

**Residential Code Review Committee
2008 Oregon Residential Specialty Code
Regular committee meeting minutes
- FINAL -**

July 19, 2007

Members present: Patrick Bridges
Chuck Day
David DeHarpport
Raymond Miller
Alan Seymour

Member absent: John Caul
Gary Lampella

Staff present: Mike Ewert, code specialist
Heidi Shamberger, structural para-technical specialist
Marianne Manning, rules coordinator

Guest present: Dwight Sheldon, Demilec (USA) LLC
Armin Rudd, spray foam industry
Keith Schaber, Schraber & Associates
Steve Strawn, Jeld-Wen
Dan Cote, Energy Trust
David Hetherington, Northwest Energy Star
Bob Stull, Energy Trust
Brady Peeks, Oregon Department of Energy
Karl Harn, City of Portland
Jeff Harris, Northwest Energy Efficiency Alliance
David Cohan, Northwest Energy Efficiency Alliance
Betty Merrill, Oregon Department of Energy
Tom Banse, Oregon Public Broadcasting Radio

1. Approval of July 12, 2007 Residential Code Review Committee minutes

Motion by Raymond Miller to approve the minutes of the July 12, 2007 Residential Code Review Committee meeting as presented.
Motion passed unanimously.

Chairman Bridges reminded audience members to register to offer testimony and that testimony is limited to five minutes with rebuttal time limited to one minute.

2. Code amendment proposals and deferred items

Chapter 8 – Roof/Ceiling Construction

R806.4, new Oregon amendment ([Proposal 36](#))

Dwight Sheldon, Demilec (USA) LLC, indicated that an amendment agreement had been reached with the Oregon Department of Energy (ODOE) about spray foam insulation. He indicated that Armin Rudd, an industry expert, would be able to answer historical and technical questions about the proposed modifications.

Brady Peeks, Oregon Department of Energy, acknowledged consensus between Mr. Sheldon and his organization. Mr. Peeks distributed and discussed [proposed modifications to Proposal 36](#). Existing code did not specifically prohibit the use of spray foam on the under side of roof decks to create an unvented condition for an attic. Local building departments sought the advice of ODOE on this issue. ODOE completed research and worked with Armin Rudd, of the Building Science Corporation, to create the modified proposal, which is based on amendments proposed by Building Science to the International Residential Code (IRC).

Armin Rudd, Building Science Corporation and the spray foam industry, discussed his decade of experience in evaluating the use of spray foam in a variety of roof installations and climatic conditions. He discussed the history of spray foam methodology approval at local jurisdiction and national levels. In 2003 the United States Department of Energy (DOE) included this methodology in a code proposal submission to IRC which was accepted at IRC's recent hearings in Rochester. The modified proposal before the committee is based upon the proposal approved by IRC with some items redacted as inapplicable to Oregon. An additional item was added requiring air impermeable insulation above any recessed can light or exhaust fan to eliminate potential air leakage or moist air penetration from the house.

Mr. Rudd answered questions from the committee about unvented attic assemblies, cathedral ceilings applications, and air impermeability versus permeability.

Keith Schaber, Schaber and Associates, distributed and discussed a [document outlining his concerns](#) about the approval of spray foam in unvented attic spaces. Mr. Schaber discussed his professional experience as an advocate investigating moisture intrusion in buildings. He expressed opposition to the adoption of the modified version of Proposal 36 because of moisture retention during the construction process, lack of venting for proper vapor retardation, challenges with inspection timing, testing equipment and industry training. He reported moisture problems in a warehouse that had not shown up until twenty years after construction.

Mr. Rudd discussed building publications where research about this matter is summarized. The research specifics contain shingle and sheathing temperature measurement, various shingle materials, and roof moisture content levels in all climates. No moisture problems in roof sheathing were found during sampling protocol throughout the climate zones of the United States with the exception of far colder climates than Oregon's in which there were unusually high interior humidity levels. He discussed moisture problems found in other methodologies that allowed moist air into cold attic spaces, which is not the condition being discussed today. Mr. Rudd stated that spray foam insulation had been successfully used and assessed for over ten years in tens of thousands of installations. The Asphalt Roofing Manufacturers Association

represented themselves during numerous hearings in opposition of this methodology but failed to present any research, case study or technical data to support their opposition.

Mr. Rudd answered questions from the committee about installation timing, moisture in constructions materials and subsequent drying times, density and permeability of the products, installation supervision and inspection processes.

In response to a question from the committee, Mr. Sheldon indicated that insulation installation instructions call for wood moisture content of 19 percent or less. Building materials are normally well dried out when the insulation is installed because installation occurs immediately before sheetrock installation during the last phases of construction. Mr. Sheldon indicated that in testing he had not seen moisture levels of over 17 or 18 percent moisture.

Mr. Schaber stated that external moisture is a problem in specific climate zones in Oregon. If a building official has to test insulation by probe, it will require every building official to have a probe that costs \$350 or more. He indicated that special inspectors should be required if this proposal is approved because of the interpretive training needed for the moisture reading based on various wood species.

Mr. Sheldon recommended a piece of coat hanger be used as a probe. He stated that he is one of only a dozen people certified in the United States in a program called WUFI, a hydro thermic modeling program. (WUFI is the Wärme und Feuchte Instationär (Heat and Moisture Transport), a state of the art modeling program co-sponsored by Oak Ridge National Laboratory, DOE and the Fraunhofer Institute for Building Physics Institute in Germany.) The program has been able to model all types of construction commonly used in Oregon. The program submitted representative samples to DOE. The general suggestion that there are moisture problems relating to the use of this methodology is very different from the specific examples that the program has modeled in Oregon.

Mr. Seymour recommended a further modification to the proposal in R806.4 (2) to add “installed within the insulated assembly” to the end of the last sentence.

Mr. Day wondered if a moisture testing requirement should be adopted as part of this process of approving Proposal 36 as amended.

N1104.9.1, Vapor barriers

Mr. Peeks recommended that changes be made to Chapter 11 in conjunction with an approval of Proposal 36. He distributed and discussed proposed [modifications to N1104.9.1, Vapor barriers](#) that would change the 0.5-perm dry cup rating required for exterior ceilings to a 1-perm dry cup rating for all surfaces. The change would improve drying ability and is the International Energy Conservation Code standard.

Mr. Seymour said that 0.5 requirement drove the use of polyethylene on ceilings to meet that requirement. That use of that material increases the potential for condensation.

Mr. Day expressed concern about approving the proposal without first making decisions about other code provisions. Chairman Bridges indicated that action taken on the proposal could be revisited subsequent to future code changes if the committee so desired.

Motion by Alan Seymour to approve Proposal 36 with the discussed modifications because it addresses conditions specific to Oregon.

Motion passed unanimously.

Motion by Alan Seymour to approve the amendments to N1104.9.1 as distributed to address Oregon's specific climatic conditions and to align the code with previous action.

Motion passed unanimously.

Chapter 3 – Building Planning

R303.4.1, new Oregon amendment ([Proposal 14](#))

Mr. Ewert recommended that the proposal be approved to align the requirement with the Oregon Mechanical Specialty Code. The proposal sets the distance of the gas meter from intake air vents.

Motion by Raymond Miller to approve Proposal 14 for code compatibility.

Motion passed unanimously.

Chapter 18 – Chimneys and Vents

M1804.3.2, M1804.3.2.1, existing Oregon amendment (deferred)

Mr. Ewert reminded the committee that the proponent had been asked to review and revise the proposal. The proponent could not be in attendance but did send a representative.

Karl Harn, City of Portland, distributed and discussed [suggested modifications to M1804.3.2 and M1804.3.2.1](#) that would clarify code applications.

Motion by Raymond Miller to adopt the Oregon amendment for code compatibility.

Motion passed unanimously.

Chapter 7 – Wall Coverings

DEFERRED

The committee took a short break.

Chapter 11 – Energy Efficiency

N1101, new Oregon amendments

Betty Merrill, Oregon Department of Energy, distributed and discussed [proposed residential energy code amendments to Section N1101](#). She indicated that her presentation would include answers to questions raised by the committee at its June 28, 2007 meeting, as well as requested clarifications.

Ms. Merrill reported that the requirement level for both exterior and interior lighting would be 50 percent compact fluorescent lamps (CFL). In terms of compliance, DOE is suggesting an approach consistent with the new requirement for moisture content, which would require the

builder to self-verify compliance and a local building official to spot check for compliance. Uniform and consistent inspection will utilize the same approach. Ms. Merrill distributed and discussed a document about the [Net Environmental Benefits of CFLs](#). CFL's reduce the amount of overall mercury because they reduce total energy usage. She indicated that window requirements have also been addressed in the modifications.

Mr. Seymour stated N1101.1, footnote F calling for 0.5-perm dry cup rating would be changed to 1-perm based on previous action taken by the committee.

Ms. Merrill and Mr. Seymour answered questions about mercury disposal and the need for statewide public outreach. Standards for hazardous material disposal vary around the state for items like batteries, light bulbs, computer equipment, thermostats, etc.

Bob Stull, Energy Trust, reported that mercury can be reclaimed during a recycling and reclamation process. He said that an information page about proper mercury disposal would be available on their Web site in approximately two weeks and would include a list of reclamation sites where CFLs are collected and then shipped out of state for processing. Homes today in Oregon have 20 to 30 percent CFLs in use on a voluntary basis, with increasing levels anticipated. The majority of power in Oregon, depending on the time of year, is generated by burning coal which releases large quantities of mercury into the environment. The total amount of emitted mercury would be reduced with the use of CFLs. The mercury from CFLs could be controlled and reclaimed, as opposed to a greater level of mercury being dispersed as a fine particulate into the environment.

Steve Strawn, Jeld-Wen, expressed his support for the amendments to the energy chapter. He applauded ODOE's efforts and indicated that the window industry found the amendments acceptable.

Jeff Harris, Northwest Energy Efficiency Alliance, stated that the last major change to the residential code was over thirteen years ago and it may be time to reconsider whether the efficiency levels set in 1993 are still appropriate. Mercury disposal is a very serious and complicated issue and should be treated accordingly. He urged the committee to look at the process systematically. Mercury in a landfill is in more concentrated state than mercury dispersed in the air. However, in a landfill the mercury is controlled and monitored, and is not in a particulate form that everyone breathes. Mr. Harris pointed out a very large source of mercury in the long fluorescent lighting tubes in commercial facilities. There is opportunity to address the proper disposal and reclamation of larger sources of mercury than represented by the CFLs. He referred to a blind test of consumer satisfaction for table lamps conducted by Popular Mechanics Magazine (May 2007). The results showed an overwhelming majority of people chose CFLs over conventional incandescent bulbs. He thought that a 50 percent socket level would be an appropriate requirement.

David Cohan, Northwest Energy Efficiency Alliance, expressed his approval of ODOE's recommended code amendments. He indicated that the cost of the bulbs in the retail market is about a dollar per bulb which represents an average cost increase of \$100 to the builder. He noted that the savings to the consumer from one CFL bulb operating three hours per day is \$4 per

year. He expressed his support of the amendments proposed by ODOE. Mr. Cohan indicated that all the major lighting manufacturers are producing CFLs.

Bob Stahl, Portland Energy Conservation Inc, representing Energy Trust of Oregon, answered questions about the effect of the amendments on statewide energy programs. He indicated that Energy Star's current standards would evolve if new standards are adopted. Ultimately, Energy Star standards would remain 15% over code.

Ms. Merrill reported that current programs would be continued through 2008. Energy Star programs must be approved by the Environmental Protection Agency in Washington D.C., a process that takes at least nine months. When code adoption is complete, ODOE will be able to submit a program for approval. Ms. Merrill noted that legislation expanded business energy tax credits to include a High Performance Home credit which would provide an incentive to the builder.

Committee members indicated some concern about the availability of technicians to perform blower door tests. Ms. Merrill reported that there are over three hundred qualified in the state right now, with recruitment continuing.

Mr. Peeks noted that the proposed amendments meet a directive from the governor's office to reduce energy use by fifteen percent. A recent federal proposal called for an increase in energy efficiency by 2015.

Committee members discussed the increasing expense of housing in Oregon, and dramatic housing cost increases not tied to the hard costs of the structure.

Motion by Alan Seymour to approve, for energy conservation and to meet the Governor's directive for residential construction, the proposed amendments to Chapter 11 as modified with: Footnote F on page 1 deleted; footnote J a roadmap; footnote L a clarification; Table 1101.1(2) a reflection of U values; page 3 changes to exterior and interior lighting; page 5, 1104(12) should be 0.35; page 6 1104.4 (3) clarified weighted average; 1104.5.1 and 1104.5.2 further defined; 1104.9.1 language change to reflect previous action; and baseline aligned to code.

Mr. DeHarpport stated that he understood ODOE's efforts to meet their directives but expressed concern with the costs analyses used for the amendments and the affordability of the proposed changes. He thought that the amendments would be a component in making homes more unaffordable. Oregon's standards seem to be consistently higher than national standards.

Mr. Seymour pointed out that national code has raised its standards to move it closer to Oregon's standards. There is less separation in the two codes now than there was five years ago.

Ayes – Bridges, Miller, Seymour
Nays – Day, DeHarpport
Motion passed.

Chairman Bridges expressed concern with affordability of the proposed amendments. However, based upon the directives in place and ODOE's willingness to make compromises the changes are necessary. Mr. Miller also expressed concern about affordability of the proposed amendments.

3. Construction Claims Task Force

Mr. Ewert distributed and discussed [Construction Claims Task Force \(CCTF\) recommendations](#).

Chapter 1 – Administration

R109 and **R318**, new Oregon amendments

Chairman Bridges distributed and discussed his [suggested modifications to Sections R109 and R318](#).

The committee discussed various construction aspects of under floor insulation, top and bottom plate drying, and exterior finishing. The committee also discussed the allowed practice of installing crawlspace insulation prior to roof installation. Mr. DeHarpport reported that this issue had been extensively discussed during CCTF meetings, but the issue was not addressed in rulemaking. The committee discussed interpretive rulings or code language that could ensure crawlspace insulation is not installed until moisture content criteria is achieved.

Motion by Raymond Miller to adopt the CCTF recommendations for R109 and R318 to meet the objectives of that task force, with modifications suggested by Chairman Bridges to clarify the intent of the code.

Motion passed unanimously.

Chapter 15 – Exhaust Systems

M1503 and **M1507**, new Oregon amendment

Chairman Bridges distributed and discussed [suggested modifications to Section 1503](#).

The committee discussed some ratings, timed vents, spot ventilation versus continuous ventilation, costs and product availability of fans, and minimum required standards.

Motion by David DeHarpport to approve CCTF's recommendation to R1503 and R1507 to meet the objectives of the task force to help reduce moisture in homes, this motion includes suggested modifications by Mr. Bridges and further modified to delete the last sentence in R1507.4. (~~“Ventilation equipment in these rooms shall have a some rating of 3.0 or less.”~~)

Motion passed unanimously.

The committee took a lunch break.

Chapter 7 – Wall Covering

Section R703, new Oregon amendment

The committee discussed soldering of metal flashing, plant-on trim and flashing of any penetration into the building envelope.

Motion by Raymond Miller to adopt CCTF's recommendations to Section 703 to meet the objectives of the task force, modified to delete the sentence "~~Metal flashing meeting at or creating a joint shall be soldered together.~~" from R703.8, delete R703.8(5) and delete R703.8(9) to align code to Oregon's specific needs.

Motion passed unanimously.

R302.1, model code addresses exterior walls minimum fire-resistance distance (not on agenda) Mr. Ewert reminded the committee that this section was deferred at a previous meeting. Table 302.1 was aligned to model code which makes this code language necessary.

Motion by Raymond Miller to adopt new model code language.

Motion passed unanimously.

4. Review model code Appendices H, K, L and O

Appendix H, model code and existing Oregon amendment about patio covers

Chairman Bridges noted that scope is amended to clarify square footage is 120 square feet and greater, because less than 120 square feet is exempted from permits.

Motion by Raymond Miller to retain the Oregon amendment to further align Oregon's code to national model code and to provide consistency with scoping provisions in Chapter 1.

Motion passed unanimously.

Appendix K, model code about sound transmission

Motion by Raymond Miller to adopt model code.

Motion passed unanimously.

Appendix I, model code (not on agenda)

Chairman Bridges discussed the limitations of the Building Codes Division (BCD) to adopt fees, and the process local jurisdictions use to change fees.

Motion by Raymond Miller not to adopt model code to meet other statutory provisions.

Motion passed unanimously.

Appendix M, model code addresses day care

Chairman Bridges noted that this licensing function is controlled by the health department.

Motion by Raymond Miller not to adopt this model code because it is regulated by other statutory requirements.

Motion passed unanimously.

Appendix O, model code about gray water

Motion by Raymond Miller not to adopt Appendix O because gray water is regulated by a different government agency.

Motion passed unanimously.

5. Review Oregon amended Appendices G and M

Appendix G, model code and Oregon amendment about swimming pools, spas and hot tubs

Mr. Ewert distributed and discussed [Appendix G code language](#). He indicated that AG103.1 was adopted in the previous code cycle but was not printed in the code by error.

Motion by Raymond Miller to adopt Appendix G as currently modified in Oregon, to be consistent with prior action and to address enforceability issues.

Motion passed unanimously.

Appendix M, existing Oregon amendment

Mr. Ewert distributed and discussed [Appendix M Strawbale code language](#).

Motion by Raymond Miller to adopt Appendix M because it fills a gap in model code.

Motion passed unanimously.

Appendices A, B, C, D, E, and F, model code (not on the agenda)

Mr. Ewert briefly discussed the reasons that these appendices are not adopted in Oregon.

Motion by Raymond Miller not to adopt Appendices A, B, C, D, E and F because they are not applicable.

Motion passed unanimously.

Deferred items that will be heard at the next meeting were outlined.

The committee took a short break.

Persons who have submitted code proposals but have not contacted BCD for a date certain for their proposal to be heard must make that request no later than July 24, 2007. No proposals will be placed on the agenda after that date.

Committee members agreed to schedule a tentative meeting on August 9, should the committee's work not be completed on August 2, currently scheduled as the last committee meeting.

The committee adjourned at 1:24 p.m.