CEWD Member Best Practices Guide

Center For ENERGY Workforce Development

January 2017

Company Best Practices

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Focus Area: Career Awareness/Career and College Exploration and Enrollment

Target Audience: Middle and High School Students

Summary of Best Practice:

Credits Count℠, a five-year, $5 million program, was launched in October 2013 by the American Electric Power (AEP) Foundation to provide a long-term impact on young people's lives. "*Credits Count℠* ensures that middle and high school students have an opportunity to explore STEM (science, technology, engineering, mathematics) education and careers by allowing students to earn college credits while still in high school," said Teresa L. McWain, Director, Corporate Communications for AEP and Executive Director for the AEP Foundation. "We often hear a lot about many high school students who are not prepared to go to college. AEP Chairman, President, and CEO Nick Akins wanted to create a program that helped young people attend college who otherwise may not be able to afford tuition or be exposed to the possibilities of a STEM career. Through *Credits Count℠*, we're working with our grant partners to eliminate barriers that prevent young people from achieving success."

The first, $5 million *Credits Count℠* grant was awarded to Columbus State Community College in Columbus, Ohio, in 2013, which created the structure that would serve as a model for other programs across AEP's service area. A second grant of $1.4 million has recently been awarded to Bossier Parish Community College in Shreveport, Louisiana. The goal is to eventually replicate this program across the company's 11-state service area.

At the middle school level, the program offers an opportunity for students to learn about STEM careers—such as what it means to be an engineer or a physicist—as well as more generally about the benefits of a college education. The program helps students understand what the possibilities are, what a college campus is like, and allows them to spend time exploring a campus, science labs, and college classrooms. Information is also provided to their parents to help them understand the value of a college education.

Students interested in dual enrollment take a college assessment and are included in a Summer Bridge Program to help students polish math, science, and English skills and to fill in any learning gaps before entering the dual enrollment program.

In the dual enrollment program, students will earn at least 12 credit hours toward a job-ready certificate in a STEM-related field or toward college in a STEM-related field by the time they graduate high school.

High schools and the middle schools that feed into them are identified for participation in the program collaboratively by the college, city school system, and the AEP Foundation. In Columbus, the program will be introduced in a high school that already has a STEM focus, McWain said. "In this particular school, about half of the kids are already interested in STEM," she said. "They are taking science and math classes that are a good fit for the *Credits Count℠* program."

Eligibility for *Credits Count℠* is not determined based upon GPA, but by a student's interest in STEM, McWain said. "We are not screening kids out, we are encouraging kids to come in."

The first year of the grant is dedicated to planning, she said, adding that implementation of the program will begin in the fall of 2014 in Columbus.

McWain said that in Columbus, it is estimated that 3,000 students will be assessed for college readiness. Of those, about 1,300 will participate in the Summer Bridge Program to improve math and English skills. About 800 students are expected to participate in the middle school program. And about 700 will actually earn credits for college-level coursework while still in high school.

"The numbers for Bossier Parish Community College are smaller," she said, "because this is a smaller market and the grant covers two schools. Overall, we are looking at reaching about 400 students once the program launches in 2015."

Partnerships Utilized:

Credits Count℠ was created by the AEP Foundation in partnership with Columbus State Community College and the Columbus City Schools.

The Foundation's grant is made to a college in partnership with a public school district. Other organizations may be included in the project depending on the structure of the program in each region, McWain said. "In some cases, a college may invite a nonprofit that does a particularly good job of addressing kids at the middle school age. They may offer science exploration programs or pieces that complement the middle school career exploration component."

Resources Required:

The grants cover the cost of tuition, books, lab fees, and other costs associated with enrollment.

Each institution has to look at its staffing needs: Counselors, tutors, teachers, and administrators are needed to run the program. "A high school administrator who will support the program is critical to its success," McWain said.

In Columbus, students who choose to attend Columbus State Community College after completing *Credits Count℠* may be offered a scholarship to continue their education. A minimum GPA (to be determined) is required for eligibility.

Steps for Implementation:

- Communicate with potential partners to make sure *Credits Count℠* is a good fit for the institution of higher learning as well as the school district, before the organization applies for a grant. A good deal of time should be spent discussing what the Foundation, the institution, and the school district wish to accomplish, and what kind of programs the institution offers in STEM, before the application process.
- Apply for the grant.
- The first year is a planning year. High schools must reach out to middle schools to garner interest and market the program. There should be a lot of interaction with parents and students to make them aware of the program and to generate interest in it.

- Launch the program, including the middle school experience, Compass testing, tutoring components, Summer Bridge Program, and dual enrollment piece. "In each area it will be different. You will not bring on all the schools at one time," McWain said. "In Columbus, the program will start at West High School and four additional schools will be added over the next four years."
- Finally, conduct a long-term evaluation that tracks the students. For instance, we are interested in tracking how many students completed (graduated and earned credits toward college or certificate) and how many will go on to a four-year public institution in the state. "That's a very critical piece for us," McWain said.

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Power for America Gas Construction Training Program—Consumers Energy

Focus Area: Workforce Development/Education

Target Audience: Veterans and National Guardsmen

Summary of Best Practice:

A four-week unpaid training program that covers all OSHA health and safety requirements, general gas construction and construction safety, plastic pipe fusion, and field safety awareness. A physical assessment is required at the end of the program for successful participants. Those who pass go on to a 90-day probationary period with Consumers Energy and if successful, are then offered full-time positions. During the probationary timeframe, the veterans are paid at a rate of $20/hour.

For every gas construction position filled internally, Consumers Energy commits to hiring at least one veteran from this program.

Partnerships Utilized:

- UWUA Power for America Training Trust Fund
- Consumers Energy
- Local military veterans
- National Guard

Resources Required:

Power for America is a nonprofit organization, but operates via tuition from member employers. Consumers Energy provided a payment of $9,000 for each veteran that successfully completed the training and started an internship with the company. The company also provided Temporary Union Instructors (TUIs) to support delivery of the training; however, the cost (labor and benefits) of TUI instructors was invoiced to the trust and reimbursed to the company.

Other resources included support from management and Talent Acquisition/HR to assist in reviews of program candidates. The partnership agreement allows for the company to participate in the selection process for entry into the program.

Steps for Implementation:

- Establish need for positions: Following a pilot, it's important to identify a long-term need that supports the agreement over the course of several years, making the investment in building the program worthwhile. In this case, the company is statewide. It is important to establish location of positions.
- Alignment with Labor Relations: An agreement of this nature requires a strong partnership with labor relations to ensure the company and union leadership are both supportive of making the program successful. Work in conjunction with labor relations to establish agreement.
- Operations Leadership Support: The partnership requires participation from operations leadership to help with the selection of candidates, identification of resources, and review and feedback regarding participant progress during the probationary period.

- Curriculum Development: Whether utilizing existing company curriculum or developing new curriculum specifically for the program, the material must be built in partnership with the training provider (in this case, Power for America). The instructors must be involved in the review and possibly design of the material to ensure alignment of intended outcomes.
- Partner with Military and Veteran Organizations: Look for opportunities to involve military leaders and veteran organizations. They can assist with recruiting, program awareness, and provide networking opportunities to assist with program deliverables. In this program, Consumers Energy was able to partner with the Michigan National Guard to arrange for reduced-cost lodging opportunities at a MiNG base in Michigan for the duration of the training.
- Recruitment and Candidate Selection: Power for America led the recruitment process with some assistance from company talent acquisition. Candidates were required to submit resumes and driving records along with proof of military service. Interviews were scheduled and conducted as a joint effort between Power for America, union, and company leaders. Candidates were also screened for drugs.
- Establish and Communicate Timelines: It is important to ensure, well in advance, that all candidates know the timeframes of the program. Being an unpaid program, candidates will likely need to prepare and plan for the time during which they will be in training.
- Program Delivery: Regular and comprehensive communication between all parties is critical to the success of the program. This includes the training provider, company, union, and organizations that have supported the program. Weekly update calls are critical to address any concerns.
- Post-Delivery Reviews: Ongoing communication while participants are completing their probationary time with the company is also critical in order to recognize any program deficiencies, either in delivery or selection of candidates. Making adjustments well in advance is critical to the continued success of the program.

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Focus Area: Workforce Development/Education

Target Audience: Potential job applicants, with a priority for veterans and minorities

Summary of Best Practice:

A three-to-ten-week condensed vocational training program delivered through formal classroom and distance learning formats, which prepares potential applicants for a variety of energy-related jobs, including: DTE Energy maintenance fitter apprentice and Consumers Energy gas utility workers; overhead lineworker; underground cable splicer; instrument and control technician; power plant operator; assistant operator; system supervisor – System Operating Center; PERT technician; field service representative; service planner representative; and entry-level customer service representative.

Boot camp applicants are recruited through job role orientations, community outreach, and news releases to the media. During the job role orientations, candidates are given demonstrations, such as how to climb poles, and other detailed information about what it's like to work within a utility to help potential applicants determine if they are interested in pursuing a career in energy. Candidates are tutored to help prepare for pre-hire aptitude tests and other pre-employment tests. Pre-employment screening and test prep are given at the beginning of the boot camp. This activity helps identify candidates who will continue and have higher likelihoods of being successful job applicants.

The camps provide job-specific training so potential applicants can hit the ground running if they are hired upon graduation.

Partnerships Utilized:

Business:
- DTE HR Recruiting and Staffing
- DTE Technical Training Organization
- DTE Employment Strategy and Compliance Group
- DTE Continuous Improvement Manager
- DTE Subject Matter Experts
- Union Representative
- Labor Relations Representative
- Consumers Energy
- Anderson Workforce Solutions Consulting, LLC (project management services)

Training Providers:
- Schoolcraft College
- Alpena Community College
- National Utility Industry Training Funds
- MIAT College of Technology
- Camp Grayling – Michigan National Guard (training location)
- DLS Consulting (tutor prep services)

Workforce Development Agencies for Recruitment and Outreach Efforts:

- Southeast Michigan Community Alliance Michigan Works
- Northeast Michigan Works
- Oakland County Michigan Works
- Detroit Employment Solutions Corporation Michigan Works
- Macomb-St. Clair Michigan Works
- Michigan National Guard
- State of Michigan, Veteran Affairs

Resources Required:

- Funding (grant/public dollars, in-kind contributions, and internal funding within business)
- Project Manager/Coordinator:
  - Central point of contact
  - Manage weekly progress calls with project team
- External partners to assist with:
  - Recruitment and outreach
  - Pre-screening activities
  - Communication to candidates prior to and during training
  - Support to candidates after training
- Internal partners to assist with:
  - Alignment of hiring plan with completion of training
  - Providing guidance on candidate qualifications
  - Curriculum mapping, including practical exercises and safety training

Steps for Implementation:

- Develop project plan with timeline
- Develop project charter to gain approval and commitment
- Identify core project team and partners
- Hold weekly progress calls
- Develop communication plan
- Identify training provider
- Develop curriculum and practical exercises with training provider and subject matter experts
- Recruitment and outreach efforts, focused on identifying qualified candidates
- Pre-screen candidates through various activities such as, but not limited to:
  - Resume review
  - Work keys testing
  - Pre-hire aptitude testing
  - Behavior assessment
  - Drug screening
  - Criminal background check
  - Review driving record

- Deliver training
- Conduct student learning evaluation: Level 1 – survey; Level 2 – course knowledge assessments; and Level 3 – in the field (post hire); complete training and graduation ceremony
- External partners: Provide support to graduates with employment opportunities

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Focus Area: Recruitment/Military Outreach, Education

Target Audience: Transitioning military (those who are still serving but have made the decision to leave the military and join the private sector)

Summary of Best Practice:

This program recruits and trains soldiers preparing to leave the military for apprentice linemen jobs at Georgia Power, by reaching out to soldiers before they actually leave the service. Information and support, pre-employment tests, interviews, and training are provided on base (Fort Stewart), to make the transition easier and smoother for transitioning military and to ensure Georgia Power that job applicants will be prepared to begin work at the utility as soon as their service concludes.

Recruiting for this program is done through promotional flyers that Georgia Power sends to Transitional Assistance managers on base, letting soldiers know they will be present during upcoming Transitional Assistance classes. Once a week for several weeks during these classes, Georgia Power sends a recruiter to the base, to talk with the soldiers in the Transitional Assistance classes, build awareness and interest in the company and careers, and get soldiers registered for the Georgia Power Information Session.

Soldiers who are interested are then invited to a half-day Information Session, which is also held on base, where they can speak informally with hiring managers, linemen, and other Georgia Power employees about what it's like to work at the utility. They are given an opportunity to ride in a bucket truck and try out other equipment used by Georgia Power linemen. Working linemen who are also former military speak to the transitioning soldiers about how to make the shift from military service to working in the private sector. The goal of the Information Session is to highlight key elements of Georgia Power jobs, provide a realistic job preview, and outline the Georgia Power recruiting and selection process.

Following the Information Session, those who are interested in pursuing a career at Georgia Power can register to take a practice employment test as well as the test itself (CAST test), which is given on base the following week. People who pass the test may then be invited to a formal interview a few weeks later with Georgia Power hiring managers, which is also conducted on base.

If they pass the test and the interview, they are invited to Georgia Power to take a physical abilities test and are then extended a job offer. Successful candidates enter into a three-week training program for apprentice linemen, which is given on base while the soldiers complete their military service.

Trainees take courses in safety and compliance training. The first wave of trainees resulted in 13 hires.

Partnerships Utilized:

- Georgia Power
- Fort Stewart

Resources Required:

- One staff member to go to the base each day, once a week over four weeks (usually a recruiter from Georgia Power)
- Cost of an overnight hotel stay for staff members during these visits to the base
- For the informational session, roughly 30 Georgia Power employees visit the base (linemen, equipment operators, hiring managers, etc.) for the day

Steps for Implementation:

- Secure an executive sponsor
- Identify target jobs you wish to hire for
- Develop a partnership with a local military base
- Get buy-in from the military to conduct training on base
- Develop a strategy to ensure you can maintain the program
- Develop a strategy for helping new hires transition in, since they will be exiting the military at different times
- Determine on-base training feasibility and plans

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Focus Area: Education, Workforce Planning

Target Audience: Community Colleges, Technical Schools, Universities, and CTE Programs

Summary of Best Practice:

The Michigan Energy Workforce Development Consortium (MEWDC) adapted a 2014 CEWD Industry and Education Partnership Summit Toolkit as part of its strategy to build a talent pipeline for gas and electric line technicians in Michigan. Piloting of the toolkit was written into a successful grant proposal to the U.S. Chamber of Commerce Foundation and became part of the approach Michigan took to identify and engage "preferred" educators in the state for building the gas and electric line technician pipelines.

In piloting the original toolkit, the MEWDC made enhancements to the partnership process, which resulted in a companion document, *Strengthening Education Partnerships: A How-to Guide for Industry* (http://www.cewd.org/toolkits/industry-education-partnership/StrengtheningEducationPartnerships-FNL.pdf). The guide provides industry members with detailed guidance on the steps needed to define "preferred" education partners and cultivate their engagement prior to implementing an Industry and Education Partnership Summit.

The benefits to using the How-to Guide and implementing a Partnership Summit include:

- Reduces the likelihood of building discreet or disparate educational programs that serve a single career track or limited hiring need
- Drives the industry to define and communicate their requirements to educators
- Builds accountability among education providers for understanding the long-term needs of the industry and engages them as partners in solution development rather than simply suppliers of graduates
- Enables industry members to base sponsorship of education partners in CEWD's National Energy Education Network on measurable outcomes

Partnerships Utilized:

- Michigan Energy Workforce Development Consortium (consortia.getintoenergy.com/michigan)
- Industry Partners:
  - DTE Energy
  - Consumers Energy
- Michigan Talent Investment Agency
- Michigan Department of Education
- Educators:
  - Lansing Community College
  - Alpena Community College
  - Grand Rapids Community College
  - Henry Ford College
  - Jackson Community College
  - Macomb Community College
  - Monroe County Community College
  - Oakland Community College
  - Schoolcraft Community College
  - Wayne County Community College

Resources Required:

- The Michigan Industry and Education Partnership Summit was paid for by a grant provided by the U.S. Chamber of Commerce Foundation. The cost of the summit was under $1,200, as meeting space was donated by Lansing Community College.
- Presenters of the materials
- Meals and breaks
- Meeting space
- Instructional materials

Steps for Implementation:

- Consult the consortium's strategic workforce plan to define levels of partnership needed
- Identify relevant education programs where increased partnership is beneficial
- Gain agreement on how preferred partnership will be defined
- Select approach for ranking desired attributes of education programs
- Identify key contacts for education programs and communicate intended outcomes
- Plan and implement an Industry and Education Partnership Summit

Contact for learning more about the best practice:
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Focus Area: Career Awareness

Target Audience: Middle School and High School Girls

Summary of Best Practice:

A middle and high school girls *Women in Trades Career Fair* is a one-day event designed to educate and inspire girls to explore career options in the trades. These careers include non-traditional energy jobs, such as technicians and welders, but also expand to other trades in construction, manufacturing, and transportation. The Career Fair is based on a successful model used by the Oregon Tradeswomen in Portland, Oregon, for the past 20 years.

The Career Fair model is ideally 9am-2pm during a school day. Activities can include hands-on demonstrations, exhibits, and a "fashion show" featuring women in the trades wearing their work clothes/equipment and answering questions from the students. Companies can also have exhibits to promote their companies, and community colleges that have trades programs can also exhibit.

The 2015 Women in the Trades Career Fair sponsored by the Nebraska Energy Workforce Consortium (NEWC) included demonstrations in bridge building, components of a line technician's daily job, how information from substations is relayed, and a simulated natural gas explosion, among others. Many of the sponsoring companies gave the participants an opportunity to interact with aspects of the careers.

Partnerships Utilized:

- Industry Members of the Nebraska Energy Workforce Consortium:
  - Omaha Public Power District
  - Nebraska Public Power District
  - Lincoln Electric System
  - Black Hills Energy
  - Metropolitan Utilities District
- Education Partners:
  - Metropolitan Community College
  - Southeast Community College
  - Bellevue University
  - University of Nebraska-Lincoln, College of Engineering
  - University of Nebraska-Omaha, Peter Kiewit Institute
  - Nebraska Middle Schools and High Schools

Resources Required:

- Buses for student transportation
- Materials for hands-on activities
- Printing marketing materials to distribute to the schools and optional giveaways
- Refreshments and/or lunch if hosting a full day
- Indirect resources including staff time to engage partners, plan and promote the Career Fair, and work at the event

- Suitable location to demonstrate career options
- Industry experts to speak to the students about specific careers in their related areas regarding energy and utilities

Steps for Implementation:

- Gain agreements to participate from industry partners and schools
- Set date for event
- Identify budget and key contact for registrations
- Identify key contact for schools
- Develop agenda and determine hands-on activities for students
- Confirm workshop leaders
- Develop promotional materials for event and identify company-donated materials
- Identify volunteers and student chaperones to assist with event
- Arrange for student transportation
- Arrange for snacks and/or lunch
- Define process for evaluating outcomes of the event

Contact for learning more about the best practice:
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Best Practice: GADgET (Girls Adventuring in Design Engineering & Technology) Camp—Nicor Gas

Focus Area: Career Awareness and Education

Target Audience: Girls ages 12–16 from diverse communities

Summary of Best Practice:

The Women's Employee Resource Group at Nicor Gas wanted to expand opportunities for young girls to learn about STEM and careers in energy. As part of that effort, this diverse group of women developed a half-day-long presentation highlighting a wide range of topics related to their jobs at Nicor Gas.

The presentation was initially developed as one component of a two-week summer camp put on by Triton Community College for female students ages 12–16. The camp, called GADgET Camp, focuses on math, science, and robotics activities for young girls and exposes them to a wide range of STEM careers and activities. The team from Nicor Gas that presents to the girls includes a diverse group of women who work as industrial and mechanical engineers, in environmental, health, and safety, and deal with codes and standards for the construction side of the utility. After first talking with campers about how they came to choose a STEM career, the team explains the underground distribution system (including a "show and tell" of the components of the system), demonstrates how gas is stored underground, and shares the importance of safety precautions such as facility locating and knowing what to do if they smell gas, among other activities.

The team's presentation has also been adapted for use in other venues and for other audiences. For example, it has been used as part of the STEM Career Expo at Fermi National Laboratory (a particle accelerator), during which both male and female students visit tables dedicated to a variety of STEM careers, and also at the Museum of Science and Industry's STEM career day.

Partnerships Utilized:

- Triton Community College
- Fermi National Laboratory
- Museum of Science and Industry
- North Central College
- Other partners as opportunities arise

Resources Required:

Staff time, including one employee who devotes 10 percent of her time to coordinate the presentations, and the time of the seven women on the team who make the presentations (which range from a few hours to all day). This team averages 1–2 presentations per month at partner sites.

The presentations also include "giveaways," items including branded pencils and a drawstring backpack with the company logo. Posters carrying the theme "Picture Yourself at Nicor Gas" are also brought to presentations. Costs amount to less than $5,000 in materials annually.

Steps for Implementation:

Identify a target population to reach. Nicor Gas has challenges recruiting women and minority engineers so this was the group they initially focused upon.

- Determine how you want to engage that population (e.g., through STEM activities, presentations, exhibits)
- Recruit employees to run the program
- Identify partners to work with and events that may already exist you can tie into (e.g., GADgET Camp – Triton CC, Science Works – Museum of Science and Industry, STEM Career Expo – Fermi Lab)
- Determine what your audience will respond to. For example, Nicor Gas found kids enjoyed taking selfies of themselves wearing hardhats and other utility gear while also holding "tools of the trade" like handheld meter-reading devices and gas detection devices, so they could picture themselves working at Nicor Gas.
- Develop materials and test them out on a small scale before growing the program for a larger audience
- As the program grows, recruit more employees to get involved so that the time commitment does not become overwhelming

Contact for learning more about the best practice:
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Focus Area: Workforce Development/Education

Target Audience: Veterans

Summary of Best Practice:

A 20-year project to replace more than 100 miles per year of aging pipe, along with thousands of gas meters that had to be relocated from indoors to outdoors (roughly 40 percent of the utility's infrastructure), required more manpower than the company could provide. In order to bring workers in and up to speed faster, Peoples Gas joined educational institutions, workforce development agencies, veterans' organizations, and union members to develop a six-month natural gas utility worker school. This program combines classroom and practical training, followed by a one-month internship. The program includes soft skills such as speech and communication, physical training to ensure candidates can handle the hard labor aspects of lifting heavy meters and working jackhammers outdoors, safety, and training in utility standards and processes for natural gas distribution.

Partnerships Utilized:

- Utility Workers of America
- Power for America Training Trust Fund
- City Colleges of Chicago
- Illinois Department of Commerce and Economic Opportunity
- Department of Veterans Affairs
- Dixon Center for Military and Veterans Community Services

Resources Required:

- A $1 million, three-year grant from Peoples Gas Company
- Resources to build the practical labs, labor, materials, and equipment
- Training curriculum

Steps for Implementation:

- Build the business case with data for why the program is needed
- Collaborate, build a relationship with internal stakeholders (local union for Peoples Gas)
- Make an internal commitment from the top down to do this
- Find necessary partners (education, administrative, program) to carry it out
- Continued engagement, review, analysis to sustain the program

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Focus Area: Workforce Development

Target Audience: Potential Job Applicants

Summary of Best Practice:

A 16-week or 32-week training program that provides an overview of the natural gas industry as well as specific skills that prepare candidates to pass beginning worker operator qualification requirements. Southwest Gas employees co-teach the course with community colleges and students can be hired for entry-level positions with the utility or with local contractors.

Partnerships Utilized:

- Southwest Gas
- Local contractors
- Regional community colleges

Resources Required:

Resources vary based on course operator qualification requirements. They may include but are not limited to:

- Employer Instructor: 48+ hours of classroom time (employer and/or school compensate)
- Material: Lab material provided by employer partners
- Tools & Equipment: Donated/loaned by employer partners
- Classroom: Lab capable

Steps for Implementation:

- Determine which skills are required for entry-level workforce
- Utilize existing training materials to structure course content
- Work with college to get course content approved
- Source and train instructors (internal or contract, experienced employees)
- Schedule course
- Recruit potential students

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Best Practice: Utility Industry Certificate—Sulphur Springs Valley Electric Cooperative (SSVEC)

Focus Area: Career Awareness, Workforce Development/Education

Target Audience: Cochise County, AZ, high school seniors and young adults

Summary of Best Practice:

This one-year certificate program was designed to train local, skilled utility workers in order to lower turnover rates for apprentice linemen.

The program is delivered at Cochise College in order to recruit people with local roots who would stay in the area long-term. Because SSVEC, a small co-op, did not hire sufficient numbers of workers each year to sustain a program on its own, it partnered with other utilities and industries (including natural gas and telecommunications companies) and made the program more broad-based.

The Utility Industry Certificate includes seven courses, including Introduction to the Utility Industry (taught by employees of partner companies); Blueprint Reading and Estimating; Business Communications; Technical Math; Construction Safety; Computer Essentials; and Field Experience in Business Construction Technology, a paid three-month summer internship with one of the utility partners.

Some of the courses have been adapted for instruction at the high school level, though high school students are not eligible to earn the certificate. Graduates from the community college program are eligible to apply for entry-level positions at SSVEC and other partner companies. Graduates typically apply for apprentice linemen positions, but may be eligible for other positions as well, such as engineering or warehouse jobs. The skills covered in this certificate align with the lower tiers of the CEWD Energy Competency Model.

Through this program, SSVEC has been able to successfully hire 50 students into its internship program and 12 into full-time jobs over the past four years.

Partnerships Utilized:

- SSVEC
- Arizona G&T Cooperative
- Southwest Gas
- Apache Nitrogen
- Cochise College
- Southeast AZ Workforce Connection

Resources Required:

- A community college to offer the courses
- Instructors from each partner. SSVEC uses one of its journeymen lineman foremen, who is paid a regular hourly wage, to teach the course. Each partner guest teaches 1–3 sessions of the 16-week course. A community college professor facilitates, tests, and instructs in the off sessions.
- Internship opportunity from each partner

Steps for Implementation:

- Meet with other sector partners to determine who has hiring needs and what types of skills they need taught
- Meet with the community college to see if a program can be offered
- Select courses from the community college catalogue, in conjunction with the school, to put together an appropriate program
- Determine if additional courses are needed and if so, develop them in partnership with the community college and other business partners
- Recruit students for the program
- Set up the internships
- Provide instructors for courses as needed
- Preferentially recruit from the program for jobs at the utility

Contact for learning more about the best practice:
Jason Bowling, HR Manager: jbowling@ssvec.com

Focus Area: Career Awareness, Education

Target Audience:

- Youth (K-12)
- Mentors (veterans and transitioning workers, both men and women)

Summary of Best Practice:

Students are divided into four groups: Junior FIRST® LEGO League (Grades K–3); FIRST® LEGO League (Grades 4–5); FIRST® LEGO League (Middle School); and FIRST® Robotics (High School). As they get older, they are expected to demonstrate a progression of skills and problem-solving techniques.

The youngest group plays and builds with the LEGOs, using their imagination and following basic instructions and diagrams. The program helps with creativity, problem solving, and team building.

The 4th and 5th graders are given a mission and a research project, a situation in which they have to develop a tool made of LEGOs to help solve a problem. For example, in some parts of the world, people must travel miles to get water for their village. The children must develop a solution so that villagers do not have to walk five miles for a bucket of water. They can build a viaduct or a well using the LEGOs. One year they were asked to help build a Mars rover for NASA and one year they were asked to retrieve treasure from a sunken ship.

The middle school students work with an erector set, using those components to construct a device to solve these same problems. Rather than just building with LEGOs, they are screwing things together and using pulleys and other tools.

In FIRST® Robotics, students take their problem-solving and building skills to the competitive level.

Each group is guided by a mentor or mentors. Each group learns how to work as a team, how to persevere, how to problem solve, and how to manage their time and resources. The mentors learn to demonstrate leadership skills and project management skills.

Partnerships Utilized:

- United Illuminating (since 2001)
- Pratt Whitney
- UTC (United Technologies Corporation)
- RBC Bearings Co.
- Career High School in New Haven, CT

Resources Required:

- $25,000 for the FIRST® Robotics competition group
- As much as 30–40 hours per week for mentors that help with the competitions; as little as 10 hours per week for those that work with the younger groups. Mentor time involves working with students after school, at night, and on weekends.

Steps for Implementation:

- Identify interested schools and get the schools involved. The superintendent and principal need to be interested and supportive. They also need to be willing to accept liability since students are using tools and machines.
- Find local sponsors who can provide both physical and monetary assistance. Yale University and Comcast are both sponsors for this FIRST® Robotics program.
- Find mentors. Adults need to be recruited and vetted and must make a commitment to the program.
- Find a way to communicate with and attract students from all backgrounds.
- Find an appropriate place to meet, build the robots, and practice for the competitions. You can't just put the materials in a closet in a classroom. Some use the school's "shop" room and others work onsite at local companies.
- Find a project manager and a champion to pull it all together and oversee the program, someone who can bring all the components together and make sure students meet deadlines, stay on track, and make it to the competitions.

Contacts for learning more about the best practice:
Joe Ryzewski: (203) 926-4641
Andrew Morrison: (203) 926-4535

Focus Area: Career Awareness

Target Audience:

- High school juniors and seniors in northeast Wisconsin
- People who have expressed interest in Northeast Wisconsin Technical College's (NWTC) Trades and Engineering Technologies program (the school keeps a list of people who call for more information, typically young adults looking for a trade)

Summary of Best Practice:

Utility Preview Day offers a sample of what students at NWTC are learning in the Electrical Power Distribution and Gas Utility programs and helps them determine if these programs would be right for them. Participants are given specifics of the two programs, which prepare students to install, maintain, and operate electrical or natural and propane gas systems for residential, commercial, and industrial customers.

When participants arrive for this half-day program, they are greeted by academic advisors who can provide information about the one-year program of study. Employers (from local utilities) are there to give the students general advice about maintaining a good driving record and staying out of trouble if they wish to work in the energy industry.

Participants then engage in four activities each for electrical power and natural gas. These hands-on activities, such as pole climbing, safety lessons, line work on the ground, and going up in a bucket truck are taught by students currently enrolled at NWTC. Instructors from the program are also present and involved, but most of the interaction is student-to-student, so that NWTC students are also learning leadership skills and teamwork while helping prospective students determine if this program is a good fit for them.

At the end of the half-day sessions, participants are asked to fill out a survey highlighting what worked for them and what they learned. NWTC follows up with participants to track interest in future enrollment.

Students are recruited for Utility Preview Day through technical education teachers and counselors at local high schools and by referral from students currently attending NWTC. They must pre-register. Parents and other family members are invited to attend.

Typically about 50 students participate in the program, with 25 in each section.

Partnerships Utilized:

- NWTC Advisory Committee members, who work for local utilities and contractors, volunteer their time to assist on a rotating basis
- Local high schools are involved as part of the recruiting process

Resources Required:

- Liability insurance
- Internal resources, such as staff time. The program is held during regular class time so that instructor costs are covered.
- Equipment used is the same equipment used for regular classes
- Recruitment costs are minimal – a few hundred dollars for mailings to schools

Steps for Implementation:

- Work with faculty to develop a half-day program; determine which hands-on activities are best to showcase and which experiences you will provide
- Identify local high schools and staff who can help with recruitment
- Ask current and past program participants to help spread the word
- Follow up with participants to determine interest in future enrollment

Contact for learning more about the best practice:
Amy Kox: amy.kox@nwtc.edu

Focus Area: Workforce Planning

Target Audience: Utility Contractor Partners

Summary of Best Practice:

Technical colleges try to determine future demand for workers by asking utilities how many people they will be hiring. However, utilities often use contractors rather than full-time employees, and the colleges do not collect data on contractors. Therefore, the potential number of new line and gas workers needed can be much higher than the numbers the colleges project.

We Energies is therefore collecting contractor requirements for utility projects, to assist the technical colleges in Wisconsin in projecting a more accurate picture of future workforce needs. They are projecting how much work there will be, how many people they will hire, and how many contractors they will need to get the work done. Together, all of this data should provide an accurate picture of future workforce needs.

Partnerships Utilized:

- Wisconsin Energy Consortium (http://consortia.getintoenergy.com/wisconsin/)
- Utility Partners:
  - Alliant Energy
  - Madison Gas & Electric
  - We Energies
  - Wisconsin Public Service
  - American Transmission Company
  - Adams-Columbia Electric Cooperative
  - Eau Claire Energy Cooperative
  - Oconto Electric Cooperative
  - Municipal Electric Utilities of Wisconsin (MEUW)
- Community Colleges:
  - Black Hawk College
  - Chippewa Valley Technical College
  - Moraine Park Technical College
  - Madison Park Technical College
  - Northeast Wisconsin Technical College
- Skilled Worker Contractors

Resources Required: Internal staff time

Steps for Implementation:

- If contractors are not already part of the state energy consortium, get them on board
- Do an internal assessment of contractor and internal staffing needs and ask other utilities to do the same
- Communicate hiring needs data to the technical schools

- Consult with the technical schools to ensure that their training programs match the qualifications needed for those skilled workers
- Put together a database of hiring requirements, then match with each state training program at local community colleges

Contact for learning more about the best practice:
Brian Dobberke, Director of Customer Field Operations, We Energies: brian.dobberke@we-energies.com

View the CEWD Contractor Demand Analysis Toolkit at http://www.cewd.org/toolkits/contractordemand.php.

Best Practices From the Arizona Sun Corridor Get Into Energy Consortium
Hermanas: Diseña Tu Futuro
Source: Maria Reyes, Dean of Career and Technical Educaiton at Chandler-Gilbert Community College

Focus Area:

Career Awareness. This program strives to raise awareness of STEM careers through role models, education, and mentoring opportunities and to make young women aware of the available pathways to STEM careers.

Target Audience:

Latina middle school and high school students and young women (grades 6–12) who are often first-generation college-bound and uncertain of career opportunities or how they link to a STEM education. Roughly 200 girls attend each conference.

Summary of Best Practice:

Hermanas: Diseña Tu Futuro—which translates to *Sisters: Design Your Future*—is an annual, one-day conference that includes a variety of activities such as a Latina Town Hall, guest speakers, hands-on activities, lunch with local college faculty/staff, and connections to resources in STEM education and careers.

Every student who attends the conference is given a registration packet and bag containing giveaways and resources of the type professionals receive at conferences.

The Latina Town Hall offers students an opportunity to ask frank questions of Latina women working in STEM careers. The students are divided into groups of no more than 25 for each Town Hall, in which there is a discussion with panelists who are all professional women. "The Town Hall is the time when we want the young women to start envisioning themselves as that person," said Reyes. "They ask very direct questions, such as 'What if my family can't afford to send me to college?' or 'How do you have a family—a husband and kids—and still have a career?' They can ask whatever they want, nothing is off-limits."

Students are also invited into labs and classrooms on campus, where they meet faculty members and are exposed to hands-on activities, such as extracting DNA from a strawberry, in the academic setting. "The idea is not so much to expose them just to female role models, but to show them what truly goes on in this college day in and day out. We want them to feel less intimidated and feel that this is a place where they belong," said Reyes.

Another part of the day involves an education resource fair, similar to an EXPO, at which the students can learn about the community college and resources such as financial aid.

Partnerships Utilized:

- Intel has been an active partner since the program was launched 10 years ago
- APS Foundation, a GIE partner, has been active the past few years, providing role models, guest speakers, and financial support
- Local K–12 schools help to identify appropriate students for inclusion in the program
- Chandler-Gilbert Community College and its sister school, Estrella Mountain Community College, each host the event twice a year (once for middle school students and once for high school students)

Resources Required:

- Industry partners provide funding for direct costs
- Host colleges provide the faculty, staff, and space
- Giveaways and goodie bags are donated by partners and colleges
- Faculty volunteers run the STEM activity portion of the program
- In-kind contributions, such as laptop computers, are raffled off at the end of the day

Steps for Implementation:

- Bring community colleges together with industry partners and feeder high schools or middle schools; identify key partners and the role each will play
- Design the day to include hands-on STEM activities, speakers, etc.
- Identify the resources to support these activities. Hands-on activities can be downloaded from the internet; CEWD provides several that have been used. Partners can provide funding, etc.
- Identify role models, mentors, and others who will participate
- Identify other educational resources for the resource fair
- Identify staff volunteers to organize and run the event
- Conduct outreach

Contact for learning more about the best practice:
Maria Reyes: (480) 988-8144 or maria.reyes@cgc.edu

Focus Area: Workforce Development/Education, Workforce Planning

Target Audience: Anyone interested in a job in the energy & utility industry

Summary of Best Practice:

Certificate programs are offered as pre-apprenticeships for lineworkers, utility field technicians, occupational health and safety, and utility workforce readiness. These four pathway certificates are part of the Energy Resource Management two-year degree program that focuses on project management and business management in the utility industry.

The two-year degree from Clackamas can be transferred to Oregon Tech and count toward a four-year BA degree. All of the credentials are stackable.

Initially, the Utility Workforce Readiness program was created to retrain Portland General Electric (PGE) meter readers; this program is now open to the public and prepares potential job applicants for entry-level, skilled jobs in the energy & utility industry. The additional pathway programs were developed as more specific technical training was needed.

Students learn about physical fitness, how to work on a team, and the importance of safety and ethical conduct in energy jobs. In addition to the basic technical skills needed for an entry-level energy job, they also learn about the wide range of energy career pathways. Students also create portfolios, participate in mock interviews, and prepare and test for the National Career Readiness certificate.

Students go through the program in cohorts of 12–24, beginning and ending the program at the same time, which helps them develop a sense of trust and respect for each other and belonging to a team. Roughly 75 percent of those who have completed the program have gotten jobs in the utility industry.

Partnerships Utilized:

- PGE – helped develop curriculum, offers pre-apprenticeships opportunities to students
- State Energy Consortium
- North Sky Communications
- Commstructure Consulting
- Comcast
- Northwest Natural Gas
- BPA (Bonneville Power Administration)
- Canby Telcom

Resources Required:

- Tools and climbing gear purchased through the Utility Training Alliance (PGE & CCC)
- Pole yard, including a substation, transformer, underground vaults, climbing poles, and a one-acre expansion in progress with a tower to climb
- A Digger Derrick (boom truck) donated by PGE
- A bucket truck and forklift purchased through the Utility Training Alliance (PGE & CCC)

- Instructors: Linemen and other industry experts from PGE, Henkel's, and BPA. They are employed at Clackamas as part-time faculty (classes are taught at night and on the weekends).
- Industry experts to speak to the students about specific careers in their related areas regarding energy and utilities

Steps for Implementation:

- Talk to local industry representatives to see which skills are needed
- Research curriculum to see what is already in place
- Develop curriculum for skills not already covered, so that the training meets the industry's needs
- Advertise the program/recruit students

Contacts for learning more about the best practice:
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Best Practice: Get Into Energy (GIE) Math & Test Prep Workshop—Estrella Mountain Community College

Focus Area: Workforce Development/Education

Target Audience: Estrella Mountain GIE students and members of the public preparing to take EEI pre-employment tests as part of the job application process at Arizona's electrical utilities

Summary of Best Practice:

The 40-hour GIE Math & Test Prep Workshop can run for one week (five consecutive days) or two weeks (eight nights) and is designed to boost math skills, teach testing strategies, and generally help potential job candidates prepare for and excel at the EEI Power Plant Maintenance Positions Selection System (MASS) pre-employment test.

The class focuses on providing students with testing scenarios that are similar to what they will experience when they take the EEI test. It exposes them to the true testing environment, which is strictly timed and can cause stress because unsuccessful scores immediately eliminate candidates from consideration for employment.

The workshop is not designed to teach math, but rather provide a refresher of math strategies needed to pass the exam and to work at a utility. Practice tests are given each day of the class.

The course is scheduled to coincide with an employer's administration of the pre-employment test so that students finish the workshop a few weeks ahead of their designated EEI test date. Estrella Mountain Community College students who register for the workshop can be at various stages in the pathway to degree completion; workshop timing is based upon the job application timeline.

There is a minimal charge to take the workshop, which is discounted for students in the GIE program. Curriculum and materials were developed using funds from a Department of Labor (DOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant, and all materials developed as part of this grant are available free to the public and to CEWD members.

So far, results have been positive. Of the 14 students who enrolled in the pilot program and completed the workshop, nearly 80 percent passed the pre-employment tests administered by Palo Verde Nuclear Generating Station and Arizona Public Service, which have the highest cut-points in the nation. Of the total candidates tested, only 48 percent of applicants passed, which mirrors the national average.

Partnerships Utilized:

Pilot Partners:
- Arizona Public Service
- Palo Verde Nuclear Generating Station

Potential Future Workshop Partners:
- Arizona's G&T Cooperative
- Chicago Bridge & Iron
- Freeport McMoran
- Salt River Project
- Tucson Electric Power

Resources Required:

- Resources and materials developed by the grant, including student and instructor guides, five days of scripted curriculum (in a PowerPoint presentation and notes), and practice exams
  - Others who wish to teach the workshop can receive these materials from CEWD at no charge
- 40 hours of instructor time
- A classroom facility
- Costs associated with printing and reproducing materials

Steps for Implementation:

- If you are a utility, identify someone internally or at a partnering community college who can hold the workshop
- If you are a community college, engage with a utility partner to establish the best time to hold a workshop, which coincides with their testing schedule. The workshop should be completed relatively close to the time students are testing (within a few weeks).
- Make sure that the faculty members teaching the course are knowledgeable about the energy industry and the exam they are preparing students to take. Instructors need to have a working knowledge of EEI tests.
- Contact CEWD for materials
- Advertise the program and recruit a motivated group of students

Contacts for learning more about the best practice:
Kayla Wolfe, Public Relations Assistant, Estrella Mountain Community College: (623) 935-8415 or Kayla.wolfe@estrellamountain.edu

Kristen Hepburn, Project Coordinator, Energy Program: (623) 935-8446 or Kristen.hepburn@estrellamountain.edu

Best Practice:
E3 (Energy Education for Educators) Teacher Summer Camp—Minnesota Energy Center

Focus Area: Workforce Development/Education, Career Awareness

Target Audience: High school instructors (math, physics, science, career, and technical education)

Summary of Best Practice:

The E3 Teacher Summer Camp is a week-long session, offered in June, which begins on Sunday evening with a dinner and overview presentation of the energy industry in Minnesota. This covers many types of energy production found within a short distance of St. Cloud, including power generation from fossil fuels, natural gas, solar power, nuclear energy, energy crops, and a refuse-derived fuel power plant (waste-to-energy).

During the week, teachers are taken on tours of sites that include the energy crops demonstration plot, a waste reclamation processing plant, a solar power generator at a private university, and a wind energy engineering firm. An overview of nuclear power in Minnesota is provided by a representative of the nuclear power industry in the classroom.

Half the week is spent taking field trips to energy sites and the other half is spent in the classroom and labs. Teachers are given $500 of instructional materials they can take back with them to their own classrooms, including water testing kits, kits that allow them to build a wind turbine in the classroom, and kits that allow students to electronically construct an energy grid.

They are also provided with copies of all of the instructional materials (such as lesson plans and handouts) used during the camp, which includes presentations from six instructors. A total of 13 teachers from around the state participated in the first camp.

Teachers were given surveys at the end of the camp and will be able to access materials electronically through the end of the year, all at no charge to the teachers or their schools.

Partnerships Utilized:

- Minnesota Energy Consortium, including a large cross-section of industry partners from across the state
- Westwood Renewables/St. John's University
- Xcel Energy
- Great River Energy
- Blattner Energy (wind)
- Minnesota Department of Employment and Economic Development

Resources Required:

- The camp was paid for with a $50,000 grant from Minnesota State Colleges and Universities, which was used to cover the cost of the first camp. (We anticipate a similar grant source for a second camp in 2015.)
- Instructors
- Industry partners who can host tours and share stories of their utility
- Buses to get everyone to the sites
- Classrooms and labs at the college
- Instructional materials

Steps for Implementation:

- Organize a committee to oversee the program
- Put together a team to structure the week and the activities
- Organize the industry visits
- Put together transportation, food logistics, and classroom schedule
- Promote the program and recruit participants
- Compile materials in an electronic format to easily share materials with participants

Contacts for learning more about the best practice:

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Rose Patzer, Biofuels Instructor and Energy Technical Specialist Instructor: Rose.Patzer@mnwest.edu

Formed in March 2006, the Center for Energy Workforce Development (CEWD) is a non-profit consortium of electric, natural gas, and nuclear utilities and their associations—Edison Electric Institute, American Gas Association, Nuclear Energy Institute, National Rural Electric Cooperative Association, and American Public Power Association. CEWD was formed to help utilities work together to develop solutions to the coming workforce shortage in the utility industry. It is the first partnership between utilities, their associations, contractors, and unions to focus on the need to build a skilled workforce pipeline that will meet future industry needs.

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Center For ENERGY Workforce Development

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