



October 2023

ADVANCED TECHNOLOGICAL  
EDUCATION NETWORK FOR UTILITIES  
AND ENERGY TECHNICAL EDUCATION  
(UTILITIES AND ENERGY  
COORDINATION NETWORK)  
SOLAR ENERGY EMPLOYER SKILLS  
SURVEY RESULTS REPORT

**Prepared for:**



Amy L. Kox, Ed.D.  
Northeast Wisconsin Technical College  
2740 W. Mason St.  
Green Bay, WI 54307

**Prepared by:**



Kathleen Lis Dean, Ph.D.  
Alyssa Horn, M.P.A.  
The Rucks Group, LLC  
7887 Washington Village Drive; Suite 250  
Dayton, OH 45459  
[www.therucksgroup.com](http://www.therucksgroup.com)  
t 937-242-7024  
f 937-242-7026

# Table of Contents

Background..... 3

Findings..... 3

Final Thoughts ..... 6

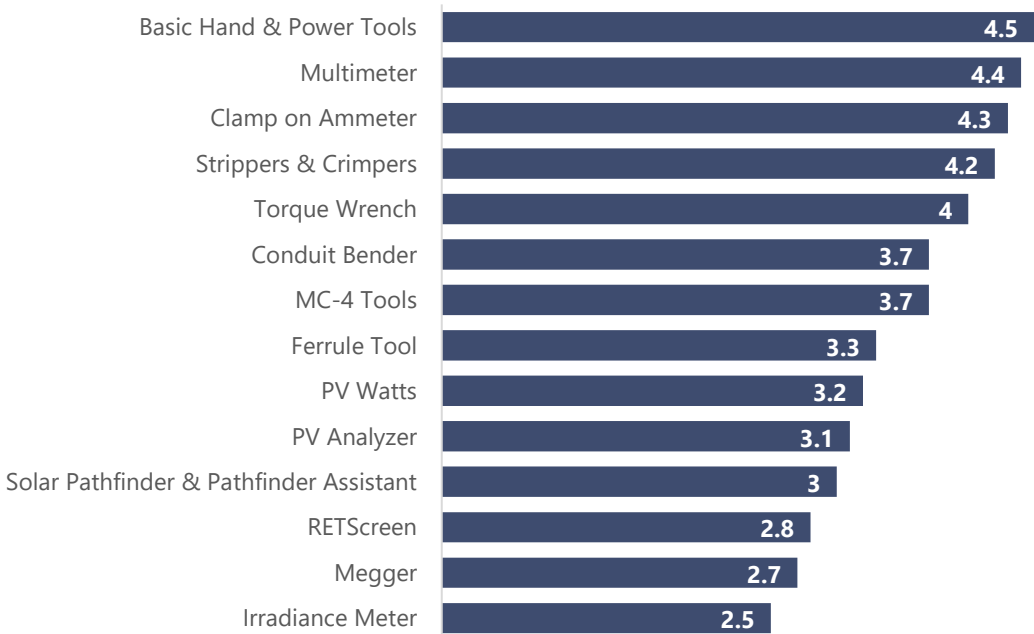
# Background

Northeast Wisconsin Technical College (NWTC) is addressing workforce shortages in the energy and utilities sector through the development of the Utilities and Energy Coordination Network (UECN). This project is designed to expand training opportunities, create new programs, and develop curricula for high-demand energy-related roles across the nation by creating a platform for industry, higher education institutions, and other stakeholders to share resources and generate partnerships in gas, electrical power, and utilities engineering to address workforce shortages.

A key objective of this project is to understand the extent to which the curricula offered by colleges in the Network align with industry needs by gathering input from employers across a variety of utilities and energy-related sectors. The findings presented in this report represent the results of a survey of employers in the solar energy industry. This survey was sent to forty-seven individuals in the solar energy field; eleven responses were received (23% response rate). This results report includes a summary of the quantitative and qualitative findings from the survey. A copy of the survey can be found in Appendix A.

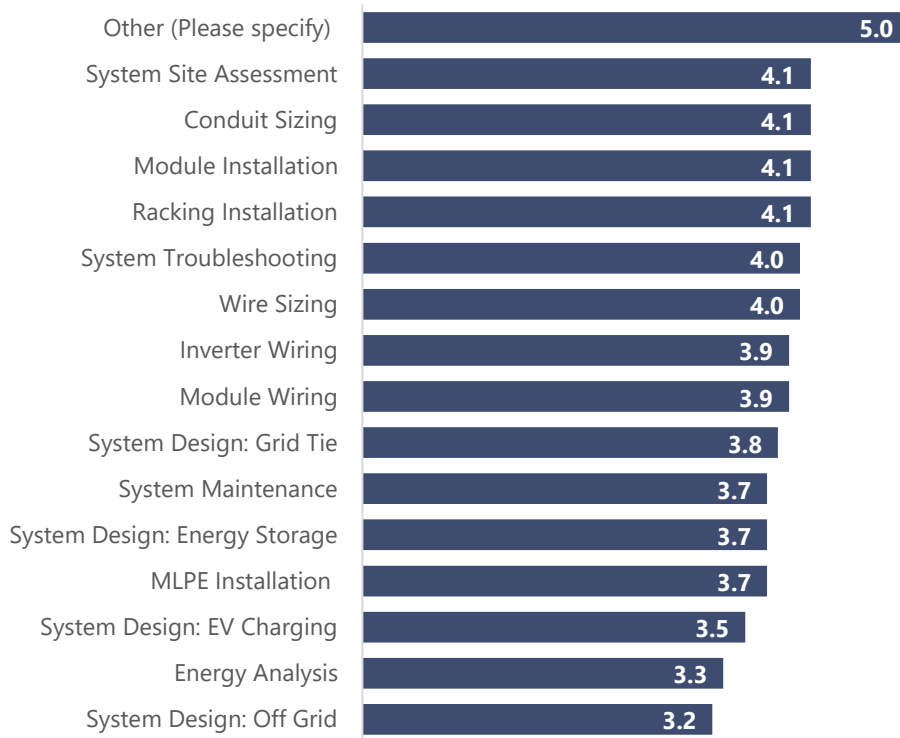
# Findings

When asked to indicate the importance of job candidates' abilities to use identified tools for the solar energy industry, respondents rated Basic Hand & Power Tools and Multimeter use as being of the highest importance (Figure 1).



**Figure 1.** Average ratings to the question, “Please indicate how important the ability to use each of the following tools is to your company when hiring” (n=11). Scale: 1=not at all important to 5=extremely important.

Respondents were then asked to indicate how important certain industry-specified skills were when hiring. Respondents highlighted that skills not listed were of the utmost importance. Of the respondents who answered "Other," three respondents provided text describing the additional skills not listed. Two skills highlighted included energy audits and utility bill analysis. The third respondent noted that "these answers all depend on which position we would be hiring for."



**Figure 2.** Average ratings to the question, "Please indicate how important the following skills are to your company when hiring" (n=11). Scale: 1=not at all important to 5=extremely important.

When asked about software skills, respondents also rated "Other" skills as most important for potential hires, followed by Microsoft Word (Figure 3). Of the respondents who answered "Other," three provided text describing the additional software skills not listed. Two of these skills included construction management software and Sketchup. A third individual highlighted that the software skills noted would be applicable to a project manager and not an installer.



**Figure 3.** Average ratings to the question, "Please indicate how important each of the following software skills is to your company when hiring" (n=11). Scale: 1=not at all important to 5=extremely important.

When respondents were asked to rank a list of professional skills in order of importance for hiring in their organizations, verbal and written communication skills were ranked the highest (Table 1).

Professional Skill	Average Rank
Verbal and written communication skills	2.6
Customer Service	2.9
Technical writing	2.9
Team building skills, teamwork	3.2
Leadership	3.7
Project Management	3.8
Social skills	3.9
Problem solving	4.1
Curiosity	4.1
Professionalism	4.6
Adaptability	4.6
Self-motivation	4.7
Willingness to learn	4.7
Communication	4.7
Other	5.0
Microsoft Office word processing, spreadsheets, presentations	5.6
Conflict Resolution	5.6
Diversity, equity, and inclusion; interaction with diverse populations	6.0
Handling feedback	6.2

**Table 1.** Average rankings to the question, “Please rank the following list of professional skills, in the order of importance for hiring in your organization” (n=11). Scale: 1=most important to 8=least important

When asked about other skills colleges should help students to develop to better prepare them for roles in the solar energy industry, respondents highlighted both technical and professional skills (Table 2).

Technical Skills	Professional Skills
<ul style="list-style-type: none"> <li>- Expose the students to Solar Thermal also.</li> <li>- Electrical skills – how to read the NEC and understand all electrical installation aspects of a solar system.</li> <li>- Safety Awareness – Electrical Hazards and fall protection.</li> </ul>	<ul style="list-style-type: none"> <li>- Business skills and economic understanding.</li> <li>- In this fast-changing industry, it is good to know of associations and networking opportunities.</li> <li>- Continue to stay current with an ever-changing industry.</li> <li>- Sales</li> </ul>

**Table 2.** Answers to the question, “What other skills should colleges help students to develop to best prepare for roles in the solar energy industry” (n=7).

Respondents indicate both sources and types of training opportunities their organizations provide as well as (Table 3).

Sources of training	Types of training
<ul style="list-style-type: none"> <li>- Professional development; apprenticeships</li> <li>- Certifications through MREA, AEE among other professional organizations</li> <li>- We attend training at manufacturers and distributors as well as the NABCEP conference.</li> <li>- We have a technical training department to help support some of our technical learning needs.</li> <li>- Manager training program</li> <li>- Electrical apprenticeship</li> </ul>	<ul style="list-style-type: none"> <li>- Boiler and water heater design; installation and troubleshooting classes.</li> <li>- Safety and skill training</li> <li>- On the job installation</li> </ul>

**Table 3.** Training opportunities provided by employers (n=9).

In addition to training opportunities, respondents were asked to highlight the types of roles their companies hire job candidates for that use the competencies highlighted throughout the survey (Table 4).

Role	N
Project Coordinators/Managers	7
Electrical Engineer	6
Installer/Technicians	5
Electrical Designer	4
Technical Sales	4
Other	3
Mechanical Engineer	3

**Table 4.** Roles for which companies hire job candidates that use the above competencies (n=11).

Lastly, respondents were asked to report whether their company is connected to any educational institutions from which they regularly hire employees or where current employees can pursue additional training. Over half of respondents said that their organization was connected to an educational institution (Figure 4).



**Figure 4.** Percentage of companies connected to educational institutions from which they regularly hire employees and/or where current employees can pursue additional education or training (n=11).

For those whose organizations connected with at least one educational institution, three respondents reported being connected with NWTC (Table 5).

Educational Institutions	Other Institutions
- Northeast Wisconsin Technical College (3 respondents)	- Midwest Renewable Energy Association
- Chippewa Valley Tech College	- Local Union 158
- Morain Park	
- Blackhawk Tech	
- Southwest Tech	
- College of Menominee Nation	
- U. Wisconsin Green Bay	
- U. Wisconsin Madison	

**Table 5.** Full responses to the question, “With what educational institutions are you connected?”

## Final Thoughts

This results report is intended to provide a clear and concise summary of the survey responses from industry partners who responded to the Solar Energy employer skills survey. The interpretation of this information in relation to this project’s evaluation questions along with corresponding recommendations will be included in the annual evaluation report.

# Appendix A: Solar Energy Employer Skills Survey

Q1 As part of the Utilities and Energy Coordination Network (Network) grant at Northeast Wisconsin Technical College, we are requesting your input regarding the skills needed by job candidates in the solar energy industry. This survey will take approximately 10 minutes and will provide valuable information for the Network to understand the extent to which the existing curricula are meeting industry's needs. Your response will remain anonymous and confidential; responses will be aggregated for reporting. Thank you.

Q2 TOOLS - Please indicate how important the ability to use each of the following tools is to your company when hiring:

	Extremely important (5)	Very important (4)	Moderately important (3)	Slightly important (2)	Not at all important (1)
Multimeter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clamp on Ammeter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irradiance Meter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Megger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PV Analyzer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basic Hand & Power Tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Torque Wrench	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wire Cutters, Strippers & Crimpers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MC-4 Tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ferrule Tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conduit Bender	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solar Pathfinder & Pathfinder Assistant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RETScreen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PV Watts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 SKILLS - Please indicate how important the following skills are to your company when hiring:

	Extremely important (5)	Very important (4)	Moderately important (3)	Slightly important (2)	Not at all important (1)
Racking Installation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Module Installation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MLPE Installation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Module Wiring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inverter Wiring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wire Sizing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conduit Sizing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Site Assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Design: Grid Tie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Design: Off Grid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Design: Energy Storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Design: EV Charging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Troubleshooting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
System Maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Q3 SOFTWARE SKILLS - Please indicate important each of the following software skills is to your company when hiring:

	Extremely important (5)	Very important (4)	Moderately important (3)	Slightly important (2)	Not at all important (1)
AutoCAD or similar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microsoft Excel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microsoft Power Point	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microsoft Word	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5 PROFESSIONAL SKILLS - Please rank the following list of professional skills, in the order of importance for hiring in your organization.

- \_\_\_\_\_ Computer skills: Microsoft Office word processing, spreadsheets, presentations
- \_\_\_\_\_ Conflict resolution
- \_\_\_\_\_ Customer service
- \_\_\_\_\_ Diversity, equity, and inclusion; interaction with diverse populations
- \_\_\_\_\_ Handling feedback
- \_\_\_\_\_ Problem solving
- \_\_\_\_\_ Team-building skills, teamwork
- \_\_\_\_\_ Verbal and written communication skills

Q6 PROFESSIONAL SKILLS - Please indicate important each of the following professional skills is to your company when hiring:

	Extremely important (5)	Very important (4)	Moderately important (3)	Slightly important (2)	Not at all important (1)
Self-motivation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Willingness to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curiosity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professionalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Project management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 What other skills should colleges help students to develop to best prepare for roles in the solar energy industry? \_\_\_\_\_

Q10 What training opportunities does your organization provide? \_\_\_\_\_

Q8 For what roles does your company hire job candidates that use the above competencies?

- Installers/technicians
- Technical Sales
- Project coordinators/managers
- Electrical designer
- Electrical engineer
- Mechanical engineer
- Other: \_\_\_\_\_

Q9 Is your company connected to any educational institutions from which you regularly hire employees and/or where current employees can pursue additional education or training?

- Yes
- No

Q10 With what educational institutions are you connected? \_\_\_\_\_