CATEGORY 1: Regional Resource & Training Providers**
Community colleges, vo-tech schools, local union chapters and others train workers and support the local solar industry

*Funded by the U.S. Department of Energy*

**CONSORTIUM Experts & Industry Representatives**

**Local Educational Institutions**
Training workers to enter and support the local solar industry

*Sponsorship and support from the Department of Labor, the National Science Foundation, Industry and other groups*

**Trained Solar Installation Workforce**
Includes installers, technicians, system designers, engineers, sales people and code officials
Regional Relationships

Midwest Solar Training Network
Core Services

MSTN Training Program Model

1. Solar Program Partnership

2. Instructor Training Pathway (Stipend Pool)
   - 2.1 Institute - Tech or Program Emphasis
     - 2.1.1 Solar curriculum development
     - 2.1.2 Site-based installation
     - 2.1.3 Training lab incubator
     - 2.1.4 Site assessment instruction
     - 2.1.5 Advanced special topics courses

3. Solar Program Assistance
   - 3.1 Program Accreditation Course
     - 3.1.1 Instructor Mentoring
     - 3.1.2 Program Partnership

3.2 Training Lab Design and Installation Partnership
   - 3.2.1 MSTN solar lab equipment portal
   - 3.2.2 System installation partnerships

3.3 Regional Strategic Partnerships
   - 3.3.1 Model site assessment programs
   - 3.3.2 System installation partnerships

4. MSTN wiki and digital library
5. Lead installation credit
6. Training lab design database
7. MREACSA recognized trainer
8. Professional CEUs
9. ISPQ Certification
10. ISPQ Accreditation
11. Donated/reduced cost lab equipment
12. Incentives based on education/experience
13. Installation experience for students
Current Opportunities

• ST Technology Institute, **May 23-27**
• Model PV Training Programs, **May 31-June 3**
• PV Technology Institute, **June 6-10**
• Solar Site Assessment Instruction, **July 15-16**
• Teaching and Installation Stipends
Network Development

**Step 1** – Establish Baseline and Principles
**Step 2** – Create a Shared Vision
**Step 3** – Develop Core Services and Relationships
**Step 4** – Grow Network Breadth andDepth
**Step 5** – Sustain
1 Part Relationship
1 Part Knowledge Sharing
1 Part Incubator
Common Elements: Hot Spots
Network Development

**Step 1** – Establish Baseline and Principles
**Step 2** – Create a Shared Vision
**Step 3** – Develop Core Services and Relationships
**Step 4** – Grow a Network to Share Knowledge
**Step 5 – Sustain**
Solar Training Challenges

• System Archetypes
  ▪ Limits to Growth
  ▪ Fixes that Fail
  ▪ Success to the Successful
  ▪ Growth and Underinvestment
Limits to Growth
Limits to Growth

Generic Archetype
Fixes that Fail

Behavior Over Time

- Problem Symptom
- Fundamental Solution
- Symptomatic Solution
Fixes that Fail

[Diagram: A cycle labeled B1 with arrows pointing to Symptomatic Solution, Problem, Symptom, R1, Side Effect, B2, Fundamental Solution, and Back to Symptomatic Solution.]

Generic Archetype
Success to the Successful

Behavior Over Time

A's Performance

B's Performance
Success to the Successful

Generic Archetype
Growth and Underinvestment

Behavior Over Time
Growth and Underinvestment

- Current Demand
  - Growing Action
    - R1
  - (+)

- Current Performance
  - B1
  - (-)

- Capacity
  - B2
  - (+)
  - (-)
  - Performance Standard
    - (+)

- Perceived Need to Invest
  - Investment in Capacity
    - (+)