



Oregon

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Oregon Commercial Energy Conservation Advisory Committee>

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Minutes

****NOTE:** *The following minutes are a summary of the committee's discussion.
To review the meeting in its entirety, the archived video of the meeting is available
on the committee's Web site at the following link: <http://www.bcd.oregon.gov/committees/10cec.html>*

- Members Present:** Martin Brown, City of Wilsonville, Building Official
Jeff Harris, NW Energy Efficiency Alliance (NWEA)
Andy Dykeman, Lease Crutcher Lewis
Jim Edelson, Governor's Energy Efficiency Working Group (EEWG)
Jim Klopfenstein, Mechanical Board Member
Tim Nicol, International Brotherhood of Electrical Workers (IBEW)
Nathan Philips, National Electrical Contractors Association (NECA)
Samir Mokashi, American Institute of Architects (AIA)
Ron Lowen, Best Heating
- Members Absent:** Marci Wichman, United Association of Plumbers and Steamfitters (UA290)
Bruce Soihl, Building Owners and Managers Association (BOMA)
Skai Dancey, Oregon Health and Sciences University (OHSU)
- Guests Present:** Douglas Mault, EIFS Industry Members Association (EIMA)
Jim Totton, Building Owners and Managers Association (BOMA)
Carl Lee, Masonry and Ceramic Tile Institute of Oregon (MIOCTIO)
Tom Young, Northwest Concrete Masonry Association (NWCMA)
Michael Rosenberg, Pacific Northwest National Laboratory (PNNL)
David Cohan, Northwest Energy Efficiency Alliance (NEEA)
Matthew Tyler, Portland Energy Conservation Inc. (PECI)
- Staff Present:** Chris Huntington, policy and technical services manager
Gabrielle Schiffer, sustainability coordinator
Shane Sumption, code specialist
Richard Rogers, structural program chief
Mark Campion, inspector
Brady Peeks, department of energy
Alan Seymour, department of energy
Shauna Parker, rules coordinator
Dana Fischer, building code para-technical

Due to technical difficulties video streaming did not begin until 1:50pm, therefore some committee discussion and public comment is not included the minutes

Introductions

Shane Sumption welcomed the committee and guests. He noted that a web site email address, BCD.2010CEC@state.or.us, has been created and that anyone wanting to submit questions or information can use it by logging onto the committee web site. Mr. Sumption asked Alan Seymour to begin the meeting by explaining the [2007 OSSC Envelope](#) handout.

Alan Seymour explained that 2007 OSSC Envelope handout is a combination of proposals from his “Building Envelope Code Development Work Group” and eight key components that the “Oregon Commercial Energy Committee” will be discussing.

SECTION 1311 OTHER BUILDINGS

Section 1311.1 Alternate method of compliance using the whole building approach

No changes.

Section 1311.2 Optional compliance approach

The committee discussed the proposed changes to this section and how it relates to compliance.

Martin Brown asked if Mr. Seymour has worked on any calculations or models to show what the tradeoffs are and will a fifteen percent energy efficiency increase really be gained? Mr. Seymour stated the answer is very broad. Most glazed buildings are office buildings. The first thing looked at is the size, e.g. small, medium or large. The size of the building determines the size of the mechanical system. He further stated that when the “Building Envelope Code Development Workgroup” calculated the energy savings, they melded everything together realizing some systems would be more efficient and some would not.

Jeff Harris commented that although he understands Mr. Seymour’s answer, there are other issues. One is the base case u-factor for windows which includes the minimum requirement for glazing of up to thirty percent and that it appears not to be part of the proposed language. Another issue proposed is the value of .46 u-factor, which allows up to another ten percent higher window to wall ratio (thirty percent more window area), which then allows the difference to be made up by increasing the mechanical system.

Mr. Harris feels another prescriptive path has been created but feels it does not provide a prescriptive path in the same area since it is now linked to the mechanical code. He questioned whether it is the right approach for the code or should the mechanical be left by itself, with a larger focus on the trade-offs for envelope provisions. Samir Mokashi asked if the language was to be kept in the envelope provisions. He also asked if there is a practical availability in cost impact between the two and would it be easier to install the mechanical?

Mr. Seymour answered that these questions really drift into the envelope requirements. Windows are a big part of the equation. Both ASHRAE and ICC require .45 u-factor instead of the proposal of .46 u-factor. He further explained that in the state of Oregon, .46 u-factor would give the state better control over compliance and that there are some manufacturers that produce windows higher than .46 u-factor.

Andy Dykeman asked how many manufacturers produce a higher number in Oregon. One? He expressed concern that if this proposal is approved there may be a situation where there is only one manufacturer in Oregon and that they may not have the capacity to manufacture enough supplies for everyone. Another concern is that currently all mid-to-high rise buildings have more than forty percent wall area, and due to the proposed new prescriptive path he is worried there may be no manufacturer to purchase windows from or that would be able to keep up with the demand.

Mr. Harris stated it is more likely an issue of manufacturing window frames, not the glass. Mr. Harris did agree that Mr. Dykeman had a valid point of concern about the forty percent and although it may provide a savings, is it enough? He further clarified using an example that if buildings fundamentally have a fifty percent window to wall ratio, then a lot of time has been spent creating a separate prescriptive path. He is concerned that it may be time consuming because the percentage is not low enough for smaller buildings and not high enough to help mid-to-high rise buildings. He also stated it would add complexity to the code.

Jim Edelson commented that at the national level these numbers are currently being negotiated. He stated he agrees with Mr. Harris, that it is a lot of complexity for window requirements to fall under a prescriptive path.

Mr. Mokashi expressed concern, that if you look at the rest of the code for exterior window protection systems, there is a threshold at forty-five percent, which goes in increments above and below that number. If windows are protected more than forty-five percent, then costs go up. Going beyond fifty percent kicks in other issues.

Mr. Seymour asked Mike Rosenberg from Pacific Northwest national Laboratory (PNNL), to explain what is happening at the national level. Mr. Rosenberg, suggested the proposal language should not go beyond forty percent, which is the current listing, stating it would cause a step backward in the code. He commented that in general, there seems to be a ratcheting down on prescriptive requirements in all areas. As this happens it will make it more difficult for buildings to meet prescriptive requirements. He further explained that ASHRAE will be moving towards performance based approaches for buildings and a simplified whole building approach. This will involve energy modeling. He expressed concern that this approach is more expensive and difficult for the user. He believes that there is a lack of compliance when a prescriptive path is used.

Mr. Rosenberg further suggested that if packages are developed that are prescriptive but optional to use, it may create an efficient method. He also suggested that the language should state that the window to wall ratio limits are thirty percent with an exception that if you choose equipment efficiency of a specific table, forty percent can be achieved. This would be a more simple approach.

Nathan Philips expressed concern that the 2007 OSSC document does not express clearly what is considered model code language and what is not. He feels it would be useful to know exactly where the changes came from. He also expressed concern that although Oregon chooses to follow model code which derived from the national model and vetted by a wide variety of stakeholder from all over the United States, feels the 2007 OSCC document is the creation of just a few interested parties representing one review group. He further stated that although he is not opposed to amending model code, he would have a hard time supporting a document that completely moves away from model code.

Mr. Seymour answered Mr. Philips concern stating that ASHRAE 90.1-2007 was developed as an engineering tool for designers and not is for code development.

Jeff Harris explained that Oregon was one of the first states to have an energy code, which was implemented in 1975 and has influenced national model code development. The drawback is since Oregon's codes have been ahead of other states it has had to figure out what comes next and how to write the language. The state has recognized that close to eighty percent of structures built in Oregon are built using simple construction, which leaves about twenty percent of structures built that have a large floor space and complex design.

Mr. Harris believes the question the committee should be asking is, "how should a code be developed that addresses the difference between a high volume of simple construction, and a low volume of complex construction which needs flexibility, and how to address both issues at the same time"? Ron Lowen believes the section explains things very well because it gives people something to look at that is concrete and this makes it easier when the designer is trying to comply with code. He further commented that the mechanical system will have a larger cost savings than up-grading the glazing on windows, because the load on the mechanical system will be the internal heat gain.

David Cohan, Northwest Energy Efficiency Alliance (NEEA), commented that NEEA conducted a building characteristic study on new commercial buildings built in 2002 and 2004. One of the major findings was that although quality of glass improved, glazing has improved as well creating a situation where they cancel each other out in terms of overall energy use.

Mr. Philips commented that he agrees with the concept of the optional simplified approach that makes it easier for people to comply without the added expensive of engineering.

BREAK

Mr. Sumption summarized the committee's discussion on Section 1311.2 stating that the language will need to be re-worded and asked Mr. Seymour to help. Mr. Seymour asked for volunteers to help with re-wording the section. Mr. Brown, Mr. Philips and Mr. Dykeman agreed to review Mr. Seymour's revisions.

SECTION 1312 EXTERIOR ENVELOPE – OTHER BUILDINGS

Section 1312.1 General

No changes

Section 1312.2 Additions and alterations

Mr. Sumption stated there are small modifications to exception 2.4, 2.5 and 2.6 in this section.

Section 1312.3 Building envelope thermal performance

Mr. Sumption stated that proposal [OSSC10-04](#), contributed to the major change in this section, which pertains to language for refrigerated warehouses. Three definitions were added for refrigerated warehouses in Section 1302, cold storage space, frozen storage space and refrigerated warehouses.

Mr. Seymour explained to the committee that both building envelope and mechanical requirements are in the proposal.

Matthew Tyler, Portland Energy Conservation Inc. (PECI) provided a document for the committee which lists two suggested [tables](#), currently adopted in the state of California, and stated that PEGI is proposing the table for use in the state of Oregon. The state of California conducted interviews with equipment manufacturers, engineering design firms and contractors prior to developing the tables. He pointed out that when comparing PEGI's "proposed Oregon values" listed on the left of the document with the column labeled "common practice from interviews" he feels it is clear in all but one case, and that the values fall within the range of common practice. He explained the intent of this proposal is to require a minimum baseline to help eliminate the worst of common practice. He further explained that the document lists a cost analysis showing the proposed values are economically favorable in climates similar to Oregon's.

Mr. Mokashi asked how many buildings would this affect in Oregon. Mr. Tyler responded that the proposal would be for new construction only and would not include retro-fits. Mr. Brown commented that there is a large facility in Wilsonville that serves the Portland area. Mr. Philips commented that there is a large facility in the Eugene area.

Mr. Philips asked Mr. Taylor why the proposal lists a freezer floor value that exceeds all of the recommendations. Mr. Taylor responded that PEGI wanted to maintain consistency with the freezer ceiling and freezer exterior wall values, maintaining a value of R-36 for the walls. He further stated that the R-values are from the 2006 adoption in California and PEGI wanted to keep continuity between the state codes. Mr. Lowen does not agree with the u-value and expressed his concern on potential added costs for minimal benefit. To have an R-36 value, you must have five inches of high density foam. Mr. Lowen as well as several other committee members expressed their agreement in using the ASHRAE values.

Mr. Mokashi asked why the proposal is needed. Mr. Tyler responded that it is not just an amendment, but brand new language and that there is a wide range of common practice. Mr. Brown expressed concern about what the actual gain in energy savings would be. Mr. Tyler also confirmed that his proposal addressed two issues; building envelope and mechanical system requirements.

Mr. Sumption proposed to table the discussion until the committee discusses mechanical provisions. The committee agreed.

TABLE 13E ENVELOPE PRESCRIPTIVE PATH, OTHER BUILDINGS – CLIMATE ZONE 1

Mr. Seymour explained to the committee, the proposed changes for Table 13E into Table 1313.2.1(1), describing each column and its significant changes. He further explained the major changes to window construction and how the U-factors affect them.

Mr. Seymour stated that in the model code approach there is a default table which uses six to eight values based on frame and model type. He has found when a person uses the table, the values do not help. Oregon allows the use of the ASHRAE fundamentals handbook to establish u-factor and shading co-efficient. He further explained that if a person tests the glass using the ASHRAE fundamentals handbook, a better u-factor is reached than if the table is used. Mr. Seymour also stated he changed the

value to one point higher, thinking it would provide a better u-factor and would better align the suggested table in the IECC with the current ASHRAE table.

Several committee members voiced a concern, wondering if the one point increase makes a difference in providing a better u-factor and if it makes a significant change to the code. Mr. Harris commented that there will be an improvement to the thermal break, which determines the energy efficiency of a window. He also explained that the term “solar heat gain co-efficient” refers to the frame around the window and how heat gain is calculated. Old style aluminum frames absorb more heat, bringing it into the building when there is no thermal break. Mr. Philips asked if the solar heat-gain co-efficient takes into account the frame, why is it being mandated that a thermal break frame be used. Mr. Harris replied that these are two options that can be used. One is a performance rating for the equipment and the other is a prescriptive approach.

Mr. Brown commented that he sometimes sees a residential window rated at u-value of 3.5. The contractor believes he is using a window with the correct rating, but the window does not have any shading co-efficient listed on the label. Mr. Brown asked what would be wrong with using the u-value of 3.5 instead of the solar heat-gain requirement. Mr. Harris replied that the scenario is describing two different processes.

TABLE 13F ENVELOPE PRESCRIPTIVE PATH, OTHER BUILDINGS – CLIMATE ZONE 2

The committee discussed the proposed changes for of Table 13F into Table 1312.3.1(2)

Glazing

Mr. Seymour explained that in the current code doors are exempt, but in the new code doors will be regulated. He further explained different requirements when glazing thickness on doors is different. He also agreed that an exemption for fire rated doors is a good idea.

The committee discussed how the new regulations will affect different types of doors, such as wood versus metal. Several members voiced a concern about exit doors and whether there will be fire rating requirements. Mr. Dykeman asked why the requirement for thermally broken frames has gone away. Mr. Seymour replied that the option is still available, if someone can get a certified product that is in a thermally improved frame. The committee continued to discuss the added costs due to the new requirements and how they would affect industry. The consensus is that if the requirements are a National Model Code change, then industry will use them and the price will come down.

Mr. Sumption asked Mr. Harris to speak with Gary Curtis who is a windows expert and who sits on the National Board of Fenestration Rating Council. The committee agreed they would like a window expert to either provide written testimony or attend the next committee meeting to learn about the availability and cost of thermally broken aluminum frames and industry trends.

Skylights

Mr. Brown asked about smoke and heat vents and if skylights affect them. Mr. Seymour answered that the requirement for manufactured skylights has a value of 1.17 or a thermal break frame with double glazed half inch air space has a value no greater than .5.

Mr. Philips asked for better clarification on the meaning of the section. Mr. Rosenberg explained that there is a difference between pre-manufactured skylights and ones assembled on site. Manufactured skylights have curves which have more metal and less thermal performance. The end result is a higher u-value. The committee discussed the way skylights are assembled, whether a curve is needed. Mr. Brown explained that a four inch curve is required in code.

Mr. Sumption summarized the committee's discussion on Table 1312.3.1(2): Mr. Mokashi agreed to re-work the language pertaining to glazing and forward it to Mr. Seymour, the exception for fire rated doors will be researched and Mr. Harris will contact Gary Curtis to provide information to the committee on windows.

Mr. Philips commented that the committee did not discuss sectional doors, which is addressed in the footnotes section and has a suggested change to number five regarding opaque doors.

Mr. Rosenberg commented that there has always been a requirement for overhead doors. He stated that he does not believe the requirement for coil and overhead doors is needed and suggested that footnote number five be removed or just list "overhead door" and remove "coil doors" from the language. Mr. Harris asked if ASHRAE has a requirement for overhead doors. Mr. Rosenberg answered that there is no language addressing coiling or overhead doors. The committee agreed that "coil door" be removed from the language in footnote number five.

Floors

Mr. Seymour continued the discussion on Table 13F, describing the suggested changes to floor requirements. He explained that the table is broken into sections; "wood joist framing", "steel framing", and "concrete slab-above-grade". He further explained the values associated with each category.

Concrete slab-on-grade

Mr. Seymour explained to the committee that concrete slab-on-grade is typically found in commercial buildings. He explained that some slabs are not heated and some have heating elements embedded in the concrete of the slab. Non-heated slabs do not have any requirements, whereas heated slabs have insulation requirements.

The committee discussed the different type of structures that would require either heated or non-heated slabs to gain a better understanding of how the suggested requirements in Table 13F would affect those structures.

Mr. Sumption suggested the committee conclude their discussion on "concrete slabs" and wait until the next committee meeting to begin the discussion on "roofs". The committee agreed.

Adjourn

Meeting adjourned at 4:00 p.m.