

Energy efficiency is a valuable resource for rural K-12 school districts to achieve energy and cost savings opportunities. This guidance document includes materials, trainings, and certification courses designed to provide building operators of rural K-12 school facilities with actionable steps to improve their energy efficiency knowledge and create comfortable, cost-saving, and energy-efficient learning environments.¹



Overview

Rural school facilities typically face operational challenges, including small budgets, geographically large districts, aging buildings, and isolated locations far from urban centers. Additionally, commercial buildings waste between 10% and 30% of the energy they use because of “improper and inefficient operations.”² A maintenance staff trained to manage energy-efficient buildings can optimize the performance of existing equipment, increase building energy efficiency, improve occupant comfort and safety, enhance resiliency, enrich learning, and more effectively plan current operations and improvements as budgets allow.

A K-12 school facility management department is often responsible for a variety of focus areas, such as engineering, operations, maintenance, planning, security, transportation, environmental services, and sustainability. Through workforce development training opportunities tailored to rural districts, facility operations staff can gain deeper knowledge of these topics, in addition to becoming familiar with building design, construction, codes and standards, resilience, mechanical systems, indoor air quality, fenestration, moisture transport, and heat transfer. Research shows a connection between engaged facility management and reduced commercial building energy use.³

Several leading energy organizations, including the U.S. Department of Energy (DOE), APPA: Leadership in Educational Facilities, Northwest Energy Efficiency Council, and the U.S. Green Building Council (USGBC), offer certifications for building operators interested in improving their knowledge and honing their expertise in these areas. These certifications and materials may serve as a starting point for planning initial efficiency upgrades. Given that many existing rural schools are housed in older buildings, facilities managers may also benefit from materials compiled by the Pacific Northwest National Laboratory (PNNL) on *building retro-commissioning*, which is the systematic process of reviewing an existing building’s operating procedures and systems to ensure the building is operating as designed.

Self-Education and Certification Programs

There are a range of self-education and certification programs available to rural building operators, many of them provided by leading energy efficiency organizations. DOE has several training and educational modules for facilities managers, and APPA is singularly focused on “adapting, enhancing, and transforming the [educational] facilities of the future.”⁴ The Northwest Energy Efficiency Council

¹ This resource serves as a starting point to share available offerings but does not evaluate or compare them. Depending on the training or certification, some programs or courses may have education (e.g., technical college-level education in a facilities engineering-related program) or experience requirements.

² <https://buildingretuning.pnnl.gov/>

³ <https://www.sciencedirect.com/science/article/pii/S2212609016300218>

⁴ <https://www.appa.org/appas-purpose/>

has also developed a Building Operator Certification® credential that provides competency testing in heating, ventilating, and air-conditioning; lighting and electrical; data collection; and code compliance. In addition to its other green building professional certifications, USGBC recently added a track for operations and management of existing buildings called Leadership in Energy and Environmental Design (LEED) Accredited Professional (AP) for Building Operations and Maintenance (O&M). PNNL offers a variety of resources related to retro-commissioning (also called re-tuning) to optimize building energy efficiency. Links to more information on these self-education and certification programs are listed below.

DOE Better Buildings Workforce Guidelines

The DOE Better Buildings Workforce Guidelines are the result of a joint effort with the Commercial Workforce Credentialing Council at the National Institute of Building Sciences. These national, voluntary training and certification programs were designed to improve the quality, consistency, and scalability of the commercial building workforce credentials.⁵ Additionally, four job task analyses outline the knowledge required to perform key energy-related jobs, including Building Energy Auditor and Building Operations Professional. Upon registration, all materials are available for download free of charge. Below are links to the guidelines and job task analyses, as well as the DOE Better Buildings Workforce-accredited certification programs.

- ▶ [Better Buildings Workforce Guidelines](#)
- ▶ [Better Buildings Workforce Guidelines Factsheet](#)
- ▶ [Job Task Analyses and Certification Schemes](#)
- ▶ [DOE-Recognized Programs](#)

DOE Building Science Education Solution Center

The DOE Building Science Education Solution Center provides professors, trainers, and students with accurate, easy-to-access training materials organized by job classification and proficiency level on the fundamentals of building science.

- ▶ [Codes and Standards](#)
- ▶ [Disaster Resistance and Resiliency](#)
- ▶ [Fenestration](#)
- ▶ [Heat Transfer](#)
- ▶ [Heating, Ventilation, and Air-Conditioning \(HVAC\) Systems](#)
- ▶ [Indoor Air Quality](#)
- ▶ [Moisture Transport](#)
- ▶ [Plumbing \(Domestic Hot Water\) Systems](#)
- ▶ [Video Gallery](#)

APPA: Leadership in Educational Facilities

As administrators of the Certified Educational Facilities Professional credential, APPA offers trainings such as the Essentials of Facilities Management Training Seminar, a 13-week paid online course that prepares participants for the Certified Educational Facilities Professional exam. Applicants for this credential must have a combined eight years of education and experience to qualify for the course.

- ▶ [APPA](#)
- ▶ [Certification](#)
- ▶ [Essentials of Facilities Management Training Seminar](#)

⁵ <https://betterbuildingsolutioncenter.energy.gov/workforce/better-buildings-workforce-guidelines>

U.S. Green Building Council Credentials

USGBC credentials relevant to rural school facility managers include LEED AP O&M and LEED AP Building Design and Construction. The LEED AP O&M credential is especially applicable to rural facility managers because it targets “professionals implementing sustainable practices, improving performance, heightening efficiency, and reducing environmental impact in **existing buildings** through enhanced operations and maintenance.”⁶ Participants earn the credential by successfully passing a paid, in-person exam and then maintaining it through continuing education credits. Before taking the LEED AP O&M exam, USGBC strongly encourages applicants to gain practical experience by working on LEED projects. For those seeking more foundational knowledge, the LEED Green Associate credential and associated exam covers core competency of green buildings practices.

- ▶ [Green Building Leadership is LEED](#)
- ▶ [LEED Professional Credentials](#)
- ▶ [Credential Maintenance Program Guide](#)
- ▶ [LEED v4 Accredited Professional O&M Candidate Handbook](#)
- ▶ [LEED Green Associate](#)

Building Operator Certification

The Building Operator Certification is an International Organization for Standardization⁷ recognized credential, certifying that recipients have a broad knowledge base in building operations. Led by the Northeast Energy Efficiency Council, this certification is similar to the LEED AP credentialing process, as applicants must complete training, take a paid exam, and maintain the credential by earning continuing education credits every two years.

- ▶ [Building Operator Certification](#)
- ▶ [Candidate Handbook and Application](#)
- ▶ [Certification Exam](#)
- ▶ [Recorded Info Webcast](#)
- ▶ [Locations of BOC Administrators](#)

Pacific Northwest National Laboratory Building Re-Tuning™ Training

PNNL has produced a website of resources for training and education on building retro-commissioning. These free resources, including classroom training materials and courses organized by small and large buildings, can help rural school facility managers implement “low- and no-cost” energy efficiency measures to reduce energy use and operating costs.

- ▶ [Building Re-Tuning™](#)
- ▶ [Building Re-Tuning™ Training](#)
- ▶ [American Society of Heating, Refrigerating and Air-Conditioning Engineers \(ASHRAE\) 2017 Webcast – “Take Control Using Analytics to Drive Building Performance: Overview”](#)
- ▶ [Building Re-Tuning™ Training: Providing Energy Saving Solutions through Interactive e-Learning](#)
- ▶ [Improving Commercial Building Operations Through Building Re-tuning: Meta-Analysis](#)
- ▶ [Re-Tuning Commercial Buildings Resources for Small and Large Facilities](#)
- ▶ [Re-Tuning Commercial Buildings Education Training Modules](#)
- ▶ [Re-Tuning Training Guide: Trending Requirements for Re-Tuning](#)

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⁶ <https://new.usgbc.org/credentials>

⁷ <https://www.iso.org/home.html>