

MODEL CONSERVATION STANDARDS - LESSONS LEARNED  
IN PROVIDING  
TECHNICAL SUPPORT TO  
THE "BUILDING CODE INDUSTRY"

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ABSTRACT

The Northwest Power Act directed the Northwest Power Planning Council (Council) to adopt Model Conservation Standards for new buildings designed to produce all energy savings that are both cost-effective to the Regional power system and economically feasible for consumers. Implementing the Model Conservation Standards, adopted in 1983, has proven to be a challenge for the Council and the Region.

In the past two years, the Bonneville Power Administration has supported the implementation of the Model Conservation Standards by providing technical support to building code officials and the "code development industry". Two main lessons have been learned.

The first one is to take the time, up front, to understand existing infrastructures. Only to learn of their existence is not enough. To understand is to acquire the ability to relate to the history, rationale, purpose and methodology of change of the infrastructure. To understand is to develop a respect for the existing code development industry.

The second main lesson is to use this understanding in designing support programs that are consistent with the existing infrastructure, and creatively add to, strengthen and complement it. This includes assisting the "building code industry" in counteracting and overcoming any pitfalls discovered.

Specific examples of mistakes made and subsequent lessons learned when working with building code officials and the code development industry are presented.

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INTRODUCTION

This paper will focus on lessons learned as a result of working toward adoption of energy codes equivalent to the Model Conservation Standards (MCS). Lessons learned will be presented from the perspective of providing technical support for code officials and the code development industry.

The Northwest Power Planning Council (Council) established January 1, 1986, as a deadline for Regional adoption and implementation of the MCS, either as traditional building codes or legally-enforceable utility service standards.

To encourage Regionwide MCS adoption, the Council's 1983 Power Plan called for Bonneville to fund programs to support the adoption of MCS level energy codes. This included reimbursing governmental or utility adopters for additional MCS-related enforcement costs, as well as providing financial assistance for homeowners in adopter jurisdictions prior to 1986.

Utilities within jurisdictions that failed to take this action were potentially subject to a surcharge.

As might be expected with any new effort involving substantial change, MCS-related portions of the Power Plan generated considerable discussion and controversy. The code enforcement community was no exception.

Within the last two years, The Council's Power Plan has been modified. Based on the experience gained the Region will continue to work toward an overall goal of regionwide adoption of the MCS by 1989.

This paper explores "lessons learned" during the past two years, from the perspective of someone who has worked to provide technical support/specialized training in working with code officials and the "code development industry", in a multi-state situation. The focus will be one of practical application, including a description of problems and obstacles encountered and alternative approaches pursued.

## OVERVIEW OF LESSONS LEARNED

The initial response of the building code community to the Council's proposal was overwhelming...overwhelmingly negative. In itself, the philosophy of the surcharge was equitable. A regional goal had been established and everyone should do their part in meeting that goal. However, it's almost second-nature to resist threats; to resist mandatory regulation.

Code officials were no exception. In some cases, the level of resistance was so high that the efforts to argue MCS credibility and/or find desired loopholes appeared to be greater than that which would have been required to adopt MCS.

In retrospect, this tack did function as a fairly effective informational mechanism for some of the code community. Although resentment was still present, a certain amount of curiosity existed as to "What is MCS anyway?" And then there were those who chose self-motivated education and training, for although they didn't like it, they intuitively felt the need to protect against it. Where this existed, it was a minimal educational effort...just in case; a half-hearted attempt to minimize the impact if needed.

And finally, there were those code officials who were personally comfortable with the idea of adopting MCS as code. However adoption was not possible due to the absence of state infrastructures necessary to adopt new codes so quickly.

Incompatibility with Traditional Code Development Procedure

The Council's 1983 Power Plan schedule for code adoption by January 1, 1986 was an ambitious one. In reality, it was too ambitious. It did not accommodate, and was even contrary to the natural code development process in sequence, timing, and protocol. The Plan called for code adoption in less than two years. Normal code development doesn't occur in less than three years, and in most cases, six to nine years are required.

Traditionally, code development is a slow, self-paced process. Code officials challenge, argue and debate code interpretation and application formally at annual code challenge sessions. This leads to actual code changes at code development conferences about every three years.

With this conservative approach to code change, by now, one might expect all sections of the code to be refined and fairly clear. However, this is not the case, especially when considering energy codes.

Why is this so? The primary purpose of the Uniform Building Code (UBC) is to protect the public regarding fire, life and safety issues. Historically, the predecessor to the UBC is a set of mandatory regulations called the Tenant Laws, dating from the mid 1800s. These responded to inadequate sanitation practices and thus disease control in housing due to the lack of basics such as hot water. The first code of the UBC was for ventilation. Ironically enough, this related to a fairly hot issue today - - indoor air quality. It was initially a volume requirement per occupant, and was soon changed to a requirement for large areas of glazing. Also of interest in the early 1900's was fire safety and control. Thus, a majority of the initial codes developed respond to these concerns.

Knowing this small portion of code development history, one can now look at some sections of the UBC and recognize that some of these requirements still exist although their original purpose is no longer applicable. They are considered by some as not responsive to today's fire, life and safety concerns; they actually conflict with the intent of other codes, such as new energy codes.

The code change process is a long, involved one. Each potential code change needs at least one building official to sponsor it. The sponsor must be very committed to the need for that change. The need for this commitment is that code change support consumes much time and energy. With this in mind, it logically follows that the codes changed are only those that have a critical impact on current enforcement practices.

#### Identifying Enforcement/Implementation Barriers

In April, 1984, BPA used the Delphi method, a committee interaction procedure, to identify technically related obstacles that could have a significant adverse effect on the ability of a jurisdiction to implement the MCS as code. BPA's intent was to use this information to ensure that technical activities and projects would continue to focus on areas that would be of maximum benefit to the adopting entities. The Delphi method provided for maximum participation of key and diversified players throughout the Region (e.g. code officials and builders). This methodology also provided for privacy of individual responses and their subsequent use in future management decisions.

The challenge given to the Delphi participants was: "Make a forecast of the code implementation process, assuming code meets or exceeds MCS, and identify any technically related obstacles. Your forecast may be in narrative or scenario form. All implementation obstacles must be broken into a set of discrete events, and priority rated: 1-low difficulty; 2-somewhat less difficult; 3-somewhat more difficult; or, 4-high difficulty."

A summary of the Delphi responses indicated that enforcement training was critical. Lack of training was the key barrier to effective implementation of MCS as code. Other barriers to enforcement included: no uniform product approval, no code format, no code interpretation/appeal process, no way to update and change code, no uniformity in assuring compliance, and increased time and cost.

To encourage regionwide MCS adoption, the Council's Action Plan called for BPA to fund programs to support the adoption of MCS level energy codes. Those programs included reimbursing governmental or utility adopters for additional MCS-related enforcement costs, as well as providing financial assistance for homeowners in adopter jurisdictions prior to 1986. However, only a handful of jurisdictions have successfully implemented the MCS as traditional building codes during the past two years under BPA's Code Adoption Demonstration Program (early adopter program).

BPA was committed to providing education and training as a key program component, but it was limited to energy efficient building technology. The Action Plan schedule did not provide enough time to develop the code implementation tools necessary for effective early adoption. The few early adopters that existed developed their own infrastructures. They succeeded in overcoming the enforcement barriers that Delphi had identified, but, in general their experiences were not transferable. The early adopters were all from one general geographic location. It was obvious that to allow isolated infrastructures to be created, and force each adopter to re-create, was not a very desirable or efficient scenario.

The results from the Delphi process were a start, but clarification was needed. How were implementation barriers addressed in other scenarios? What worked? What didn't work and why not? Was there already a successful formula to use that could be modified from a single-state to a four-state application?

In August, 1984, a nationwide enforcement phone survey was conducted. Battelle Human Affairs Research Center's "Analysis of Institutional Issues in The Implementation of Federal Energy-Performance Standards for New Buildings", March, 1980, was used as the basis. The purpose of the survey was to confirm what technical support was needed for effective enforcement of energy codes.

The results of the August, 1984 survey confirmed that providing the implementation/enforcement tools, in themselves, was not enough. Aspects such as who developed them and how they were developed were critical to eventual user confidence.

Assigning responsibilities to an entity not previously acquainted with or involved with the building industry can lead to adverse organizational impacts, problems and delays. In several jurisdictions in California, complaints were registered with regard to the design manual published by the State Energy Commission to help designers and code officials with the code.

Local building officials found the code overly complex and confusing. They suggested that this may have been a result of the fact that government administrators wrote the manuals, and not building officials and members of the building community who would normally use them.

Unnecessary political conflict may also be a consequence if care is not taken in the delegation of enforcement/implementation responsibility. In 1977, authority for California code administration was transferred to the Energy Commission (CEC). Reportedly, local building officials and members of the building industry resented this since CEC had little prior experience with building regulation, yet did not consult them in code implementation. As a result, the standards and regulations lacked a sensitivity to the realities of local building regulations. Similar conflict was experienced in Colorado, Minnesota, and Florida.

Even state energy code training efforts throughout the country were jeopardized. Local officials felt that since they had played no role in the development of either the standards or the training materials, they could hardly be expected to clarify, interpret or explain them. They further complained that they were understaffed, and could not afford to attend let alone actively support training efforts.

The message was clear: use existing infrastructures as much as possible. Continuing opposition to the MCS from code officials due to lack of sensitivity to this may unnecessarily affect the efficiency with which the code is enforced, and may ultimately jeopardize the entire effort.

There was one more message received from the enforcement/implementation homework BPA had done. Ambitious schedules, such as the Council's, sponsor a tendency to be shortsighted or intermittently lose sight of the goal. In the rush to meet deadlines, and thus failure to resolve uncertainties beyond specific program needs, confusion and conflict are bound to occur. This, in turn, threatens the thoroughness and efficiency with which the standards, once developed, can actually be implemented and enforced. While financial incentives may ease the strains on resources, they will do little to reduce political opposition where it may arise. Thus, code writers may complete a job quicker by not enlisting the support of those who will enforce the measures and abide by them. However, unless they do enlist such support, the code may be doomed to failure.

## BPA'S RESPONSE TO CODE TECHNICAL SUPPORT NEEDS

In light of the results of the Delphi process and the survey data, BPA concluded that it was necessary to develop a two-pronged technical support approach. One prong was to respond to the immediate and ongoing technical support needs of the Code Adoption Demonstration Program participants. The other was to build the technical support needs required for eventual regional adoption of the MCS as code, while maintaining a sensitivity to and consistency for early adopters. Another presentation will address lessons learned from the experience of early adopters (Crossman, 1986). This paper covers the second prong of the strategy.

Code Official Training and Education

BPA knew by the end of 1984 that code official training and education was critical to adoption and effective enforcement of the Model Conservation Standards (MCS) as code.

All four States in the Region independently conducted code official needs assessments/surveys which consistently revealed the following training and education objectives:

- The organization responsible for training should be in a stable and permanent position to guarantee continuity of training and personnel from year-to-year.
- The organization and personnel who conduct the training should be available within the State on a year-round basis to provide technical reference information.
- The organization responsible for energy training should preferably handle training for all code-related disciplines.
- Training sessions should be made available at several locations and times each year, and integrated into normal code enforcement training opportunities as much as possible.
- Continuous support should be given to build a knowledgeable code enforcement community which encourages growth and increased understanding through peer assistance.

BPA developed the following regional strategy to meet these objectives:

1. Assisting State technical support efforts.
  - Workshops and continuing efforts to integrate MCS training into normal code enforcement training.

- Outreach mechanisms and activities, including developing and disseminating MCS materials and providing technical assistance and training materials to the International Conference of Building Officials' (ICBO) training efforts, and utilizing members of the code official community in training activities. A "Code Official Peer Assistance Process" (COPAP) allows code officials in each state to formalize their own form of peer assistance.
2. Utilizing existing code development industry mechanisms.
    - Supporting ICBO short schools.
    - Providing MCS presentations at local ICBO chapter meetings.
    - Technical assistance for ICBO code development activities.
  3. Providing a regional MCS Technical Information Clearinghouse for code officials.

The Clearinghouse supports a self-serve, in-house training methodology. The Washington State Energy Office, the Idaho Department of Water Resources, and the Building Code Division of the Oregon Department of Commerce, and the Montana Local Government Energy Office coordinate under a BPA contract with ICBO to provide the following Clearinghouse services for code officials:

- A code hotline system for code officials in each State.
- A code interpretation resource for code officials in each State.
- A regionwide library system.
- A regionwide video tape service.

#### Code Official Implementation Tools

To help assure that the enforcement tools developed were responsive to industry needs, BPA sponsored a regional code technical support task force. Building officials as well as state and local government representatives participated. Subsequent to these work group sessions, BPA is currently providing technical support to the code development industry in many ways.

#### Code Language.

First of all, the MCS needed to be transferred into a familiar energy code format. The Council's technical staff had already provided an MCS equivalent code formatted after Chapter 53 of the Uniform Building Code. Of the four northwestern states in the Region, only Oregon was actively using this format, and they were considering a change to another format - - the "Model Energy Code, 1983" (MEC) format. This format was that of the Council of American Building Officials' (CABO) and had wider use on a national level. Many areas in the Region were using it, or working toward such a conversion, to receive broader-based code interpretation support.

BPA responded to this need by contracting with an energy code analyst with The City of Seattle's Department of Construction and Land Use, to develop "The Model Conservation Standards Equivalent Code to The Model Energy Code, 1983". Seattle's energy code is based on the MEC. This was in January, 1985. Before print and mass distribution, final review copies were sent to several code officials and industry representatives for their review.

Then there was another problem because CABO has a copyright on the MEC. The President of CABO was asked for a copyright release. The CABO Board of Directors (representing: Building Officials and Code Administrators International, Inc. (BOCA); International Conference of Building Officials (ICBO); National Conference of States on Building Codes and Standards (NCSBCS); and Southern Building Code Congress International, Inc. (SBCCI)) had a valid concern. Although BPA was only using the MEC format, code officials might misunderstand the intent and mistake the MCS version for CABO's national consensus version.

After three months of negotiating that hurdle, copyright release would only be given if CABO received a royalty for every copy distributed. BPA could not accept this; it would be an administrative nightmare. Determined not to abandon the ship at this point, BPA suggested that the MCS be amendments to the MEC; CABO agreed.

By this time it was September, 1985 and the Council was in the process of amending the MCS. The Council formally amended the MCS in December, 1985. BPA and the Council's technical staff made the necessary changes, and the "MCS Equivalent Amendments to The Model Energy Code, 1983" was finally published in January, 1986.

#### Code Interpretation/Application Manual.

Building code development is an active, evolutionary process. Building officials in each jurisdiction interpret and apply code on a case-by-case basis. As specific aspects of building code are interpreted and applied, certain applications and interpretations become standard practice. Eventually, these can be considered in the code development process as a change in local building codes.

Traditionally, the reference document most used for this purpose is "UBC APPLICATION/INTERPRETATION", published by the International Conference of Building Officials. True to its function, this is an ever-changing document, to which building officials subscribe. Historically, the publication deals with various building components such as mechanical, plumbing, electrical, etc.

BPA has underwritten the development and production of a new publication, the "Manual of Accepted Practices " (also called the MAP) for use by code enforcement officials. Written in the format of the "UBC APPLICATION/INTERPRETATION", the MAP adds a new dimension to code interpretation, functional energy efficiency objectives for buildings.

After three months of intensive field sessions with building officials throughout the Region, the MAP has been prepared to mirror the format of its prototype. To be as useful as possible, it was organized by code section, and identifies MCS energy code applications/interpretations adjacent to the codes of each state.

Created in close cooperation with the industry, the new manual is a meaningful expansion in service and credibility in code development. As a result, the Northwest is advancing energy efficient code development and interpretation.

#### Technical Information "Clearinghouse" for Code Officials.

The "MCS Technical Information Clearinghouse" has already been mentioned as a training and education approach, but it also serves as a continuing code development resource.

The Clearinghouse grew out of meetings of BPA's MCS Technical Support Task Force. These sessions were scheduled to solve problems such as codifying the MCS. A spirit of cooperation and creativity operated from the start in brainstorming sessions. It was out of these sessions that the notion of a hotline and clearinghouse was born. As the idea became reality, the International Conference of Building Officials, after a competitive process, agreed to contract with BPA to operate the facility. Operations began on January 3, 1986.

"The International Conference of Building Officials is a service oriented organization that exists for the benefit of our membership. We have entered into the Energy Code contract with BPA because providing this service is consistent with the needs and requests of our members...Our participation in the energy clearinghouse should prove valuable to all parties involved. We urge you to make use of this new service."

David A. Bassett, P.E., Chairman, Board of Directors  
International Conference of Building Officials

The only energy-related code hotline in the U.S., the Clearinghouse furnishes toll-free telephone information to code officials 5 days a week. Users questions and subsequent interpretation/application answers are all entered into a database. In turn, every two months, the database is printed and distributed to code officials as an addition to the "Manual of Accepted Practices."

With code officials using the Clearinghouse early in the building permit review process, builders and other members of the shelter industry also benefit. This singular central facility provides builders with timely and consistent application and code interpretation - - which in turn saves them time and money.

Not only does the facility provide useful information, it provides a daily training opportunity and a give-and-take dialogue concerning the MCS. The dialogue, the immediacy, and the convenience should contribute significantly to future energy code development.

## CONCLUSION

In the past two years, the Bonneville Power Administration has supported the implementation of the Model Conservation Standards by providing technical support to building code officials and the "code development industry." Two main lessons have been learned.

The first one is to take the time, up front, to understand existing infrastructures. Only to learn of their existence is not enough. To understand is to acquire the ability to relate to the history, rationale, purpose and methodology of change of the infrastructure. To understand is to develop a respect for the existing code development industry.

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