Advanced Technological Education Network for Utilities and Energy Technical Education (Utilities and Energy Coordination Network) Year 2 Evaluation Report

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Executive Summary

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*. 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.

Specific project objectives are to:

1. Leverage the knowledge base of the NWTC Program Advisory Committees to cultivate a core leadership group consisting of stakeholders representing national and regional employers from across the electrical power, gas, solar technology, energy management, and telecommunications industry, academia, and workforce development sectors to lead the formation of the *Utilities and Energy Coordination Network* (the Network);

2. Create a clear, shared vision that guides the evolution of the Network; and

3. Establish the structure and norms of the Network to build relationships and trust among members.

Findings and Recommendations

In Year 2, the project team continued to reach out to potential members through both virtual and in-person opportunities which has led to an increase in Network membership despite limited opportunities. Two new communication mechanisms – a newsletter and a microsite – were developed with the goal of reaching more members and potential members to share resources and information about the Network.

The first of several planned employer surveys suggest that the current educational programs in the Network appear to meet employer needs, but also suggest opportunities for potential modifications to specific technical and professional skills addressed in the curriculum, especially the role of welding courses, computer skills, and diversity, equity, and inclusion skills.

Information on training opportunities, curriculum, and staffing is being made available to the Network, primarily generated by the project team through the website, newsletter, and Teams platform, and useful information about member preferences and employer needs has been collected. New collaborations are gaining traction between NWTC and other Network members.

While evidence is still limited in Year 2, structures and tools are emerging to support the Network's goals of implementing workforce solutions with educational institutions and employers.

- Using the results from the employer survey, the team should also identify how to share this information with other colleges as well as engage employers in conversations to understand the implications of any curricular changes.

- Once the UECN microsite is published and publicized, the project team should consider how they might leverage this platform to enrich the Network member experience and to attract new members. Some considerations should include profiles of existing members and their partnerships, highlights of the employer skills surveys, and opportunities to meet with the Network leadership and other members during upcoming conferences.

- To build relationships and collaborations, the project team should identify opportunities to convene current and potential members both virtually and in person. The project team should consider working with selected members to offer an online "office hours" or workshop series on topics of interests, such as identifying partners, developing collaborations, and modifying curriculum. Hosting networking events at related conferences such as HI-TEC and the ATE PI Conference could help to raise awareness of the Network and its goals, as well as begin to develop and deepen connections among attendees.

Table of Contents

Background

Northeast Wisconsin Technical College (NWTC) is a two-year technical college located in Green Bay, WI that offers one of the widest varieties of utility-related associate degrees, technical diplomas, and certificates in the Midwest and has partnered with local employers to meet regional economic needs for over 100 years. NWTC is also home to the Great Lakes Energy Education Center, a "living energy" laboratory featuring the latest technologies and serving as a model of sustainable building practices. NWTC's expertise and experience puts the College in an excellent position to form and facilitate a network of industry and educational partners.

Funded by the National Science Foundation's Advanced Technical Education program (NSF ATE) in 2020, the purpose of NWTC's *Utilities and Energy Coordination Network* grant is to create a platform for industry, higher education institutions, and other stakeholders to share resources and collaborate to expand training opportunities, create new programs, and develop curricula for high-demand energy-related roles across the nation. The Utilities and Energy Coordination Network, referred to as "the Network" in this report, project will leverage relationships developed through prior grants, including UPDATE: Utilities Pipeline Development for Advanced Technological Education (DUE#1304726) and the Planning Grant for a Utilities and Energy Regional Center of Excellence (DUE#1700673) to create a formal utilities and energy coordination network.

Despite increased enrollments at NWTC over the past six years, the needs of industry outweigh the ability of a single entity to fill the workforce pipeline. The energy industry is experiencing workforce shortages and skills gaps in key engineering and technical areas due to an aging workforce approaching retirement, changing technologies, and fewer qualified, younger candidates. Furthermore, qualified workers are increasingly choosing to work closer to their hometowns, limiting the ability to fill positions across a wider geography.

Matching industry partners to community colleges with expertise to train future technicians will be critical to addressing pipeline shortages. Such partnerships will help industry gain access to students, training expertise, and graduates who want to work close to home. Higher education institutions will benefit from industry partners who can provide input and feedback into program competencies and access to resources such as equipment, tools, and field experiences. The Network will provide a platform to cultivate and generate partnerships that can expand training opportunities in gas, electrical power, solar energy, energy management, and apprenticeships to address workforce shortages across the nation.

Specific project objectives are to:

1. Leverage the knowledge base of the NWTC Program Advisory Committees to cultivate a core leadership group consisting of stakeholders representing national and regional employers from across the electrical power, gas, solar technology, energy management, and telecommunications industry, academia, and workforce development sectors to lead the formation of the *Utilities and Energy Coordination Network* (the Network);

2. Create a clear, shared vision that guides the evolution of the Network; and

3. Establish the structure and norms of the Network to build relationships and trust among members.

This document details the Network's progress in its second year of funding.

Purpose and Design of the Evaluation

The Rucks Group, LLC (see Appendix A for author biographies) was contracted to provide external evaluation services for the Network and has worked collaboratively with project leadership to distill the evaluation methods. The project's theory of change hypothesizes that bringing industry, academia, and other stakeholders together with a shared purpose will lead to resource sharing and collaborations focused on addressing current and anticipated industry workforce and training needs through new programs and curriculum development. Guided by the logic model (see Appendix B), the evaluation design includes formative evaluation for project improvement as well as summative evaluation to gather evidence of impact continually.

Evaluation Questions

Driving the evaluation are four evaluation questions:

1. How effectively is the project team bringing together key organizations in the Network?

2. To what extent do the curricula offered by community colleges in the Network align with industry needs?

3. What information, best practices, and/or resources are flowing through the Network? How does this information bring value to the Network?

4. How and to what extent is the cross-sector Network ready to set and execute strategies, including implementing workforce issues solutions?

Data Gathering Approaches

The evaluation uses a mixed-methodological approach, collecting both qualitative and quantitative evidence of the completion of deliverables (e.g., outputs) and short-term project outcomes. Data collection in the second year relied on reviews of project-level documents (e.g., meeting notes, communication activity, outreach activity), regular meetings with the project team to understand project progress and planning, interviews with project team members (see Appendix C for protocol), an employer survey (Appendix D) to gather feedback about the skills they need in their workforces, and a member survey (Appendix E) to understand expectations and communication preferences.

Evaluation Findings

Evaluation Question #1: How effectively is the project team bringing together key organizations in the Network?

In Year 2, the project team continued to reach out to potential Network members, identifying stakeholders' needs, and further develop their communication mechanisms.

Outreach and Recruitment

While the global pandemic continued to hinder the project team's outreach and recruitment efforts, they were able to participate in several conferences and meetings to share information about the Network, either virtually or in-person (see list of outreach activities in Appendix F). The project team noted that reliance on virtual opportunities has been the most challenging aspect of identifying and bringing new members into the Network, particularly the change in format for the October 2021 ATE PI Conference from in-person to virtual. The materials developed for this conference (see flyer in Appendix G and conference slides in Appendix H) have been leveraged for continued use on the Network website and microsite; more information about both of these platforms is shared later in this evaluation question. The team's original intent was to attend multiple conferences and host adjacent sessions to share information about the Network and hear firsthand from potential members what they need from the Network. One individual commented that virtual opportunities are just "not the same thing as sitting at a table together."

Despite these limitations and challenges, the Network expanded in Year 2 from six member organizations to 69 (Figure 1). A complete list of current Network members is available on the UECN website[1] under the "Network Resources" link.

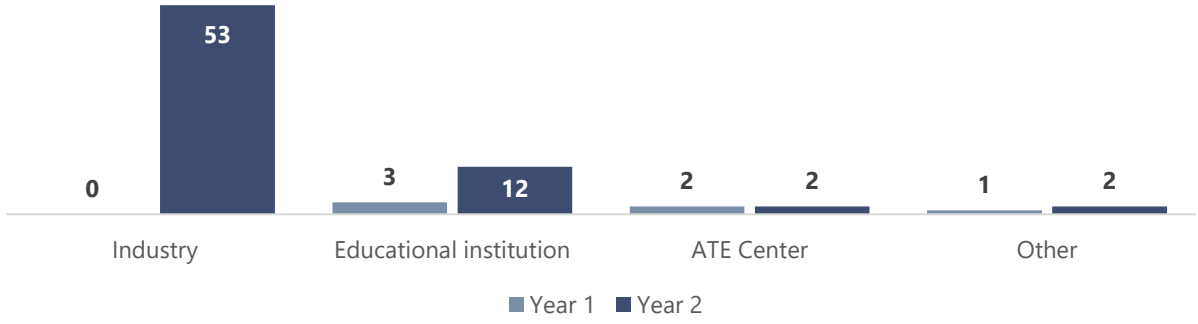


Figure 1. Change in Network membership.

The most notable changes in Network membership are the large increase in industry members and the expanded geographic diversity of the educational institutions. One goal of the Network is to connect employers with educational partners in their geographic area as many workers in this sector prefer to work

[1] https://www.nwtc.edu/about-nwtc/nwtc-locations/green-bay/great-lakes-energy-education-center/utilities-and-energy-coordination-network/utilities-and-energy-coordination-network-resources

close to home. The addition of eight educational institutions in eight states has expanded the geography of Network educational partners from the original four in Wisconsin.

Identifying Stakeholder Needs

To understand stakeholder needs and preferences, two surveys were distributed in Year 2. In August 2021, the project team sent a survey to 154 individuals representing 66 organizations to understand the utility of the Microsoft Teams™ platform, motivations for joining the Network, and expectations of Network leadership and other members. Responses were received from eight institutions of higher education, 15 industry members, and five professional organizations. Data from this survey will be shared in evaluation questions 3 and 4.

A second survey was developed to begin identifying how the curriculum available at Network colleges meets the needs of employers. The survey included the key technical and professional skills identified in a review of each 33- to 38-credit curriculum, and also asked employers about additional skills not listed that were important, as well as training opportunities provided by their organizations. The survey was distributed by email in January 2022 to 169 individuals, and 17 responded (10% response rate). Data from this survey will be shared in evaluation question #2.

Communications

Communication creates the opportunity for shared information that can serve as a foundation for cooperation, coordination, and collaboration.[2] With a goal of sustaining a network with limited opportunities for face-to-face-interaction, developing a means for members to connect with one another, share resources, and to recruit additional members remained a key implementation task. In Year 2, the project team started publishing a semi-monthly newsletter, maintained the campus-based project website and a Microsoft Teams™ channel, and began developing a microsite through the ATE Microsite Services to facilitate communication among Network members and to reach potential members.

Newsletter. The first edition of the Utilities and Energy Coordination Network newsletter was disseminated by email in February 2022 to 323 industry and educational institution contacts (see newsletter in Appendix I). The newsletter included grant updates, a survey invitation, information on upcoming trainings and seminars, news about NWTC academic events and programs, and a request for information, comments, and best practices to share. A second edition is planned for April 2022. More information about the newsletter will be shared in evaluation question #3.

Microsoft Teams™ Platform. The need for a more interactive communications component led to the introduction of Microsoft Teams™ in the first year of the grant to provide a platform for Network members to share ideas, resources, and best practices. In Year 2, there are now 75 individuals on the platform, including project team members. The platform appears to be used primarily by the project team as a place to share information about resources, opportunities, and conferences. There is little evidence of conversations or information sharing among other Network members in the General channel or in any of the program area channels included in the Network – Electrical Power Distribution, Energy Management, Gas Utility Construction, Solar Energy, and Telecommunication. In a survey of Network members, 76% said that Teams works as a communication platform for their organization, but some noted drawbacks. The project team noted

[2] Williams, B., Sankar, M., & Rogers, P. (April 2004). *Evaluation of the Stronger Families and Communities Strategy 2000-2004*. Australian Government Department of Family and Community Services.

that it is a challenge getting people to engage with chats or discussion on Teams. One survey respondent shared that, "Teams works great as a meeting platform but not great for sending and receiving messages. Often new messages are lost in the noise of the platform among the various teams [to which individuals belong]."

Website. The Network's web presence continues to be hosted by NWTC's Great Lakes Energy Education Center[3] and currently serves as a place to direct people for more information and to join the Network. Data analytics through February 2022 show most visitors to the site are new, with only one-quarter categorized as a returning visitor (see Figure 2), suggesting few repeat visitors.

Figure 2. UECN website visitors, May 2021- February 2022.

Microsite. In Year 2, the project coordinator began working to build a microsite[4] using the ATE Microsite Service[5] which helps projects to easily create a mini-website to "to share documents, publish curriculum materials, announce events and publications, and disseminate the products and progress of their grant." Unlike many campus-hosted sites, projects teams can update content themselves and are not limited by campus decisions about website traffic. The Network will keep the existing campus-based website but link it to the microsite once it is published later in Spring 2022. Analytics and more information about the microsite will be shared in future reports.

Conclusions

In Year 2, the project team continued to reach out to potential members through both virtual and in-person opportunities which has led to an increase in Network membership. Despite limited opportunities, the ability to network and have conversations with people has been effective in growing the Network. Two new communication mechanisms were developed with the goal of reaching more members and potential members to share resources and information about the Network.

[3] https://www.nwtc.edu/about-nwtc/places/green-bay-campus/great-lakes-energy-education-center/energy-coordination-network
[4] https://atecentral.net/msites/UECN
[5] https://atecentral.net/microsites

Evaluation Question #2: To what extent do the curricula offered by community colleges in the Network align with industry needs?

Respondents to the survey of gas utility employers were asked to identify the most important technical and professional skills they consider when hiring, as well as opportunities they provide for employee training.

Technical Skills and Certifications

Of the skills identified in the curriculum, three appear to be most in demand: pipe cutting and threading, installing plastic mains and services, and installing gas piping (Figure 3). Welding and residential appliance skills appear to be less important to employers, which may suggest areas for curriculum modification.

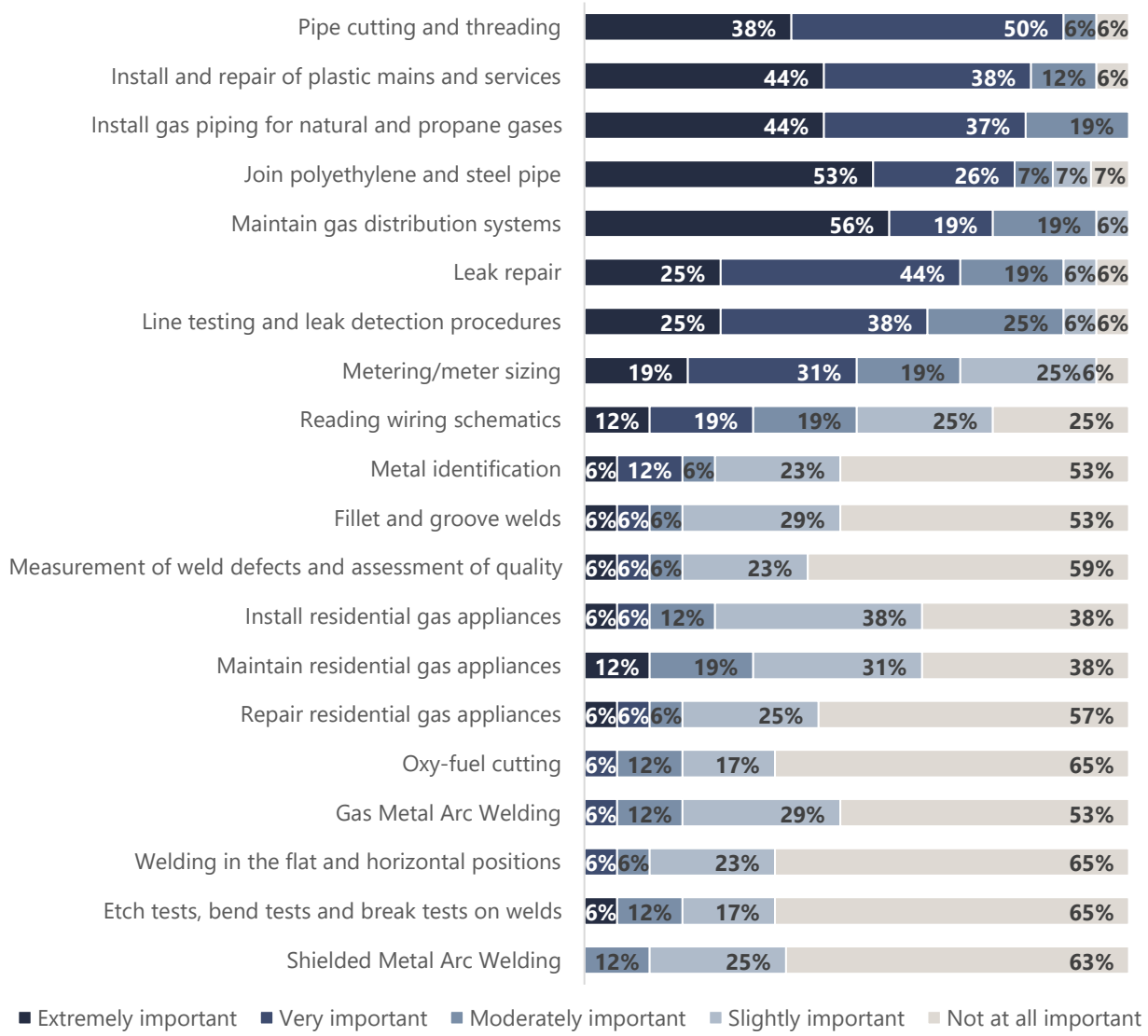


Figure 3. Employer-reported importance of gas industry skills.

Other technical skills in which employers reported interest included equipment operation (n=2) and polyethylene (PE) fusion (n=1). As one respondent stated, "We need mostly plastic gas technicians who can grasp the concepts of the installing mains and services. They need to be able to drive with commercial licenses and operate basic excavation equipment." Equipment, safety, and health certifications are also included in the program curriculum, and employers reported that these credentials vary in importance for new hires (Figure 4). Commerical Driver's License (CDL) certification is most important, with one respondent identifying "combination and air brake CDL" as another important credential. "Fire prevention" was noted by one employer as another certification that would be useful for new hires.

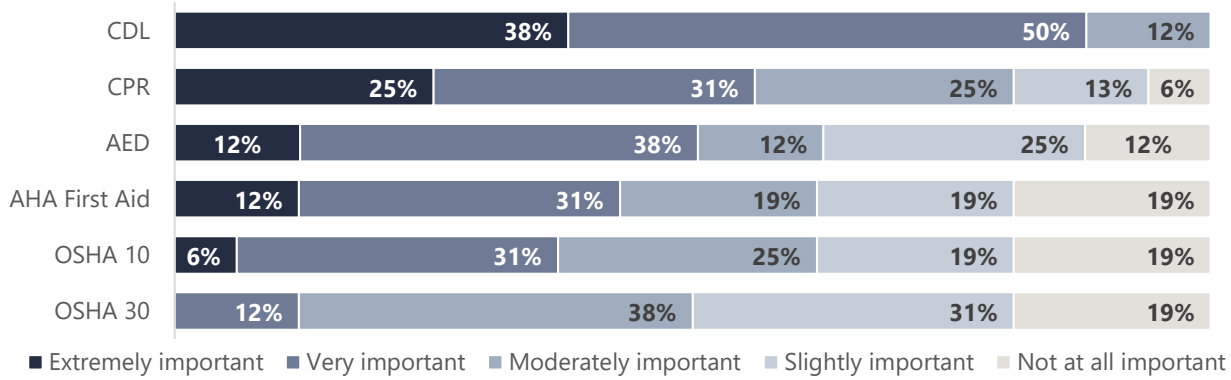


Figure 4. Employer-reported importance of gas industry certifications.

Professional Skills

In addition to the technical skills included in the Gas Utility Construction and Service programs, professional skills are also addressed through courses such as College 101, Computer Literacy – Microsoft Office, Applied Written/Job Seeking Communication, Occupational Relations, and Occupational Success Strategies. Survey respondents were asked to rank eight professional skill categories in order of importance, with results showing computer skills; diversity, equity, and inclusion (DEI); and handling feedback as the three most important (Figure 5).

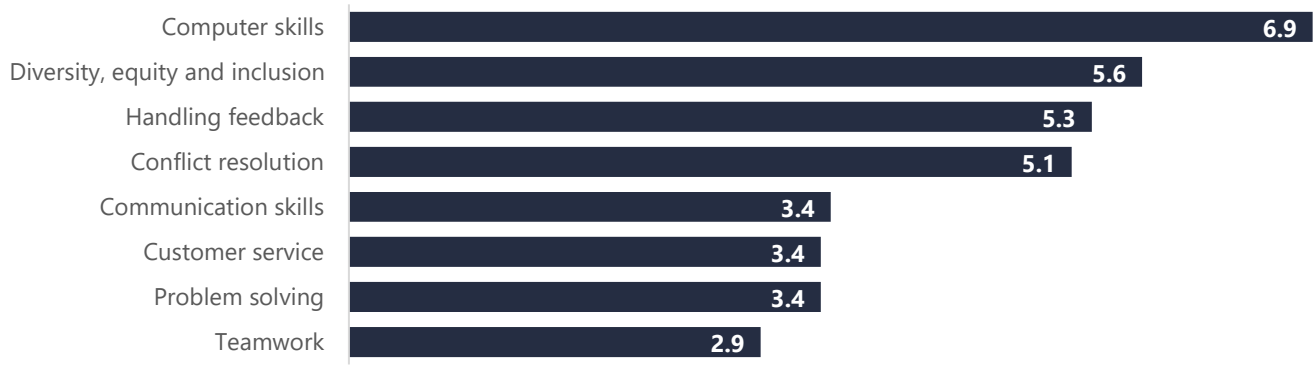


Figure 5. Employer ranking of importance of professional skills when hiring (scale: 1-least important to 8=most important).

Several employers commented on the need for computer skills, noting that "A lot of our OQ training is computer based and you would need basic computer skills," while others specifically identifyed basic computer skills, spreadsheets, and email as well as basic programs in the Microsoft Office™ suite including

Word, Outlook, and Excel. Other professional skills that employers reported as important included reading comprehension (n=1), interpersonal skills (n=1), professional appearance (n=1) and interview skills (n=1), with one commenting on the importance of, "Knowing how to do behavioral interviews and answering in the STAR method. Someone could be an excellent coworker, but they need this skill to know how to tell us they are."

Employers reported that they offer a wide variety of technical and professional training opportunities to employees (Table 1). Respondents commented that they provide training for, "The skills needed to get them to the opportunity they want to pursue" while another noted that they "train to all aspects of our work…as an employee progresses."

Technical training	Professional Training
Industry-related skills (n=2)	General employee training (n=3)
Equipment operation (n=2)	Leadership (n=2)
Pipe fusing (n=2)	Diversity and inclusion (n=1)
Natural gas installation/repair (n=1)	Teamwork (n=1)
OQ-related skills (n=1)	
Commercial Driver's License (n=1)	
Pipe laying (n=1)	
Meter connection (n=1)	
Gas distribution (n=1)	
Polyethylene fusion (n=1)	
General service/maintenance (n=1)	
Welding (n=1)	
Compliance (n=1)	
Machining (n=1)	
First aid (n=1)	
Safety awareness (n=1)	

Table 1. Employer-sponsored training opportunities.

When compared to the professional skills that employers are seeking and those that they provide training for, it is notable that none offer computer training, suggesting that there is a high expectation that new employees already have these skills. DEI is also listed as very important to employers (see Figure 4). but only one indicated that they provide training in this area, suggesting that this may also be an opportunity for colleges to address.

Conclusions

The current educational programs in the Network appear to meet employer needs, but survey results also suggest opportunities for potential modifications to some technical and professional skills addressed in the curriculum, including the role of welding courses, computer skills, and DEI skills.

Evaluation Question #3: What information, best practices, and/or resources are flowing through the Network? How does this information bring value to the Network?

Multiple types of information and resources are being made available to the Network through the communication tools that have been put into place and other interactions such as surveys, conferences, and other outreach events. The member survey highlighted the expectation that a key role for Network leaders (NWTC project team) is to provide information. One respondent noted that leadership should "keep us informed on updated information" while another emphasized the need for "timely, relevant communication

about content." Similarly, Network members expect each other to share knowledge, information, and resources (n=7).

Network Information

The project team has ensured that key information about the Network is available on the Network website, the newsletter, and in event materials to inform and recruit potential members. The Network website serves both as an introduction and invitation to the Network with content about its goals and project team members. In Year 2, the website expanded to include a list of Network members with links to their organizational website, a brief slide show sharing information about the Network, and a form to join the Network.

Curricular Information

Information and resources about curriculum and related educational materials are a large part of the information that has been made available in the Network in multiple places. Members can find course descriptions, sample student schedules, instructor job descriptions, and sample budgets on the Teams platform. On the website, visitors can connect to information about the five academic program areas included in the project. The newsletter also highlights recent events and activities from NWTC's energy-related programs including classroom activities, student accomplishments, and new initiatives.

A significant new source of information on curriculum emerged in Year 2 with the results of the gas industry employer survey. These nascent results represent a significant source of information for educational institutions in the Network to consider their academic programs and partnerships with employers.

Trainings and Seminars

Information on training and development opportunities from NWTC and other Network partners has been made available through the Network website and newsletter. NWTC shared two opportunities for businesses to participate in specific training and opportunities and for technical assistance through the college's Corporate Training and Economic Development (CTED) department. Another member, CREATE (Center for Renewable Energy Advanced Technological Education), shared information on opportunities and resources for K-12 and community college teachers, and also highlighted the webinar library for energy professionals at another Network member, Slipstream.

Collaborations

Respondents to the member survey emphasized the role of Network leadership in building connections and improving communication among members. As one respondent described, leaders should "facilitate ongoing discussions and connect stakeholders from various industries" while others suggested a role for "ensuring equal participation from industry and education" and "connecting stakeholders form various industries."

In addition to the multiple types of partnerships between industry organizations and higher education institutions identified in Year 1, new collaborative opportunities are beginning to emerge in Year 2 between NWTC and other organizations. For example, the project team met with CREATE to discuss how the two organizations can actively work together to help promote and disseminate information across each other's networks. As a result, CREATE has shared program profiles on NWTC Energy Efficiency Program as well as similar information from other community colleges, including Network member Madison Area Technical College. NWTC has shared information about CREATE's resources through the Network newsletter and website.

There is also evidence that members are beginning to leverage the expertise that NWTC brings to the Network. Opportunities for new academic programs in two states have also begun to emerge as a result of Network activities. In one example, a project team member was contacted by a Network employer who wants to ensure that there is a relevant educational program in his area. In another instance, a project team member has been contacted about starting gas utility and power distribution programs at other colleges. Another project team member is serving as a project advisor for another Network member, Slipstream, on a Smart Building curriculum development grant. This is an opportunity to share expertise, information, and best practices within the Network and to promote the Network's activities.

Conclusions

Information and resources are being made available to the Network on a variety of topics, primarily generated by the project team through the website, newsletter, and Teams platform. New information is emerging in the form of member preferences and employer needs. New collaborations are gaining traction between NWTC and other Network members.

Evaluation Question #4: How and to what extent is the cross-sector Network ready to set and execute strategies, including implementing workforce issues solutions?

While evidence is limited on the extent to which the Network is ready to execute its strategy as implementation continues in the context of the pandemic, structures are continuing to be developed to support the goals of the Network. Communication mechanisms are evolving to better share information and to make resources available. However, the team may need to identify additional strategies to improve the use of these communication tools by their intended audience. For example, as discussed above, the website does not experience a high volume of repeat visitors and only 30% of recipients opened the first Network newsletter. The microsite currently under development is a promising approach to making information and resources more available to current and potential Network members.

The implementation of the first employer survey sent to gas industry members is a good example of the extent to which the Network is preparing to implement workforce solutions, as it provides a solid foundation for educational institutions to use employer feedback to inform curricular change and modification to meet workforce needs. Subsequent surveys in other industry areas (e.g., Electrical Power Engineering, Solar Energy, Telecommunications, Energy Management) will broaden the available information and relevance to more Network members.

In Year 3, the evaluation will collect information about member involvement in Network decision making, member satisfaction, relationship quality, and perceptions of shared purpose.

Conclusions

While evidence is limited, structures and tools are emerging to support the Network's goals of implementing workforce solutions with educational institutions and employers.

Summary and Recommendations

In Year 2, the project team continued to reach out to potential members through both virtual and in-person opportunities which has led to an increase in Network membership. Two new communication mechanisms – a newsletter and a microsite – were developed with the goal of reaching more members and potential members to share resources and information about the Network.

The first of several planned employer surveys was completed, with the results suggesting that the current educational programs in the Network appear to meet employer needs. There are opportunities to consider potential modifications to the technical and professional skills addressed in the curriculum, especially regarding the need for of welding courses, computer skills, and diversity, equity, and inclusion skills.

Information on training opportunities, curriculum, and staffing is being made available to Network members, primarily generated by the project team. Useful information about member preferences and employer needs was collected in Year 2, which will support further Network development. New collaborations are gaining traction between NWTC and other Network members.

While evidence is still limited in Year 2, structures and tools are emerging to support the Network's goals of implementing workforce solutions with educational institutions and employers.

Based on these findings, the following recommendations are provided:

- The project team has already begun discussing how the gas industry and construction coursework might evolve, including considerations about the role of welding in the curriculum and the creation of shorter-term training opportunities in lieu of the full certificate. The team should also share results from the employer survey with other colleges who would benefit from understanding employer needs in this industry, and should also identify how to engage employers in conversations to understand the implications of any curricular changes. To further leverage and develop the Network, these outreach efforts could be designed as joint conversations aimed at idea generation, knowledge sharing, and partnership development.

- The UECN microsite should make more resources easily available to the Network as it may be easier to access than the Teams channel for both current and potential members. Once it is published and publicized, the project team should consider how they might leverage this platform to enrich the Network member experience and to attract new members. Some considerations should include profiles of existing members and their partnerships, highlights of the employer skills surveys, press releases, and a list of opportunities to meet with the Network leadership and other members during upcoming conferences.

- Communication and relationships are key levers to developing and growing the Network. The addition of the UECN newsletter and the microsite are promising approaches to communication and resource sharing. To build relationships and collaborations, the project team should identify opportunities to convene current and potential members both virtually and in person. The project

team should consider working with selected members to offer an online "office hours" or workshop series on topics of interests, such as identifying partners, developing collaborations, and modifying curriculum. Hosting networking events at related conferences such as HI-TEC and the ATE PI Conference would help to raise awareness of the Network and its goals, as well as develop and deepen connections among attendees.

Appendix A: Author Biographies

Kathleen Lis Dean, Ph.D., provides clients with insights from her extensive experience helping organizations connect strategy, evaluation, and learning for program improvement and impact. Prior to joining The Rucks Group, she spent 20 years in evaluation and strategic leadership roles at higher education, nonprofit, and philanthropic organizations. In these roles, she leveraged qualitative and quantitative data to support organizational effectiveness, outcomes assessment, accreditation, strategic planning, and continuous improvement. Dr. Dean utilizes a collaborative approach in her work. She also draws on her research about boundary-spanning teams, strategic thinking, and organizational learning to incorporate multiple perspectives and intentional practices to help clients achieve their goals. Dr. Dean earned a Ph.D. in higher education policy and leadership at the University of Maryland, and both a master's degree in education and a bachelor's degree in international relations at the University of Delaware.

Julia Siwierka, Ph.D., joined The Rucks Group in 2019. Dr. Siwierka's educational preparation focused on applied research methods within real-world broader systems and organizational settings. Her collaborative-focused approach to evaluation fits well with The Rucks Group's approach to evaluation. Dr. Siwierka has served as the evaluator for the Boys & Girls Clubs of South Central Kansas, assessing program impact for multiple sites and managing data collection efforts. She also worked on Kansas's System of Care evaluation funded by the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration. She is a member of the Society for Community Research in Action and OPEG. Dr. Siwierka earned a doctorate in community psychology at Wichita State University.

Appendix B: Logic Model

INPUTS	ACTIVITIES	OUTPUTS	SHORT-TERM OUTCOMES	MID-TERM OUTCOMES	LONG-TERM OUTCOMES
NWTC faculty subject-matter experts Relationships from two previous NSF-funded projects Past institutional history helping launch utility/energy programming around state and U.S. Industry involvement via established NWTC Program Advisory Committees	• Hire Project Coordinator to organize meetings, provide administrative support, for joint projects, create structure for information sharing, create Network web presence • Consult with NWTC Program Advisory Committees to develop plan for identifying and recruiting Network members • PI/Co-PIs travel to meet industry and academia connections and other stakeholder groups and/or to recruit members • Conduct contributions assessment of all members • Identify up to 10 individuals to serve as network facilitators and provide training to ensure meeting productivity.	• Platform identified for group communication • Network webpage created • Member commitment of 20-30 core stakeholders representing national and regional employers, educators, and national organizations • List of peripheral stakeholders interested in participating in the Network once the strategic and action plans are established • Inventory of member expertise and list of skill gaps • Select network members complete facilitation training	Increased number of entities from industry, academic, and workforce development are part of the network Increased involvement of entities from industry, academia, and workforce development	Network structures established Increased connectivity and communication Shared purpose	Network members are collaborating on research, training, and educational activities to address current and anticipated industry workforce and training needs through new programs and curriculum development.

	• Conduct a SWOT Analysis • Facilitate Network visioning session(s) • Host strategic planning sessions • Develop an action plan	• Completed SWOT analysis • Network vision statement documented • Three-year Strategic Plan • 2023 Network Action Plan			
	• Convene small workgroup to discuss framework/norms; draft structure and norms; Network members review/approve • Survey members on structure and member expectations; analyze results • PI/co-PIs implement established structure and reinforce norms/member roles and expectations	• Group structure and norms documented • Plan for sustainability (e.g., member fee structure)			

Appendix C: Protocol – NWTC UECN – Project Team Interviews

Implementation

1. What were your planned activities for Year 2 of the UECN project?
    - What successes did the team experience? What challenges arose?
2. What has been most challenging about identifying and bringing new members into the Network? Building partnerships between members?
3. What opportunities did the project team experience in Year 2?

Curriculum/Employer Skills Needs

1. What changes to the curriculum might occur as a result of the employer survey?

Network development and activity

1. Who are the emerging leaders and/or involved members in the Network?
2. What communication mechanisms are you using for information and resource sharing?
3. How is the project team participating in and using resources and chats on the Teams platform?
4. What collaborations are emerging or in progress?

Appendix D: NWTC Utilities and Energy Coordination Network – Employer Skills Survey (Gas Industry)

Q2 Introduction: 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 gas 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.
Q1 TECHNICAL SKILLS. Please indicate how important each skill is to your company when hiring:

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Shielded Metal Arc Welding (SMAW)	○	○	○	○	○
Oxy-fuel cutting (OAC)	○	○	○	○	○
Gas Metal Arc Welding (GMAW)	○	○	○	○	○
Welding in the flat and horizontal positions on carbon steel plate and pipe	○	○	○	○	○
Fillet and groove welds	○	○	○	○	○
Measurement of weld defects and assessment of weld quality	○	○	○	○	○
Etch tests, bend tests and break tests on welds	○	○	○	○	○
Metal identification	○	○	○	○	○

Q5 Technical skills (continued)

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Line testing and leak detection procedures	○	○	○	○	○
Leak repair	○	○	○	○	○
Install and repair of plastic mains and services	○	○	○	○	○

Install gas piping for natural and propane gases	○	○	○	○	○
Maintain gas distribution systems.	○	○	○	○	○
Join polyethylene and steel pipe	○	○	○	○	○
Install residential gas appliances	○	○	○	○	○
Maintain residential gas appliances	○	○	○	○	○
Repair residential gas appliances	○	○	○	○	○
Pipe cutting and threading	○	○	○	○	○
Metering/meter sizing	○	○	○	○	○
Reading wiring schematics	○	○	○	○	○
Communicate technical information	○	○	○	○	○

Q4 What, if any, technical skills not listed above is your organization looking for in an employee?_____

Q6 For what technical skills does your organization provide training opportunities? _____

Q7 CERTIFICATIONS. Please indicate how important each certification is to your company when hiring:

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
CDL	○	○	○	○	○
OSHA 30	○	○	○	○	○
OSHA 10	○	○	○	○	○
AHA Heartsaver 1st Aid	○	○	○	○	○
CPR	○	○	○	○	○
AED certification	○	○	○	○	○
Other: (please describe)	○	○	○	○	○

Q8 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

Q9 What, if any, other professional skills are important to your company when hiring? _____

Q10 For what professional skills does your organization provide training opportunities? _____

Q12 What other skills should colleges help students to develop to best prepare for roles in the gas industry?
_____

Q11 For what roles does your company hire job candidates that use the above competencies? _____

Q12 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

Display Q13 if Q12 = Yes

Q13 With what educational institutions are you connected? _____

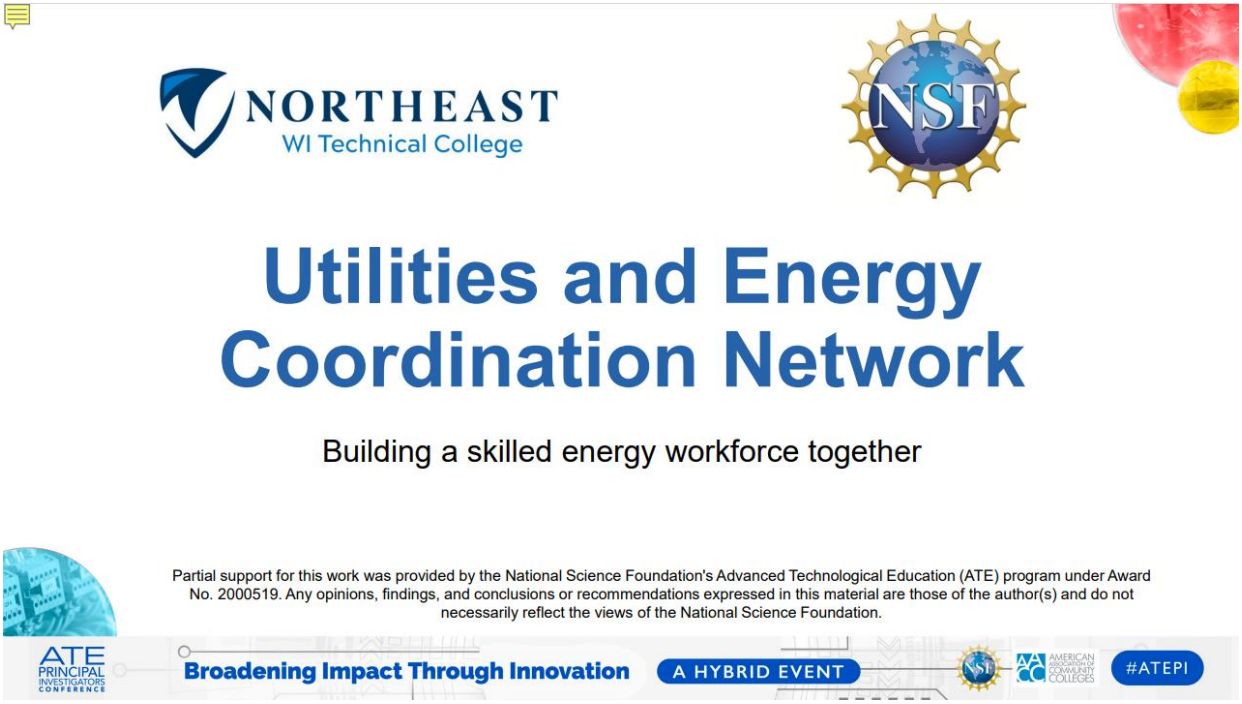
Appendix E: Outreach Activities

October 2021 to July 2022

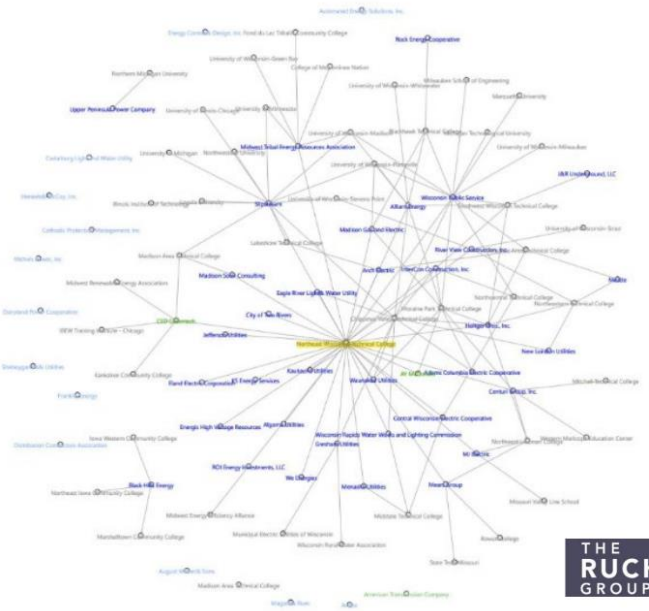
1. RENEW Energy Summit. January 27
2. Midwest Renewable Energy Fair, June 24-26
3. Booth at the BEST Center's Virtual Winter Institute, ended January 7
4. Presentation at WI Energy Consortium, October 2021
5. ATE Virtual Conference, October 2021
6. WI Energy Efficiency Expo, October 2021
7. Plastic Pipe Institution program at NWTC, October 2021
8. Speaker at Peshtigo Chamber of Commerce, fall 2021
9. School outreach, Fall 2021
10. Project team met with CREATE, November 2021
11. Speaker at Oconto High School, October 2021
12. ATE meeting about Necessary Skills Now Network
13. Presenter at C3 Conference, February 3-4, 2022
14. Presenter at HI-TEC Conference, July 25-28, 2022
15. Superintendent's conference, January 2022
16. Achieve the Dream Conference, February 2022
17. WI Technology Education Association, March 17-18, 2022
18. Midwest Renewable Energy Fair, June 24-26, 2022
19. WEWC Consortium Meeting, February 17, 2022

Appendix F: ATE Flyer

Appendix G: ATE PI Conference Presentation



Network connectivity with NWTC highlighted at center



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Broadening Impact Through Innovation

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Gas Utility & Construction Service Lab

Electrical Power Distribution Lab

Solar Energy Lab

Year 1 Accomplishments:

- Network website launch
- Survey of sector employers, education institutions, affiliated groups.
- Investigation of network communication platforms
- Participation in virtual conferences

TOUR THE UTILITIES ENGINEERING LAB

Share Information Now!

Energy careers pave the way for a cleaner future! Watch the educational videos WPPI Energy created in collaboration with Slipstream to learn more about the numerous careers available and the pathway to join this unique workforce. Powering the Future through Clean Energy Careers – WPPI Energy

Is there something you'd like to share? Do you have training coming up, did you find an interesting article, or something new? Email one of the contacts listed at the bottom of the page with the details and we'll put it here.

ATE PRINCIPAL INVESTIGATORS CONFERENCE

Broadening Impact Through Innovation

A HYBRID EVENT

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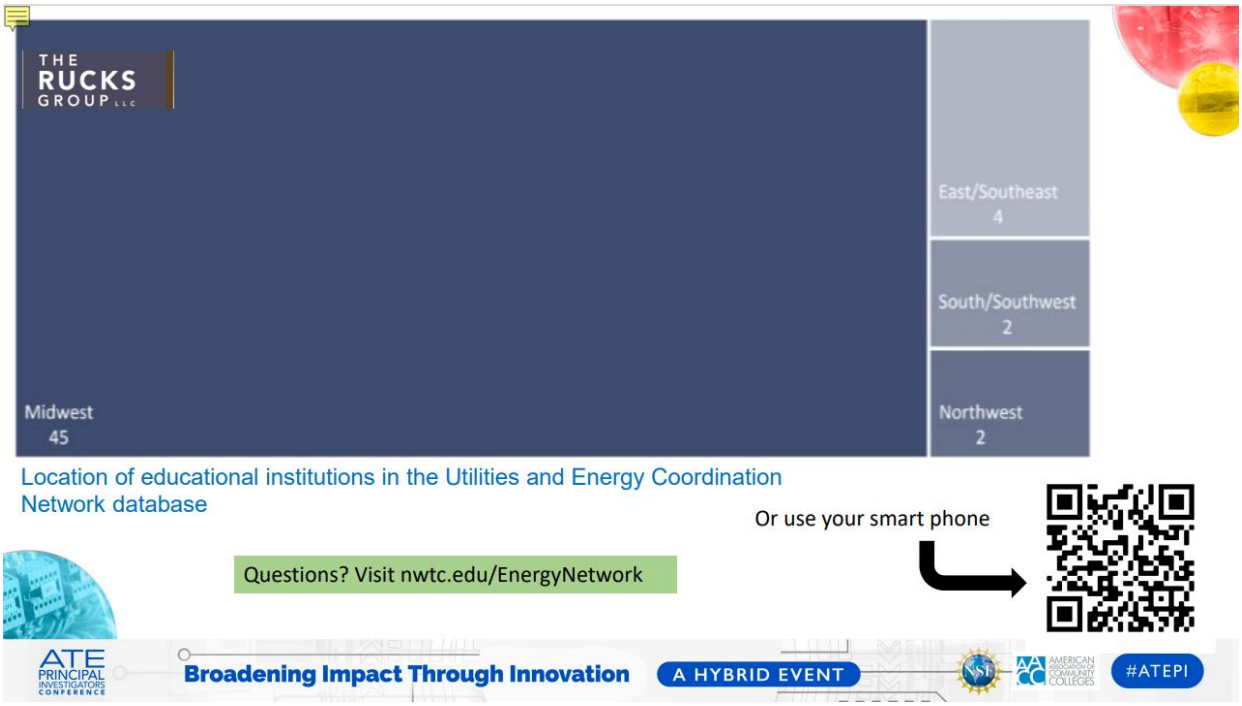
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East/Southeast
4
South/Southwest
2
Northwest
2
Midwest
45
Location of educational institutions in the Utilities and Energy Coordination Network database
Or use your smart phone
Questions? Visit nwtc.edu/EnergyNetwork
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Appendix H: Network Member Survey

To continue moving forward, we need to know what you want and how best to communicate with each other. Please complete this brief survey to help us understand your expectations and communications preferences for the Network.

1. What type of organization do you represent?
2. What is your company name?
3. Are you the correct contact person? If not, who is it? Please include their name and email address.
4. Does communicating using the Teams platform work for your organization? If "no" – why not? What platform would work?
5. How do you share information and communicate with external customers?
6. What is your organization's motivation for joining the Utilities and Energy Coordination Network?
7. What are your organization's expectations from NWTC as the Network lead?
8. What are your expectations of other Network members?
9. What resources are you able to share on the Network platform?
10. Does your organization have any upcoming events that you would like to promote to our Network? Please list the event information and we may be able to share with the Network.
11. Utility and Energy employers and educators in some locations are having trouble attracting employees and students. Would you be willing to share a best practice that has worked to attract new employees/students?

Appendix I: Network Newsletter

UTILITIES AND ENERGY COORDINATION NETWORK

Building a Skilled Energy Workforce Together

February 2022 E-Newsletter

Welcome to the semi-monthly Utilities and Energy Coordination Network newsletter, where you'll get updates on this partnership that aims to expand training opportunities across the county.

To make this effort a success, we need your participation. When you have information, comments, or processes that work well, email any of the contacts below. We look forward to working with you to help eliminate the growing workforce shortages.

In this issue:

Grant Updates

Since there are five energy areas involved with this grant, we will address each program individually to keep information pertinent and concise.

The first program is Gas Utility and Construction. A survey was sent to gather baseline information. After reviewing the data, it will be determined if curriculum changes are needed to meet industry requirements. When the process is complete and documented, academia will have tools to start new training in their locations.

When the process for Gas Utility is finished, the other programs (Energy Management, Solar Technology, Electrical Power Distribution, and Telecommunications) will follow the same steps.

If you receive a survey, please complete it. If you would like a copy of the survey sent to you, email Kathleen Dean: kdean@therucksgroup.com

Upcoming Trainings and Seminars

NWTC Transformer Workshop

Monday, April 25, 2022, 8:00 a.m. –
Thursday, April 28, 2022, 4:30 p.m.

Line Technicians, Line Foreman, Line Supervisors, Meter Technicians and Safety Trainers are encouraged to attend this workshop. **Get details or register.**

NWTC Corporate Training and Economic Development (CTED) Training & Seminars

Get training when and where you need it, at a cost-effective price. Many of the seminars can be offered as customized training or technical assistance for businesses of all sizes and for all shifts. **Find or register for training online**, or **view the Spring 2022 CTED Training Catalog**.

CTED and NWTC Logo

CREATE Logo

Center for Renewable Energy Advanced Technological Education (CREATE)

A variety of training opportunities and resources are available, including **teaching materials for community college and high school**, **solar installation toolkit**, or **KidWind workshops for K-12**.

Slipstream Training & Webinars

Slipstream offers an **on-demand webinar library** for residential and commercial building professionals,

including a two-part **DIY: Maximizing facility assessments** webinar series.

Slipstream logo

Send your training information to bonnie.willems@nwtc.edu to be featured in our next newsletter and on our website.

This and That

Gas Utility and Electrical Power Distribution
On Tuesday, March 8, at 5:00 p.m. on the NWTC Green Bay Campus, commencement ceremonies will be held for 39 Gas Utility and 40 Electrical Power Distribution students. Each year, an early spring commencement ceremony is held for these students who may be working full time or out of the area when the College-wide ceremony is held in May.

Graduation caps in sunlight

Energy Management Technology
This fall, Energy Management students evaluated the performance of the Great Lakes Energy Education Center's geothermal variable refrigerant flow system. They're now working on an energy audit of a restaurant at a county zoo. Students utilize data loggers, infrared cameras, and other equipment to collect data and will provide an energy audit report with financial analysis. Students are also assisting in the development of building automation trainers to be used in five local high schools in Fall 2022.

Telecommunications
NWTC has launched a new program serving the Telecommunication industry. Students from this

program will leave with certifications to safely build and maintain telecommunications towers and have the capability to design and engineer projects that contribute to the nation's infrastructure.

Solar Energy Technology
Students are finalizing design and beginning construction of a 20 KW ground mount PV system that will compare standard monocrystalline PV modules to Bifacial PV modules that can collect energy from both sides while ideally shed snow more effectively. They're also adding solar thermal collectors to help offset domestic hot water energy consumption, plus adding more EV (Electric Vehicle) charging stations.

Connect With Us

Visit our website: nwtc.edu/EnergyNetwork

Email Bonnie Willems: bonnie.willems@nwtc.edu

Grant Contacts

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