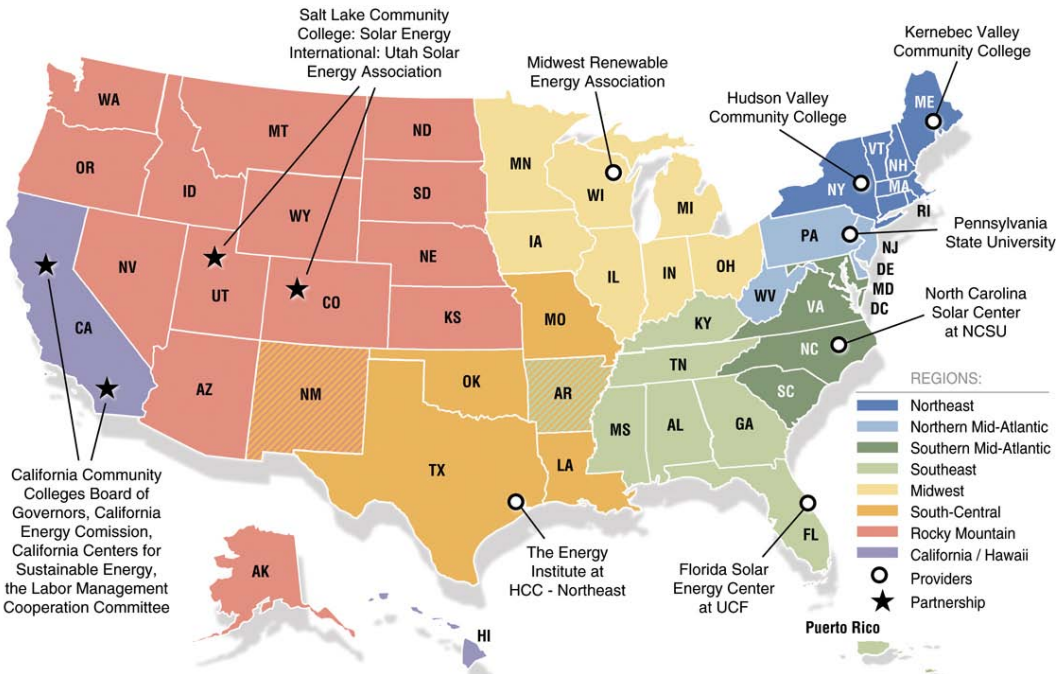
5.2

Develop Local Workforce Training and Education Programs

Although the automation of some tasks is increasing efficiency in the solar industry, employment in the field will continue to grow, and solar energy projects will continue to require skilled domestic workers to install, maintain, and service solar energy systems. One way local governments can support solar training programs is to offer financial incentives to people who hire graduates of local training programs to install a solar energy system. They can also help align local solar workforce training programs with other municipal workforce and economic development initiatives and facilitate partnerships between training organizations. Local governments can also play an active role by informing local educational institutions about the benefits of participating in the U.S. Department of Energy's (DOE) Solar Instructor Training Network. The nine Regional Training Providers within the network develop best practices and sponsor local instructors with lab equipment, model curricula, and train-the-trainer workshops.

Solar Instructor Training Network



Source: U.S. Department of Energy/Energy Efficiency & Renewable Energy.

Educating and training solar technicians runs the gamut from intensive weekend courses through multicourse certificate programs to 2-year degree programs. Community colleges, vocational and technical schools, electrical trade unions, and nonprofit organizations offer training, and specialized training is available at small independent centers. Solar product manufacturers and distributors also conduct installer training, although the training is often for product-specific applications. The type and length of training required depend entirely on the prerequisite skills, abilities, and experience of the individual as well as the job requirements of the desired occupation. Critical skills such as the ability to do proper electrical work or sophisticated plumbing could require extensive formal training or work experience. Tasks that require fewer critical skills can be performed by entry-level employees or through on-the-job training opportunities such as apprenticeships under the direct supervision of experienced journeymen workers. Brief training sessions such as weekend courses for people with little or no experience should be viewed as introductory instruction for prospective technicians. These courses don't adequately prepare job-seekers to immediately start work as installers. Unless students are experienced construction tradesmen, such as journeyman electricians or plumbers, graduates of short courses will most likely require extensive on-the-job training and possibly more institutional education.

Established education and training institutions can add solar courses to existing curricula, develop specialized solar training programs, or offer continuing education courses to address solar energy workforce employment opportunities. The amount of practical or work experience an individual has is an important part of any technology program that prepares participants for immediate entry into the workforce. Virtually all U.S. colleges, universities, and community colleges offer continuing education courses. Solar technology permitting and inspection is an example of an appropriate solar-related topic for a continuing education course. Such a course would help installers and inspectors understand local variations in code requirements. Construction trade apprenticeship programs at community colleges or vocational tech institutions are offered in many trades, including electrical, roofing, ironworks, carpentry, air conditioning, plumbing, sheet metal, surveying, welding, and swimming pool construction. Community colleges and vocational tech institutions have the opportunity to introduce cross-disciplinary training into the curriculum. For example, **photovoltaic** (PV) installers need both electrical and roofing training, and **solar water heating** (SWH) technicians need both plumbing and roofing skills.

Associate in applied science (AAS) degree programs stress technology to prepare students for employment in a specific occupation such as a PV technician. AAS programs don't require general education credits and aren't generally intended to prepare pupils for an undergraduate degree. Two-year associate of science (AS) degree programs are intended for career preparation. An AS degree can also be transferred from the community college to a 4-year program such as a bachelor of science in engineering technology. These programs are well suited for students considering pursuing PV system design or energy management.

All solar education and training programs should have the facilities, curricula, and materials to prepare students for postgraduation jobs in the solar industry. The best programs offer internship, apprenticeship, or cooperative on-the-job training opportunities, leveraged with resources of the local industry and government. Solar installation jobs call for mechanical abilities that require "learning by doing" outside the classroom. As an example, The Interstate Renewable Energy Council (IREC) offers Institute for Sustainable Power Quality (ISPQ) training accreditation. The ISPQ standard—which is internationally recognized for renewable

energy training programs—specifies requirements for competency, quality systems, resources, and qualification of a curriculum against which trainers and training programs can be evaluated. ISPQ-accredited programs rely on extensive, hands-on work that can be performed only in adequate training facilities. IREC currently offers ISPQ accreditation for training programs, accreditation for continuing education providers, certification for independent master trainers, certification for affiliated master trainers, and certification for instructors.

BENEFITS

A robust solar workforce education and training program is a critical pillar in developing a local solar energy industry. Training programs help ensure consistent installer competency and, through increased consumer satisfaction, can help drive additional growth in local demand for solar installations. In addition, in many cases, solar energy training can transform the careers of individuals formerly employed in the electronics, construction, and manufacturing industries.

Implementation Tips and Options

- ☐ Identify organizations and institutions in the community that are conducting training and education in solar energy.
- ☐ Collaborate with local education and training institutions to identify gaps, needs, and barriers in the development of a robust solar workforce.
- ☐ Encourage training institutions to achieve accreditation through ISPQ. The ISPQ requirements are designed to accomplish the following:
  - Teach individuals the knowledge and skills required for a professional trade.
  - Ensure that graduates have a predictable level of expertise.
  - Make sure that facilities are adequate and safe for training.
  - Ensure that the training organization has appropriate financial resources and that administrative and management procedures and policies are in place and practiced.
- ☐ Contact local training providers to ensure that they know about the activities sponsored by DOE's Solar Instructor Training Network. Local instructors might be eligible to receive specialized training, equipment upgrades, model curricula, and other assistanc.
- ☐ Work with local institutions to develop solar curricula that match learning objectives with skill sets required by local employers.
- ☐ Encourage local training institutions to offer nationally recognized licensing/certification programs (see 3.5, Installer Licensing & Certification).
- ☐ Evaluate how a local solar training program can help meet broader municipal economic development or workforce-training objectives.
- ☐ Implement local government programs that encourage using locally trained solar installers.