Building Operator Certification, BOC®, trains building operators on the latest technologies and strategies for maintaining equipment, improving energy efficiency and reducing energy costs in their buildings. This nationally recognized certification program gives building operators the skills and knowledge to reduce energy operating costs by an average of 2–5 percent or more in their buildings.

**Earn a cash incentive for learning how your building works**

BOC is designed for facility operators, including engineers, technicians, architects, facility managers, maintenance personnel and energy managers working in public or private commercial buildings.

In Oregon, certification is offered through the Northwest Water & Energy Education Institute, NWEEI, at various locations throughout the state, with classes led by experienced professionals. Building operators can become certified at two levels:

- Level I—Building System Maintenance
- Level II—Equipment Troubleshooting and Maintenance

Energy Trust of Oregon provides a cash incentive of up to $600 per BOC-certified building operator who completes Level I or Level II certification. This incentive is available for building operators regularly working in a commercial, institutional or governmental building served by Portland General Electric, Pacific Power, NW Natural or Cascade Natural Gas.
Reap long-term benefits for your organization

BOC benefits facility personnel working in a wide range of new or existing commercial buildings, including government offices, schools, hospitals, apartment complexes and more. Participants learn best practices in systems management and the latest strategies and technologies for improving the operation of their buildings. Skills are practiced through onsite projects and building assessments. Participants can also network with and learn from peers at other organizations.

The benefits of BOC include:

- Average energy savings of 2–5 percent
- Sustained reduction in facility operating costs
- Understanding of technologies—old and new
- Enhanced occupant comfort
- Improved indoor air quality
- Ability to attract and retain tenants interested in sustainability
- Improved building safety
- Increased credibility with tenants and property owners
- Higher property values; greater ability to attract investors
- Employee development

BOC CURRICULUM

Level I certification: Building System Maintenance

Level I certification emphasizes energy-efficient building maintenance. Participants attend seven Level I classes (56 hours):

- BOC 1001 – Energy-Efficient Operation of Building HVAC Systems
- BOC 1002 – Measuring and Benchmarking Energy Performance
- BOC 1003 – Efficient Lighting Fundamentals
- BOC 1004 – HVAC Controls Fundamentals
- BOC 1005 – Indoor Environmental Quality
- BOC 1006 – Common Opportunities for Low-Cost Energy Savings
- BOC 1008 – Operation and Maintenance Practices for Sustainable Buildings

Level II certification: Equipment Troubleshooting and Maintenance

Level II focuses on advanced equipment troubleshooting and maintenance.* Participants attend four core classes (35 hours) and two elective classes (14 hours).

- BOC 201 – Preventive Maintenance and Operations
- BOC 202 – Advanced Electrical Diagnostics
- BOC 203 – HVAC Troubleshooting and Maintenance
- BOC 204 – HVAC Controls and Optimization
- BOC 210 – Advanced Indoor Air Quality
- BOC 211 – Motors in Facilities
- BOC 214 – Introduction to Building Commissioning

*Participants must complete Level I certification before enrolling in Level II, unless they have an engineering background.

Investing in new technologies isn't enough. Well-trained operators make the difference in reducing energy use and costs.

Kathleen Belkhayat, Senior Project Manager
Energy Trust of Oregon
CONSERVATION AT THE TAMÁSTSLIKT CULTURAL INSTITUTE

Facility Director Mike Cooper was impressed by the visitor services manager who worked at the front desk of the Tamástslikt Cultural Institute on the Umatilla Indian Reservation near Pendleton. Jess Nowland, a member of the Umatilla tribe, had a solid computer background and was mechanically inclined—Cooper noticed him doing major repairs to his car out in the parking lot.

Cooper had been working to improve the building’s energy efficiency and to streamline operations into a single digital system. With Nowland’s initial interest, Cooper asked him to join his team as an apprentice and his BOC training helped him with this role.

In 2004, Cooper completed the NWEEI energy management certification program through Lane Community College, and Nowland went through the program in 2009. In 2011, they both completed BOC training as well.

The training gave Nowland the knowledge to make a number of simple systemwide adjustments at the cultural institute. He took care of the preventive maintenance that had been neglected. He cleaned and tuned up all of their equipment, fixed air leaks in the building and added insulation where needed.

In addition, Nowland used data loggers to track electricity usage to determine exactly how much energy they were using at different times of day. He was concerned because temperature and humidity must be kept at a consistent level in the museum vaults. But after reviewing their systems, he discovered he could turn off the heating and cooling systems at night for a few hours and still maintain appropriate levels.

Since Nowland and Cooper completed BOC training, electric energy use has decreased 15 percent at the Tamástslikt Cultural Institute, and natural gas use has decreased 8 percent.

“The hands-on training was the most useful,” said Nowland. “Also having the class in different buildings was helpful and informative. Even when you are in the same field for a long time, it’s good to be continually trained. Things change, and you forget about certain things if you don’t do them every day.”

“You have to be able to recognize where problems exist and then figure out a way to get them fixed,” said Cooper. “The BOC training forces you to look at your own building. One of our projects was to audit our building at every level, which was really helpful.”
MINIMIZING ENERGY USE AND COSTS, MAXIMIZING PROGRAMS AND SERVICES

Martie McQuain, facilities supervisor at Hermiston School District, understands the challenges of maintaining efficiency in buildings, particularly when they’re scattered across eight locations and range in age from 3 to 50 years old. But his Level I BOC, which he completed at Columbia Gorge Community College in The Dalles, makes the job easier.

“One of the first things I did was install occupancy sensors in areas where lighting is used intermittently,” said McQuain. “I also learned how to use our energy management system more effectively to control lighting, motors and HVAC. For example, we’ve fine-tuned that system so we don’t have unnecessary lights and air conditioning on when we’re hosting a basketball game, which saves us on energy costs.”

McQuain stays in touch with BOC instructors as well as other certified building operators: “I have sought advice from them on a few topics. We stay in touch and help each other.”

Hermiston School District trimmed operating costs substantially as a result of BOC, enabling the school district to free up funds for much needed educational programs and services. “We’re committed to BOC,” said McQuain. “I’m going to go through Level II certification, and we’re sending two more employees through Level I.”

Get more from your energy. Visit www.energytrust.org/commercial, email existingbuildings@energytrust.org or call 1.866.605.1676.