

*Market Progress Evaluation Report
Executive Summary*

**Regional Building Operator Certification,
No. 7**

prepared by

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Report

REGIONAL BUILDING OPERATOR CERTIFICATION
VENTURE:
FINAL MARKET PROGRESS EVALUATION REPORT

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EXECUTIVE SUMMARY

The Northwest Energy Efficiency Alliance (the Alliance) is a non-profit group of electric utilities, state governments, public interest groups and industry representatives committed to bringing affordable, energy-efficient products and services to the marketplace. This is the final Market Progress Evaluation Report on the Alliance-sponsored Regional Building Operator Certification Venture.

A BRIEF HISTORY OF THE BUILDING OPERATOR CERTIFICATION VENTURE

In 1987, the Washington State Energy Office developed the region's first course in energy maintenance practices for building operators and facility managers, called the Building Operators Training (BOT) program. Independent of the BOT, agencies in Idaho developed the region's first certification program for building operators. In 1990, the Idaho Department of Water Resources (IDWR) and the Idaho Building Operators Association (IBOA) brought a group together to begin development of a training program. IBOA began offering a course series and a one-year building operator's certification in 1993. Its successor agency—Northwest Building Operators Association (NWBOA)—continued to offer BOC course series in 1999 and 2000.

As a result of the success of the Idaho BOC, the BOT staff and steering committee recognized that certification would be a more effective long-term strategy than training alone for improving building operations. They redesigned the BOT from a single course to a multi-course Building Operator Certification (BOC) program leading to a three-year certification. After the closure of the Washington State Energy Office in 1996, the Washington BOC found a home with the Northwest Energy Efficiency Council (NEEC).¹

The NEEC BOC was the first operator certification program to be funded by the Northwest Energy Efficiency Alliance (the Alliance) in 1996. The funding to NEEC was focused on getting the NEEC BOC operational and established, first in Washington and later in Oregon. IBOA received funding from the Alliance in 1997 to assist their BOC efforts through marketing and evaluation research support. In

¹ The Washington State Energy Office operated from the 1970s to its closure in 1996.

addition, the Alliance funding designated IBOA as the lead agency for facilitating a region-wide approach to building operator training and certification.

EVALUATION OVERVIEW

The Alliance contracted with Research Into Action, Inc. in March 1998 to conduct an evaluation of the region-wide BOC market transformation efforts from 1998 to 2001. The staged evaluation built on results of the evaluation of the 1997 Washington BOC effort and included five key activities focused on the region-wide program:

- Interviews with participating students and their supervisors for the NEEC Level 1 course series in 1998 and 1999, the NEEC Level 2 course series in 2000, and the NWBOA Level 1 and Level 2 course series in 1999 and 2000;
- Interviews with venture staffs, instructors, and Steering Committee members;
- A review of the NEEC BOC program database and documents;
- A survey to assess operations and maintenance actions taken by NEEC BOC students as a result of course attendance and to provide estimates of energy impacts resulting from these actions; and
- A baseline market assessment of the four-state region.

This final Market Progress Evaluation Report (MPER) follows four previous MPERs focusing on the region-wide program: three addressing the regional efforts of NEEC and NWBOA in 1998, 1999, and 2000, and one that provided a cumulative assessment of the programs at the end of 1999. In addition, these reports were preceded by two reports addressing the results of the 1997 Washington BOC venture.²

² See Alliance reports E97-001, E98-007, E98-007A, E98-015, E99-027, E99-031, E99-052 and E01-07 at <http://www.nwlliance.org/>.

PURPOSE OF THIS REPORT

This final MPER provides a cumulative assessment of the NEEC and NWBOA BOC activities between 1998 and 2000 across the four-state Pacific Northwest region. The report includes a follow-up analysis of the student, supervisor perceptions of the impact of the BOC on their work and an assessment of awareness, knowledge and interest in the BOC for building operations supervisors throughout the region.

PROGRAM STATUS

The focus of this MPER is on impacts from the BOC program. The current contracts with NEEC and NWBOA focus on activities other than marketing and expansion of the program. The following briefly describes the status of the program as of July 2001.

Program Goals and Achievements

The current contracts between the Alliance and NEEC and NWBOA do not have any targets for registration or certification. Current contracts focus on development of electives for NEEC and exploration of how to facilitate delivery of services in Montana for NWBOA.

The NEEC project requires the development of six electives between 2001 and the end of 2003. During 2001, NEEC has already developed one course focused on water efficiency and deployed this at two locations (one in Washington and one in Oregon) and will have the second course developed by December. The topic of the second course will be load management or building commissioning.

NWBOA is completing a contract with the Alliance that focuses on addressing regional certification issues, market research on how to expand to the private sector in Idaho, and program marketing to the private sector in Idaho and to all operators in Montana. All aspects of the effort have gone well except the expansion into Montana. In 2001, NWBOA tested the use of a "circuit rider" approach to market the BOC directly to building operators and their supervisors throughout Montana. The circuit rider visited building operators and supervisors in Montana and identified sufficient students for a course to be held in Bozeman in October 2001.

Transfer of NEEC Curriculum to Other Education Providers

No new organizations accredited or recognized the BOC between September 2000 and July 2001. In all, six organizations have accredited the curriculum and eight organizations have recognized the BOC as a professional development program for their members involved in facility O&M.

The major push in 2001 has been to expand licensees of the NEEC BOC. In 1999, the Northeast Energy Efficiency Partnership became a licensee and, beginning in 2000, has been able to fill classes on a steady basis. Currently, NEEP's BOC is operating about eight courses a year across New England and New York. In 2001, NEEC sold two additional licenses, one to the Northwest Energy Education Institute (NEEI) to implement BOC in Oregon, and the other to the Energy Center of Wisconsin (ECW) to implement the BOC in that state.

During 2001, NEEC also held discussions with three utilities in California. One, San Diego Gas and Electric (SDG&E), is considering purchasing a license. Another, the Sacramento Municipal Utility District (SMUD), asked NEEC to hold a BOC Level 1 course as a pilot to test responsiveness to the program. This course series began in the spring and will end in fall 2001. A similar pilot will be held in the fall for Pacific Gas and Electric (PG&E) customers.

Implications for Long-Term Viability

As we have concluded in past MPERs, the BOC appears to be well on the way to long-term viability. The regional survey suggests that awareness of the BOC will reach 50% of qualified facilities with operators by 2003. With sustained marketing and outreach, awareness should continue to increase. Awareness is a critical first step to adoption and long-term viability and must be maintained to be effective.

Viability is also fueled by the value that supervisors and operators place on the BOC. Throughout the implementation period, we have found supervisors and operators to be satisfied with the BOC and confident that the course has improved job performance for operators and saved money for many of the companies. In this MPER we found compelling evidence that trained operators save their companies and the region energy every day of the week. If the BOC continues to provide timely and useful training, operators will continue to provide these savings and supervisors will find value in the BOC.

Finally, long-term viability will be assured if the BOC is seen as a requirement for building operators. Over the years we have seen supervisors increasingly state that they will look for the BOC on resumes and they will consider it in their hiring

decisions, though none have indicated that it is a hiring requirement. Those supervisors most likely to do this are those who have some type of certification themselves. This suggests that as the BOC expands and certifies more operators, this aspect of viability will in-fact occur.

KEY EVALUATION FINDINGS

The key evaluation finding for students and supervisor perceptions of the value of the BOC course and certificate shows little change from previous MPERs:

- Over 90% of students and supervisors report that the BOC has helped the students on the job.
- Seventy-eight percent of the students report being satisfied or extremely satisfied with the training they received from the BOC courses.
- Most of the students indicate that their supervisors are supportive of their efforts and 75% of the students believe that others from their organization will enroll in the BOC in the future.
- Eighty-two percent of supervisors report they will look for the BOC on resumes in the future.

The follow-up regional survey results also show few differences from the baseline survey in the broad categories of interest in training and certification, and interest in specific courses. Some differences however were noted:

- Interest in energy conservation as a training topic moved from 8th place overall to 2nd place for all supervisors.
- Public and private sector differences in training topics tended to diminish in the follow-up, with only four of the 12 course topics (instead of ten) preferred significantly more often by public sector supervisors: HVAC systems, refrigeration maintenance, HVAC controls and heating equipment.
- Contracting O&M services supervisors reported different training interests, different types of training taken in the past and a different average number of students sent to training than reported by in-house supervisors. These differences suggest that the contracting O&M supervisors tend to focus on building maintenance rather than on operations.

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- Key factors that drive whether training will be funded and courses of interest to supervisors did not change much from the baseline.

Interest in the BOC program has increased since the baseline regional survey in early 1999.

- Thirty-nine percent of in-house O&M supervisors report being aware of the BOC in 2001, compared with 28% in the baseline (adjusted for Idaho public sector over-sample).
- Forty-six percent of all supervisors and 60% of all BOC-aware supervisors indicate that they are considering sending staff to the BOC in the next year.
- Supervisors with a certificate of some type are significantly more likely to consider the BOC important in future hiring decisions compared to those with no certificates.
- Supervisors who are considering sending staff to the BOC reported on average that they might send about three staff.
- The mean BOC course fee that supervisors reported being willing to pay in 2001 is \$820. When respondents who gave a response less than \$850 were asked as a follow-up whether they would be willing to pay \$850, about 40% said yes. Similarly, when respondents who gave a response between \$850 and \$1050 were asked as a follow-up whether they would be willing to pay \$1050, about 40% said yes.

The BOC program appears to have the following impacts:

- An analysis of tasks implemented by BOC-trained building operators and untrained operators indicates the BOC students are more likely than untrained operators to engage in efficient building operations and preventive maintenance activities. They are also more likely to read energy meters and bills monthly and to perform organizational efficiency activities such as providing supervisors with an idea for energy savings opportunities at least three or four times a year.
- Over 90% of BOC-trained building operators and their supervisors reported saving energy and money, and improving comfort as a result of training. They described explicit actions they had taken. Some operators also said that, as a result of what they had learned in the training, their

organizations had undertaken more extensive efficiency retrofits than had been planned.

- We estimate that BOC program activities to date (1997 through 2000) *saves the region approximately 172,000 MWh annually*. Alliance staff have calculated a benefit-cost ratio (CE Index) for the program of 7.8.
- The program has trained nearly 1,000 students since 1997, and program staff estimate that it will continue to train about 250 students annually. Over 10% of the estimated market for the BOC program has participated to date; by 2010, we estimate a market saturation of 40%.
- Both the NEEC and NWBOA programs appear to be financially self-sustaining for their present activities. This conclusion does not preclude the possibility that the organizations will need additional funding to expand their services or markets. For example, NWBOA has not created a self-sustaining market in Montana and NEEC has sought Alliance funding to develop its recertification curriculum.

RECOMMENDATIONS

- 1. Continue to assess—through survey research—awareness, willingness to pay, and impacts over the duration of the program.** This will enable the Alliance to make an ongoing assessment of the overall effectiveness of the BOC investment.
- 2. Encourage NEEC and NWBOA to each maintain a database that includes for all students the square footage they are responsible for and, if they are not responsible for building operations generally, the specific systems they are responsible for. The database should also track course completion, certification, and re-certification status.** Consider providing a small stipend to ensure these data are available for long-term data tracking and link overall contract compliance to the effective tracking of these data.
- 3. Delivering services to Montana operators remains a concern.** The following options appear may improve delivery:
 - **Consider funding a specific effort focused on delivering services to Montana at an even higher cost than currently charged by NEEC (\$1,050) to field test willingness to pay.** This

will enable courses to be delivered with less than ten students enrolled.

- **Consider establishing a set location for training each year:** (e.g. Missoula year 1, Bozeman year 2, Missoula again in year 3, etc.) With Level 1 offered each time and Level 2 every other time. This will provide operators and their supervisors sufficient time to prepare.
4. The BOC course topics are among those of interest to supervisors, but they remain of less interest than other topics such as safety and equipment operations. **Including courses** such as these, **with a focus on the energy efficient aspects of safety and equipment operations could expand interest in the course series.** Additionally, NEEC needs to be prepared to offer specialty electives that touch on timely issues such as energy conservation and load management in a time of "energy crisis" such as occurred in 2001. Such electives could go a long way to expand awareness and interest in the BOC while also providing supervisors and students with up-to-date information to deal with immediate needs. To prepare for such future issue areas, the Alliance may want to fund a specific market research task.