

# WORK-BASED LEARNING FOR SOLAR WORKFORCE DEVELOPMENT:

*Key Outcomes from a Midwestern Solar Internship Program*

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Work-based learning programs are valuable tools both for talent recruitment and skill development within a regional solar workforce. As the solar industry evolves and matures, work-based learning is emerging as a central component of solar workforce development and as an investment in long-term industry stability. As the industry expands and demand for solar talent grows, solar companies across the country are encountering similar workforce challenges. According to The Solar Foundation's National Solar Jobs Census 2017, "the three primary reasons reported for hiring difficulty are: lack of relevant experience or technical knowledge among the candidate pool, insufficient qualified applicants, and the high volume of workers needed." A coordinated approach to work-based learning, led by the industry in partnership with training institutions can help to address each of these challenges.

## **Workforce development:**

a process of leveraging regional networks and resources through partnerships to help an industry manage hiring needs and skills gaps, and to help individuals prepare for employment or career advancement.

## Types of **work-based learning**

range from informal short-term engagements like job shadowing, to more structured education programs, like internships or apprenticeships, and each is designed to meet a particular set of objectives within a given time frame.

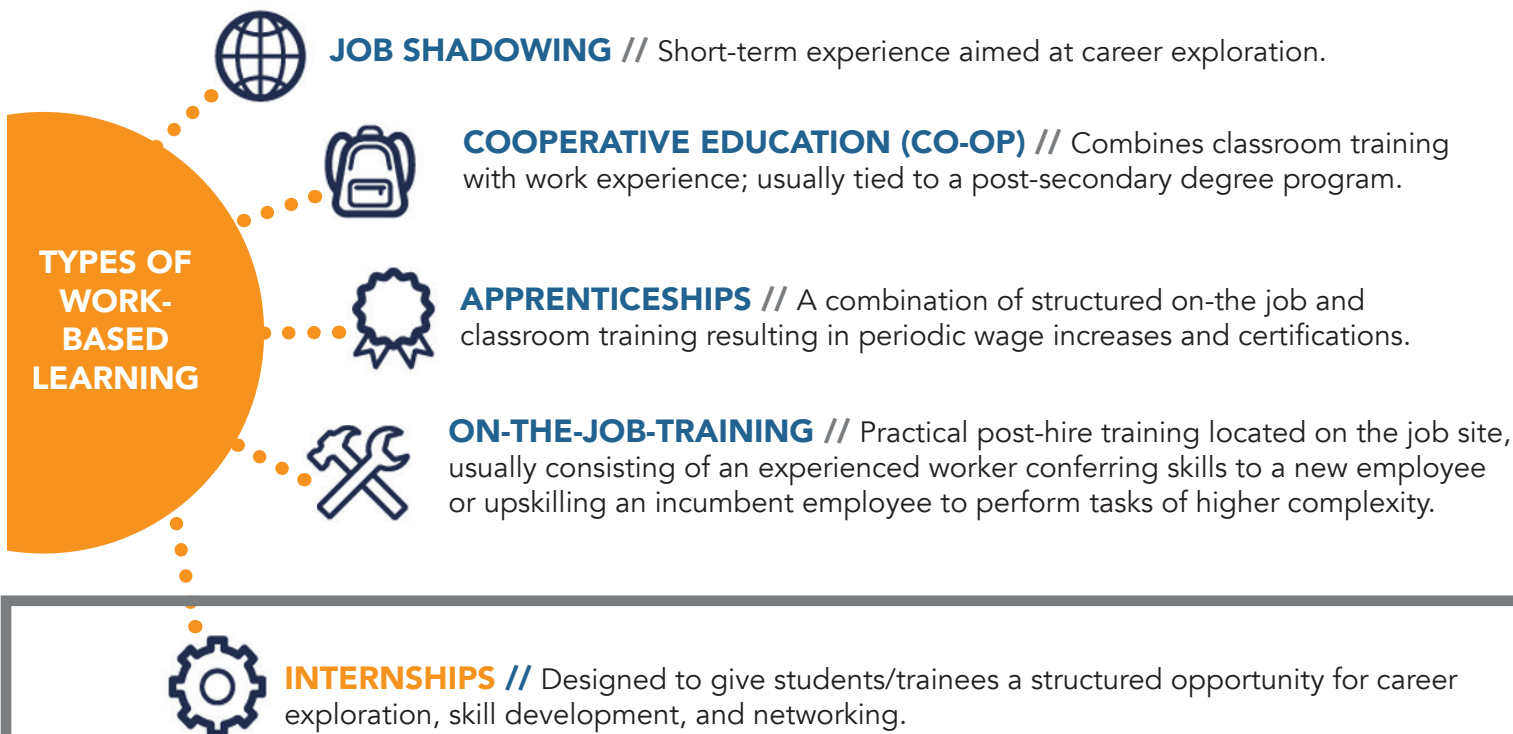
Work-based learning is a long-term process to build workforce stability, rather than an overnight solution to fill immediate hiring needs. At local or regional scales, the industry should pursue efforts to pair solar training and broader renewable energy education with practical, on the job experience, to invest in the skillsets of the near-future workforce, while boosting awareness of diverse solar career paths.

This resource supplements the Solar Training Network's 2018 toolkit, [Strategies for Solar Workforce Development](#), and illustrates successful implementation of the toolkit's Work-Based Learning Guide. With an internship case study from the Midwest Renewable Energy Association (MREA), it outlines lessons learned and best practices for replication and adaptation in solar markets across the country. The Midwest is home to some of the fastest growing solar markets in the US, and this rapid growth presents challenges to midwestern solar employers. Particularly in Illinois, backed by strong renewable energy and jobs legislation, the solar job market expanded 37% from 2017 to 2018, creating 1,308 new jobs. Like other regions of the US, firms are experiencing difficulty finding and retaining competent and qualified field technicians and project managers to keep up with their growing installation portfolios.

In recent years, solar sector partnerships have developed among industry leaders and education systems to better align solar curriculum with emerging high-demand jobs. As midwestern markets are a microcosm of broader solar industry workforce trends, the MREA was selected by the Solar Training Network to pilot a solar internship program. Through this effort, interns were recruited and placed with host companies to fill a range of solar positions, from installation technician to sales and permitting. Their progress through the program was tracked to glean best practices, lessons learned, and key recommendations for replication. Feedback from host companies and interns was designed to inform the pursuit of work-based learning across the broader solar industry.



The Midwest Renewable Energy Association (MREA) offers a full range of entry-level and continuing education training in design, sales, and installation to over 1,000 solar trainees and professionals each year. For the last 10 years, the MREA has successfully engaged a network of regional solar companies in work-based learning partnerships to offer an Advanced PV Installation Course. With ten years of job placement success for participants, this course was developed into the MREA's first solar internship program in 2017.



### CASE STUDY: INTERNSHIPS FOR SOLAR SKILL DEVELOPMENT AND RETENTION

The MREA engaged four mid-sized solar companies across Wisconsin and Illinois in partnerships to pilot a work-based learning program. This project aimed to expand on existing regional partnerships in order to model a solar industry internship program representing a diversity of solar career pathways. The participating contractors were identified based on broader conversations about regional training and hiring needs, and had previously worked with the MREA on successful training efforts. Each firm has expressed commitment to workforce development, anticipating that without coordinated efforts by all market stakeholders, hiring challenges would likely continue.

This project was informed by the Solar Training Network toolkit & work-based learning implementation guide.

Read the toolkit at:  
[AmericanSolarWorkforce.org](http://AmericanSolarWorkforce.org)



# SOLAR INTERNSHIP PILOT:

## Recruitment and Hiring

Installed PV capacity in Illinois and Wisconsin have more than doubled in recent years. Each of the participating companies are growing rapidly to meet expanding residential and commercial market needs across PV design, engineering, installation, operation, and maintenance. Particularly for smaller companies without designated HR staff, accelerated expansion stretches a company's capacity to effectively manage immediate hiring needs while planning for long term growth. The internship program was designed to demonstrate how work-based learning and sector partnerships can help to overcome some of these challenges.

The specific workforce needs and internship objectives varied among the participating firms, with some prioritizing field and technical experience and others office-based competencies. Each of the host contractors recognize the value of work-based learning as an opportunity to train job seekers on the particular skills and knowledge needed to succeed in their companies, but like many solar employers, have limited capacity to stand up such a program independently. MREA worked with each firm to define internship objectives and responsibilities.

The MREA provided assistance to each employer to develop vacancy announcements that clearly outlined internship requirements and activities. Concurrently, recruitment partnerships were established by the MREA with four Wisconsin technical colleges and two Illinois colleges that offer solar and renewable energy curriculum. The MREA promoted the vacancies publicly and through recruitment partners to attract a diversity of qualified applicants for each internship. Host companies independently selected applicants for interviews and made their own selections.

Upon hiring, the MREA communicated the supervisor and intern evaluation requirements to ensure mid-term and final evaluations were completed by all parties. The goal of the mid-term evaluation was to ensure that both employers and interns were meeting the expectation of the program. The evaluations provided an opportunity to make changes as necessary to maximize positive outcomes for the employer and intern. Final evaluations were designed to provide guidance on program improvement and inform future offerings.

### Internship Program Basics:

- 160-hours (full-time for 1 month or part-time for up to 3 months)
- Intern stipend offered upon completion
- Standardized partnership agreement with participating firms outlining roles, responsibilities, and objective of internships
- Assistance in development of position description and promotion of competitive vacancy for each partnering firm
- Recruitment through a network of technical training partners
- Standard mid-term and final evaluations for both supervisors and interns

“ I would not have predicted this two years ago, but our biggest current challenge is hiring. We are lucky to have a good relationship with Mid-State Technical College and the Midwest Renewable Energy Association. Graduates from their programs make up a majority of our employees but the continuous need for hiring is difficult to manage. The internship program has helped us to plan for future needs and commit time and resources to workforce development. ”

-Josh Stolzenburg, Founder and Member, North Wind Renewable Energy Cooperative

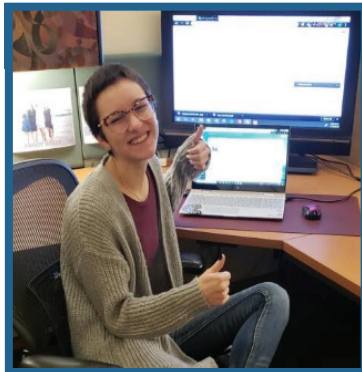


# SOLAR INTERNSHIP PILOT:

## Outcomes

Each of the four participating companies brought on an intern who was pursuing a career in the solar industry or the broader field of renewable energy. Each of the vacancies received a minimum of six applications and contractors were able to hire an intern with requisite skills and relevant career interests. Upon completion, three secured permanent solar employment: two with their host company, and one with a competing firm and one returned to complete his degree program.

EMPLOYER	POSITION	STATUS
ReThink Electric	Permitting Intern	Completed, <b>hired permanently</b> by competing firm
Arch Electric	Engineering Intern	Completed, <b>hired permanently</b>
North Wind Renewable Energy Co-op	Support Specialist	Completed, completed degree program
StraightUp Solar	Solar Support Specialist	Completed, <b>hired permanently</b>



### An Intern's perspective...

“ In my Renewable Energy undergrad program at Illinois State University, I was able to work with StraightUp Solar for canvassing efforts. When the MREA partnership offered a chance to intern with StraightUp Solar, I was incredibly excited to jump on the opportunity. I was hired as a Solar Support Specialist for the company and able to take my classroom knowledge to the field. This was a great chance to learn so many things about the solar industry and the functions of the company. I was able to participate in various tasks including customer contact, onsite technical inspections for potential installations, and multiple mentoring opportunities from StraightUp Solar employees. Each

of these aspects allowed me to gain a new insight into the company and how important the integration of renewable energy is. After my internship, I was offered a full-time position with StraightUp Solar and am continuing my learning and education of the solar industry. I now have the chance to also work with the MREA to get my NABCEP certification and even further my personal and professional development. ”

– Conner Waters,  
former StraightUp Solar Intern, and now Permit and Utility Specialist



## LESSONS LEARNED

Two-way communication and program structure are key components of a successful work-based learning experience for both the trainee and employer. Through this pilot, employers and interns each conducted mid and end-point evaluations, offering the chance for minor course-corrections where necessary to ensure that the program was valuable to both parties. Overall, each intern and employer reported a positive experience, but employers indicated that for the greatest return on investment, an internship should go beyond the 160 hours that this program modeled. Intern evaluations reflected a common desire that greater attention should be paid to on-boarding training and overall program structure, to maximize both the amount they can contribute to the company as well as their professional development outcomes.

Interns indicated that the stipend was an important motivator for them in applying for the internship. In a competitive job market, paid internships will likely attract more skilled applicants than unpaid opportunities. Employers provided mixed responses concerning their interest in offering paid internship programs. Internships do not immediately satisfy staffing needs and can involve additional time investment without guarantee of continued employment. And, the limited program did not resolve the continued difficulty in recruiting and attracting qualified applicants or grow businesses capacity to promote additional vacancies to satisfy immediate staffing needs. The responses from interns and employers support the need for mid to long-term programs that provide recruitment support to participating businesses and financial support to interns.

Work-based learning isn't a short-term solution that will fill the skills gap on day one. Making a proactive investment in training will help businesses build a pipeline of talented and skilled workers in the solar industry. This is a sustainable, scalable solution, not an overnight fix.

## CONCLUSIONS AND NEXT STEPS

Recognizing current workforce development needs, and the outcomes of the pilot internship program, the MREA is further supporting the development of credit-bearing courses with partnering colleges that provide worksite experiences to students. These courses, including advanced installation trainings and internships, will facilitate real world experiences for students, formalize industry partnerships, engage local workforce development boards, and encourage NABCEP certification for participants.

In their evaluations, employers expressed a preference for students and new industry professionals to pursue NABCEP certification; employers view it as a strong indication that an individual is committed to professional advancement and is engaged with the industry's evolving product and service offerings.

Workforce development should be viewed and embraced as a long-term investment to increase recruitment of students into technical training programs, communicate diverse solar career pathways, more closely align training to meet regional industry needs, and in doing so, formalize partnerships for experiential learning. Practical and hands-on education, in various forms, supports trainees and job seekers who can more confidently and more immediately meet a company's needs, and strengthens a regional train-to-hire pipeline. Effective workforce development efforts are employer-led, informed by, and adaptive to an industry's evolving regional needs. The demand for field technicians and project managers identified in this pilot may soon expand to engineers and technical sales professionals. To ensure that work-based learning programs anticipate near-future hiring needs, the position description and job responsibilities should align to some extent with the skills and knowledge required for professional credentialing. "Stackable" credentials, like NABCEP encourage continuing education through coursework and practical training, central to success in an evolving industry.

NABCEP has completed thorough Job Task Analyses for solar occupations, and provides a strong resource for defining learning objectives and identifying technical and professional competencies.

For more, see the Solar Training Network's Work-Based Learning Implementation Guide.

# SOLAR INTERNSHIP PILOT: Recommendations for Replication



BUSINESS &  
INDUSTRY



ECONOMIC  
DEVELOPMENT



EDUCATION



COLLABORATION  
& INFORMATION  
SHARING



WORKFORCE  
DEVELOPMENT

## Recommendations for Replication

- ✓ **IDENTIFY GOALS** // Effective work-based learning programs are employer-led and designed to address specific skills gaps and long-term talent needs. The first step in planning a work-based learning program is to identify a clear and reasonable goal for the business and for the potential interns.
- ✓ **DETERMINE THE RESOURCES NEEDED** // Ensure staff capacity to supervise and mentor interns, as well as physical resources like equipment and office space.
- ✓ **RECRUIT** // A variety of institutions can help recruit applicants for internships and other entry-level job openings. Employers should build relationships with:
  - Technical colleges and vocational training centers
  - Post-secondary institutions
  - Regional high schools (Beyond internships, short term and low-cost opportunities include job shadowing, or career day to raise awareness of solar careers in your community)
  - Community and workforce development organizations to reach new talent pools.
- ✓ **MATCHMAKE** // Aligning intern and employer objectives will help ensure a positive learning experience and future employment opportunities. As employers see positive employment outcomes from their investment in internships, they are more likely to continue and expand their participation in workforce development programs.
- ✓ **TRAIN** // An internship should have specific goals, clear expectations, and a well-defined supervisory structure.
- ✓ **MONITOR AND ADAPT** // A mid-term evaluation with the employer and inter can help to build off success and address challenges to ensure a positive experience.
- ✓ **SHARE SUCCESSES** // Hosting an intern is an investment in the development of the future workforce. By sharing your successes, you invite further participation in the workforce development effort.