

Developing an Energy Workforce in Indian Country

Blackfeet Community College

Workforce Development Department

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Staff Introductions

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Getting the Grant/ NSF Grant/Missoula College

- Data gathered from the Blackfeet Tribe's Economic Development Plan, Blackfeet Housing Authority Community Needs Assessment, Blackfeet Community College's Community Needs Assessment, and Montana's Department of Labor & Industry - Montana Employment Projections reflects the need across the Blackfeet Reservation, across the region and across Montana for immediate training in Building Trades with an emphasis in Solar Electric technology, Computer Technology with several certificate emphasis and Pre-Paramedic curriculums.
- **Technical Skills Proficiencies Taught:**
 - This program emphasizes the basic construction of Solar Paneling, Solar Electric and Installation and Phase Application of construction. Students will be able to work safely on the construction site and apply up-to-date construction methods applicable to utilizing green technology in construction.
- **Industry Certifications, credentials, certificates or degrees students may earn:**
 - The Solar Electric certificate program provides the foundation for attaining the solar industry's standard certification from the North American board of Certified Energy Practitioner (NABCEP).
- **Industry-recognized Standards or competency assessments:**
 - Upon successful completion of coursework offered by a registered NABCEP Entry Level Exam Provider, a student is eligible to sit for one of the Entry Level Exams. Prior to taking the NABCEP PV or Solar Heating Entry Level Exam, students should have demonstrated a basic understanding of the principles outlined in the Learning Objectives

Training the Staff

Energy can transform lives. From turning bread into toast, to moving several-thousand pounds vehicles with ease, to shinning lights in dark corners, the list of ways in which energy changes our lives is endless. Every day, each of us relies on some source of energy to make our lives easier, more productive and more fun. All energy on planet earth comes from the sun, whether it is from photosynthesized light compressed into the earth, from wind flowing because of air heated by the sun, or from solar cells energized by photons of sunlight. Some of these sources can pollute the earth while consumed and some do not. In recent years the topic renewable energy and over all green power has captured public awareness.

Here at the Blackfeet Community College we are taking steps to reduce the carbon foot print which is created.

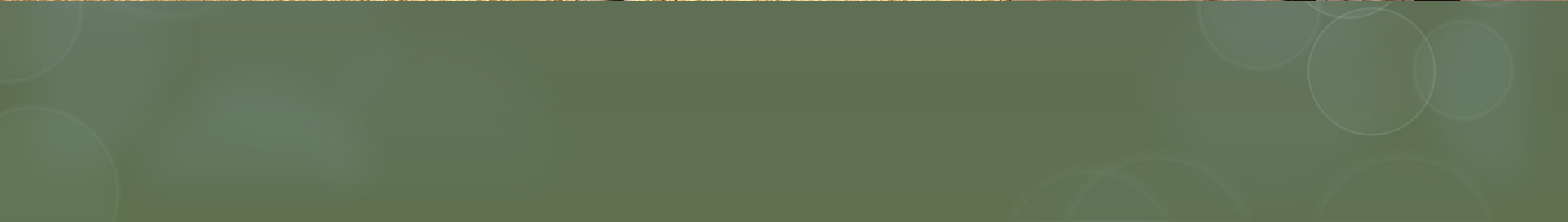
Recently Blackfeet Community College was award a grant from the department of energy to strive forward in solar industry. It started out with intense on-line class work which was provided by Solar International, its home base is in Paonia, Colorado. On-line class work was for 6 weeks, with a follow up hands-on lab after completion.

Training the Staff

- After arriving in Poaina, Co, we meet for classroom instructions and had a choice of systems we wanted to work on, such as
- Low slope roof with Schneider Inverter and ballasted racking
- Ground mounted array SMA Inverter, commercial style ground mount racking
- Steep roof array SMA TL inverter, Standard roof mount racking Roof mounts Array Enphase micro inverters, Standard roof mount racking
- Pole mounts (stand-alone) system with Kaco Inverter

Training the Staff

- Courses studied were, Solar Electric Design and Installation. (PV 101) On and off grid applications were covered. Courses content provided a fundamental understanding of concepts necessary to work with PV systems that included:
 - Systems components and configuration
 - Site analysis and solar resource data
 - PV module specifications and site criteria
 - Mounting solutions
 - Sizing of residential grid-direct systems
 - Overcurrent protection and grounding
 - Safety and commissioning













Training the Staff

- Enrolled participants also took PV 203. Solar Electric Design (battery-based), this course explored additional design and installation considerations to battery-based PV systems. This course covered step-by-step design processes for battery-based applications, this included stand-alone (off-grid) and Grid-tied with battery back, and hybrid systems.
- Topics covered:
 - Load analysis
 - Sizing strategies, and calculations
 - Component selection
 - Battery safety and maintenance
 - Generator integration
 - Commissioning procedures

Training the Staff

- Lab week(Grid-tied) was filled with hands-on learning, By working in small groups led by expert PV instructors, students were to put their classroom learning from PV 101 to the test, fully installing and commissioning a variety of system types and a range of components, testing the systems, and evaluating their performance.
- Lab week (Battery-Based), we learned to safely install, test, and commission battery-based PV systems, over the course of the week with hands-on installation practice. Lab stations were composed of both stand-alone and grid tied with battery backup systems, that included both AC and DC coupled systems. Class concentrated on battery safety, wiring, and maintenance, system components included: combiner boxes, disconnects, power centers, controllers, battery banks, and inverters.

BCC Curriculum

- **CORE 7 - Construction Technology - 22 Credits (Complete the Following)**
 - CSTN115 - Construction Calculation & Estimating
 - BGEN105 - Intro to Business
 - ACTG201 - Financial Accounting
 - CSTN148 - Blue Print Reading
 - CSTN295 - Field Work/Clinical/Practicum
 - HHP245 - 1st Aid & CPR

- **Emphasis: Solar Energy**
 - PV101 - Solar Electric Design & Installation
 - PV202 - Grid-Direct Design and the NEC
 - PV203 - Battery Based PV Design
 - PV299 - Basic Survey & Soil Analysis
 - CON190 - Special Topics (OSHA 10 - Safety in the Workplace)
 - CON204 - Basic Electrical Fundamentals
 - HHP245 - 1st Aid & CPR

Job Placement/Workforce

- Dual Enrollment with BHS
- Blackfeet Housing – new homes/projects
- BCC Career Center/Internships/Experiential Learning/Workforce Development Building

The Future

- First tribal college to have this curriculum
- Work with other tribal colleges
- Professional Development for current tribal/community employees
- Endless possibilities!!

Questions

