Commercial Building Energy Standards (CBES)
Working Group Meeting

Burlington Electric Department - June 10, 2005

Note:
(1) Also see two separate documents that were presented at the meeting:
(#1) PowerPoint presentation and (#2) List of Proposed Vermont Changes to the 2004 IECC.

(2) An attendance list is attached at the end of this document.

(3) Section 12 of S.52, adopted by the 2005 VT Legislature follows the attendance list.

The meeting opened with round table introductions

Introduction
Chris Owen, VT Department of Public Service

- Background and history - see http://www.state.vt.us/psd/Menu/EE_and_Renewable/ee19.htm for information
- The 2005 VT CBES will initially apply to Act 250 projects, State-funded projects and school projects funded by the VT Department of Education. As with the 2001 CBES, BED will consider adopting the proposed 2005 CBES.

Randall Lloyd, VT Department of Public Service

- Printed review copies of the 2005 Vermont Guidelines for Energy Efficient Commercial Construction **are not for distribution or copy**
- DPS is working with ICC to have a read-only PDF version posted on the ICC web site. DPS will send an e-mail to the CBES Working Group indicating when this available.

Review of the Proposed 2005 Vermont Guidelines for Energy Efficient Commercial Construction (2005 VT CBES – Commercial Building Energy Standards)

Note: Unless specified, all the following comments refer to the Proposed 2005 CBES and not to ASHRAE/IESNA Standard 90.1-2004 (the latter is a compliance option referenced in Chapter 8 of the Proposed 2005 VT CBES)

Bill Root, P.E., GWR Engineering

- Provided a general introduction to the proposed 2005 CBES

- Will VT update the COMcheck software?
- Randall - DPS is looking towards doing that in conjunction with US DOE/PNNL. Mark Halverson of PNNL noted that VT needs to make this request in writing to US DOE.

Bill – Chapter 1: Administration and Enforcement

Bill - 2001 VT CBEES site-built glazing requirements were confusing, Chapter 1 default Table 102.1.3(3) on page 2 is to be used when glazing doesn't have an NFRC rating label
Mark - Default table lists things a code official could check on; and is not a comprehensive table.

Bill – Additions, alterations, renovations or repairs; it is now easier to know when CBES applies; see Section 101.4.3 on page 1.

Bill – 2001 Chapter 1 Approval and Acceptance criteria and requirements are now greatly simplified (see Section 104 Construction Documents on page 3 and Section 803.3.8.3 on page 30.)

Bill – Chapter 2: Definitions see pages 5-7.

Bill - Chapter 3: Climate Zones

- Specifies internal design temperatures, see Section 302.1 on page 9.
- There was considerable discussion about the specific design temperatures and whether these were suitable across all Vermont.

Matt Lillis, BED – Section 803.2 .1.1 on page 17 says equipment can't be over sized.
Mark - ASHRAE Standard 55 specifies design temperatures.
Jonathan Aldrich, IBM – What if owner wants 68 for cooling? How do you get to do what the owner wants?
Matt – Could request a variance. Or work to get a more efficient building (i.e., do load calcs at 75 for cooling, improve envelope to reduce load, then use same equipment to actually achieve lower temps).
Possible solution: One way to address this is to include boilerplate text indicating that life, health or safety concerns may supersede the code requirements.

Chapter 8 Building Design For Commercial Buildings

Indu, Efficiency Vermont - Section 806.3.2 on page 37, dry-type mentioned instead of liquid-filled for transformers.
Note: this will be corrected.

Mary Jane Poynter, Efficiency Vermont- Economizers, Section 803.2.6 on page 22 and 803.3.3.5 on page 28 - do you have to have water-side economizer if there isn't an air side economizer? Are they talking about each fan coil unit or the entire system?
Mark – there isn't good clarification. VT could change that in our version of IECC to be consistent with ASHRAE Section 6.5.1 on page 36. ASHRAE Section 6.5.1.2 on page 38 specifies water economizers.

Mary Jane – Table 803.2.2(4) on page 20 and 803.2.2(5) on page 21, furnace and boiler minimum requirements are too low.
Mark - Federal law preempts state standards. Since VT isn't proposing a code, we could do something

different.
Randall – we are working to get this to a code. If higher efficiencies are specified, we'd be out of compliance if the guidelines were adopted as a mandatory, statewide commercial energy code.

How about including text indicating higher efficiency heating equipment is readily available and noting that VT fuel costs are higher than those assumed and used to determine the federal minimums?
Chris – VT has programs to get beyond code. Maybe more appropriate to address promoting high efficiency heating in that way.
Bill – It may make more sense to keep such promotion of higher efficiency heating equipment out of code.

Mary Jane – Table 805.5.2 on page 34, what happened to all of the detail space-by-space method lighting power densities.
Mark – The proposed 2006 IECC proposal on which this is based is geared toward making this simple. ASHRAE/IESNA Standard 90.1-2004 Table 9.5.1 and 9.6.1 on pages 64 and 65 include the Building Area and Space-by-Space Method, respectively. The IECC is geared toward code officials. ASHRAE subcommittees are technical. They don't shy away from detail.
Donna Leban, Light/Space/Design – IECC Chapter 8 says you can address interior lighting using either the lighting approaches in ASHRAE or IECC. So there is a Space-by Space compliance option even when using the IECC for envelope and HVAC compliance.
Mark – The ASHRAE lighting committee is driving all of the numbers. VT could leave out the proposed 2006 interior lighting table change and revert back to the IECC 2004, which includes both approaches. Specify that interior and exterior lighting density values are maximums.

Donna – Table 805.6.2 on page 35, parking lot lighting at 0.15 W/ft^2 is a give away and will make the parking lot over lit. If someone uses that as a baseline the parking is overlit. In the ASHRAE/IESNA Office Building Guideline at 30% above Standard 90.1-1999, as a compromise we came up with 0.1 W/ft^2. I can't design a lot over 0.08 W/ft^2.
Open Areas 0.5 W/ft^2 also may be high.
Jonathan – Shouldn't we be using footcandles rather than watts per sq ft.?
Chris – The International Dark Sky Association uses watts per square foot.

Donna – Table 805.6.2 Tradable Surfaces, how do you measure gross lighted exterior area?
Mark – The IECC is silent on how to measure area…this is a good question!
Ray Keller, Breadloaf Construction – Could restrict the area by stipulating the contrast.
Chris – VT could put some language in to restrict area.
Donna – It could say paved area plus 4-6 feet beyond that.
Donna – LED lights used for landscape lighting have a very low lumens per watt and would make it hard to meet exterior lighting power densities. Landscape lighting could be made exempt.

Indu – If there is a LEED project, what baseline is used as the state standard/code for LEED purposes? Currently, LEED refers to ASHRAE/IESNA Standard 90.1-2001 as the minimum from which a project can accrue LEED points.

Ray – If the VT baseline is higher than what LEED generally uses, then it's harder to attain energy related LEED points.
Note: This is the case currently with the 2001 VT Guidelines which requires a more stringent ASHRAE envelope table for Vermont.

Bill – Modifying the ASHRAE envelope table for VT's climate by substituting the VT developed IECC table may create compatibility issues, such as with using ASHRAE software.
Mark – Check on issue of operable/inoperable windows in ASHRAE with Table 802.2(2) on page 15. Check on ASHRAE requirements for cool roofs. Check if and how ASHRAE text specifies envelope requirements for semi-heated and high-rise residential buildings. Check ASHRAE Other U-values vs. VT envelope Table 802.2(1) on page 14. Specify envelope table is for minimum R-values of insulation.

Donna – With higher lighting requirements, Act 250 projects are going to be penalized for lighting incentives compared to other projects. How are incentives going to be offered?
Randall- There will be a ratcheted implementation schedule over time.
Chris - EVT incentives could be used to hire a professional lighting designer.

Randall/Chris – The 2005 VT Legislature passed a bill, S.52, Section 12 requiring the DPS in consultation with an advisory committee, to submit a report to the Legislature by January 31, 2006 regarding updating the CBES requirements. See an excerpt for S.52 below.
Mark – the reference to ASHRAE 90.1-2001 in section c should be to 90.1-1999 as DOE has not issued a positive determination regarding the 2001 version of Standard 90.1.

Chris – E.F. Wall called and said they're getting beat up on bids because they build to code and are getting under bid by companies not building to code.

Mark – Radiant heat paint - in a vacuum like outer space it works. Reflectix bubble wrap.
Chris – Has done research on bubble wrap. It's ok for a radiant barrier and needs an air space. It is ineffective for insulation. The manufacturers of these products have not been able to provide DPS with independent lab results showing the product insulates as they claim.

Teigh Southworth, BGS – Section 804.3 on page 32 is in conflict with the State of VT Department of Labor and Industry (DLI) plumbing code requirement for 140 degree water for storage water heaters. There's a requirement to flush the system once a year at 180 degrees.
Chris – A radiant slab company uses a system to heat slab with a hot water heater. As a result, there is a potential danger to contaminate the potable water system.
Stu and – The solution should be to have an isolated system via an internal heat exchanger.
Randall – The CBES Working Group could work on this with DLI, especially if this goes to the Legislature.
Stu – ICC and ASHRAE may be able to provide information about this issue since they also work on plumbing codes and standards.

Randall – Tentative final updated CBES publishing date. DPS needs to coordinate with BED and the

Legislature. The goal is to get the updated CBES published this fall for use as a guideline. DPS is requesting feedback by July 15, 2005 and then will conduct outreach after that date.
Chris – Let the CBES Working Group know if there are other interested professionals or groups that need information about the proposed updated CBES. We're interested in their comments.

John Hemmelgarn, Black River Design – Architects are sitting on the front lines and we have to talk to owners who my not want to meet the guidelines. When is it voluntary vs. a requirement?
Chris – In Act 250 it is a requirement to meet the current (2001) Guidelines. Out side of listed state-funded projects and Department of Education funded school projects, you don't have to meet the CBES minimums.

John – How to fill out labor and industry permit?
Chris – If not state-funded you don't have to check the box indicating the project meets the Guidelines.

John – Likes the shorter document with less references. Likes to have the option of using ASHRAE.

John – Is there an index to the guidelines?
Randall – No, but maybe a good idea.

CBES Working Group Meeting 6/10/05 Attendance list

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