

RESIDENTIAL ENERGY CODE TECHNICAL SUPPORT:
TRAINING THAT WORKS FOR ENFORCEMENT PERSONNEL

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ABSTRACT

Comprehensive enforcement of residential state energy codes depends upon well designed and accessible technical support programs. This paper will explore the challenges of technical program development and delivery, and the solicitation of support from code officials for Washington's Energy Code Clearinghouse Hotline and residential circuit-rider training workshops.

Residential circuit rider training, is conducted by professional contract trainers who are knowledgeable in the State Energy Code and the Northwest Energy Code -- which has been adopted by some Washington jurisdictions. Introductory trainings are given at the local building sites and emphasize hands-on inspection procedures. Students like the small classes and the real world training approach.

The Washington State Energy Office in conjunction with the International Conference of Building Officials, operates the Energy Codes Clearinghouse to provide technical energy code support to code officials. The service includes a toll-free hotline, published bi-monthly interpretations and an energy publications library at ICBO's Northwest regional office. Although the technical interpretations are advisory only, code officials like having an easy-to-reach expert to advise them on code questions.

Formal evaluations have proven both of these programs to be well-received and generally successful in elevating code official knowledge.

INTRODUCTION

In December 1985, House bill 1114 was signed into Washington State law upgrading existing law with the 1986 Washington State Energy Code (WSEC). The revised code tightened efficiency requirements for insulation, glazing mechanical systems and lighting in new and renovated residential and commercial buildings. The 1986 WSEC was based on the updated ASHRAE 90A-80 and 62-73 standards, and the Model Energy Code.

In addition to the WSEC, the Bonneville Power Administration (BPA) sponsors the Model Conservation Standards (MCS) Early Adopter Program. This program, which began in 1984, effectively tightens

standards for electrically heated, residential occupancies but is roughly equivalent to the WSEC for other occupancies. Cities and counties within the state and the Northwest region are encouraged to adopt the more restrictive MCS, since renamed the Northwest Energy Code (NSEC), in return for incentive payment to builders and jurisdictions. The incentive payments compensate for any additional building and enforcement expenses. Several Washington jurisdictions have chosen to adopt the MCS. These include several of the more active building areas such as Tacoma, Spokane, and Spokane County.

Providing adequate technical support to code enforcement personnel is an important element in elevating energy code enforcement levels. Two of the programs that have been evaluated and proven successful are residential circuit rider training and the energy code clearinghouse hotline. Key elements in the success of these programs are a well-designed operation plan, on-going evaluations of code official needs, and code official cosponsorship. Major funding for these programs is provided by the Bonneville Power Administration and oil overcharge settlement funds.

BACKGROUND

Implementation of the 1986 WSEC and an increasing number of MCS early adopter jurisdictions created a demand for training and a technical support network for code enforcement personnel. Without support, the more stringent code requirements would not achieve the desired energy conservation goals. Effective enforcement of energy efficient codes represents one of the more cost-effective ways to conserve energy. Simply put, it is easier to install insulation, energy efficient windows and HVAC equipment, during initial construction, than to retrofit the same buildings at a later date.

The Washington State Energy Office (WSEO), which plays a significant role in facilitating energy efficient buildings technologies, was selected by the Bonneville Power Administration to deliver the support programs. WSEO developed a smorgasbord of programs to suit a variety of learning styles. Programs that are

currently being developed or provided are:

- Energy Code Clearinghouse Hotline
A toll-free hotline for code officials that provides WSEC and MCS interpretations and technical support.
- Residential Circuit Rider Training. On-building-site WSEC and MCS inspection training for code officials. This program is co-sponsored by WABO.
- Commercial Circuit Rider Training. On-location plan review and inspection training. Covers commercial lighting, HVAC, and thermal requirements. Limited to five to ten participants.
- Independent Study Courses. Covers commercial and residential plan review and inspection practices for the WSEC. Through a partnership agreement, the courses are promoted and distributed by WABO.
- Inspector/Plan Reviewer Certification Program. Certification program offering certification as an Energy Code Plan Reviewer or Energy Code Inspector. Offered two times per year and co-administered by WABO and WSEO.
- Energy Code Training Videos. A generalized explanation of WSEC compliance pathways and inspection techniques. (20 minutes)
- Codes, Contractors & Conflicts Video. A narrator analyzes both the ineffective and effective communications styles of a building inspector and contractor in conflict. This video will enhance the inspector's ability to control volatile situations and, at the same time, get the contractor to comply with the code. (29 minutes)
- 1986 Energy Code Training Manual. A desk reference to the 1986 WSEC with cross-references to the Super Good Cents Standards and the Model Conservation Standards.

In order to effectively implement any technical assistance program, credibility must be established with enforcement personnel and their professional association. To insure that each of our programs is meeting their needs, WSEO has worked closely with the Washington

Association of Building Officials, consulting with their Energy and Education committees, attending quarterly membership meetings, surveying code officials, and most importantly by listening to what they say. These programs enjoy much greater support than those that don't actively involve code officials.

Two of the programs that have been particularly successful are the Energy Code Clearinghouse and Residential Code Official Training.

ENERGY CODES CLEARINGHOUSE HOTLINE.

Code officials were instrumental in identifying the need for an energy code information service similar to that provided for the Uniform Building, Plumbing and Mechanical Codes by ICBO. With the advent of newer energy efficient codes and limited local educational opportunities, a central information resource was needed to answer questions. The development of the hotline concept resulted and was a joint process of the BPA, WSEO, ICBO, and WABO. Since the program had positive implications for enforcement of energy efficient codes, BPA agreed to provide funding.

WSEO's Energy Codes Clearinghouse is a single component of a Northwest regional hotline system that encompasses Washington, Oregon, Idaho and Montana. Washington's hotline began operations in December 1985 under a subcontract from the International Conference of Building Officials (ICBO). ICBO directly provides hotline services to Montana and Idaho and subcontracts to the State of Oregon for their services.

The primary regional contractor for the program is ICBO. Their established network and recognition by the region's building departments made them an important and logical participant in the program. ICBO currently publishes the uniform codes, provides plan review services, educational training, professional certification and coordinates the UBC review process. WSEO was asked by ICBO to deliver hotline services to Washington because they were already providing Energy code training to code officials. This helped further BPA's goal of tying together existing support networks, thereby maximizing the effectiveness of the program.

The major goal of the hotline is to provide an accessible and knowledgeable, central resource for interpretations of the Washington State Energy Code and the Northwest Energy Code.

Services include a toll-free phone line, published bi-monthly code interpretations and an energy publications library for local government jurisdictions within the state. The hotline operates five days per week, six hours per day.

Interpretations are mailed to all local code enforcement jurisdictions within Washington and to utilities that participate in the Super Good Cents program. Hotline access is limited to code officials with two exceptions: design professionals who are specifically referred by a code official and consultants hired by the jurisdiction to aid in the education/enforcement process.

Two purposes are served by limiting hotline access to code officials: It reinforces the decision making authority of code officials and, by directly dealing with questions, enhances their knowledge of the code. Competent and informed code officials are important in a state like Washington where local government jurisdictions ultimately enforce and interpret the state energy codes. For this reason, the hotline interpretations are advisory only and are not binding to the local building jurisdictions.

Hotline interpretations are published in a question and answer format and are indexed both by a code section number and a "keyword". The "keyword" contains the code section title and a second or third subtopic word, describing the subject of the interpretation. The intention is to provide the user with a quick and easy method for finding the particular interpretation.

A second benefit to using the key word system is that it takes advantage of the search command found in most modern computer word processors. Since more and more building departments have IBM compatible computers, the interpretations are also distributed on floppy discs in a generic word processor format, allowing quicker access to specific interpretations.

The following is an example of a typical interpretation:

102(a) WA 86 [Exemptons/Energy Source]

Q: Can a furnace designed to use recycled crank case oil be considered as a "non-depletable" heat source thereby exempting the building containing it from WSEC building envelope requirements?

A: No. While there may be some merit to the argument that burning waste oil does not adversely effect depletable energy supplies, there is no guarantee that waste oil will be utilized, especially by subsequent tenants who may not have access to such fuel sources. The obvious advantage to such a system is the economy of the intended fuel source.

SEE NVEC, SECT.101.3.1.3,
FOR SIMILAR REQUIREMENTS THESE
OPTIONS ARE ADVISORY ONLY

CIRCUIT RIDER TRAINING

From 1980 to 1986, a few large, lecture-style Energy Code workshops were provided each year in central locations. Trainers tried to cover all aspects of the energy code in a day-long session. During the same period several versions of the Energy Code Training Manual were published and used as workshop training aids.

Evaluations and our own experience, determined that the workshops were covering too much material and were too lengthy and large for effective learning. The larger workshop setting created a reluctance on the part of participants to ask meaningful questions. Consequently, code officials weren't having an optimal learning experience. A different approach was needed for future training efforts.

Based upon input from WARO, residential energy code training was restructured from large scale lectures to many small sessions conducted by circuit riders traveling to the individual jurisdictions.

Training is provided at the jurisdictions because it minimizes time and travel expenditures to the local building departments. With past programs, inspector/plan reviewers often traveled substantial distances to attend the workshops. Adding travel time to the 8 hour workshop made for a long day. For building departments that are understaffed, which many are, this is a difficult proposition. Small jurisdictions usually have minimal travel budgets and few have backups for the code official. For this reason, training periods are limited to 4 hours. The shorter workshop allows participation with minimal disruption to the participants or the jurisdictions.

The smaller sessions include three to five participants. This allows more personal attention by the instructor; participants are more open with questions and gain more from the experience.

With the exception of a short introductory orientation, the workshops are given at construction sites located within the local building jurisdictions. Building departments are asked to prearrange for a single family dwelling in the framing/insulation phase for their particular training session. Participants and the instructor spend approximately three hours at the building site. Approximately 50 trainings have been given to date, with over 220 participants.

The training outlines the residential code requirements and visually demonstrates proper inspection techniques. Discussion topics include vapor retarders, insulation, glazing and common problems encountered in the interpretation/enforcement process.

Trainings might be best described as the code training version of "This Old House", the public television series on remodeling older homes.

Two phone evaluations have been completed by the WSEO evaluation division. Code officials who participated were asked a series of questions to determine the degree to which effective learning took place:

- Was enough material covered?
- Was there sufficient time to cover the material?
- Did the instructor keep you interested?
- Did the instructor understand the kinds of problems you face on the job?
- Would you recommend this workshop to others?

In addition to the phone evaluations, individual workshop evaluation forms were given to each participant at the conclusion of the sessions. In both evaluation processes, code officials requested that the trainers conduct subsequent specialized trainings on heatloss calculations, evaluations were substantially identical: code officials consistently rated their training experience as good to excellent and preferred the on-building-site trainings to the previous lecture-style workshops.

CONCLUSIONS

- #1 Small workshops which are delivered on-location and cover generalized inspection techniques at the building site are effective. They give enforcement personnel the hands-on, visual training that is needed for effective code enforcement.
- #2 Working closely with code official organizations is important to the success of any technical code support program. Code officials will support and take ownership of programs that they actively help develop. Ideally, code enforcement activities should be cosponsored by the state organization of building officials.
- #3 A well-planned evaluation process maintains program flexibility and more precisely addresses client needs. Programs should be evaluated before the program begins, at midpoint, and after they are completed. Phone evaluations are effective because personal contact enhances candid feedback from survey participants.
- #4 Concepts of the Energy Codes Clearinghouse and the Circuit Rider Training Program should be applicable to other types of code support programs.