

## Building energy analysis for commercial buildings

This updates *Practice Note 2006-09* issued May 2006.

### 1. Summary

This Practice Note advises on the qualifications and experience required to use building energy analysis software for Class 3 and Class 5 - 9 buildings<sup>1</sup>.

### 2. Background

The Building Code of Australia (BCA) 2006 introduced energy efficiency measures for Class 5 - 9 buildings following the introduction of Class 3 provisions in 2005. The BCA provides a number of options for demonstrating compliance. One option is the use of building energy analysis software.

BCA verification methods JV2 and JV3 apply to a Class 3, Class 5, Class 8 and Class 9 buildings. They require the annual energy consumption of the proposed building to be determined and compared with the stated values in Table JV2 or, in the case of JV3, a reference building. 'Annual energy consumption' is the theoretical amount of energy used by a building's services in a year, excluding kitchen exhaust and the like.

The BCA requires the annual energy consumption to be calculated using a method that complies with the Australian Building Codes Board (ABCB) Protocol for Building Energy Analysis Software. The BCA 2007 references protocol Version 2006.1. Analysis software must meet this protocol. The protocol is available from the ABCB's website ([www.abcb.gov.au](http://www.abcb.gov.au)).

Evidence must be available that demonstrates that the building energy analysis software complies with the protocol. The protocol requires that a training program for users must be available for the current version of the software and any new version. The protocol also requires that trainers be "technically qualified and well versed in the functionality of the program and the calculation methods employed"<sup>2</sup>.

Programs currently meeting the protocol are:

1. BEAVER
2. DOE2 programs
3. E20II
4. TRACE
5. TAS
6. EnergyPlus
7. IDA-ICE
8. Energy Express.

### 3. Using building energy analysis software

The *Buildings Regulations 2006* (the Regulations) do not prescribe a class of building practitioner for persons using building energy analysis software. Where a BCA Alternative Solution is being undertaken, consideration needs to be given to clause A0.9 of the BCA Volume One.

Clause A0.9 outlines various methods to determine whether an Alternative Solution meets the relevant Performance Requirements. Where JV2 or JV3 is used to demonstrate compliance, the Assessment Method used would be a combination of the Verification Method and Expert Judgement. The BCA defines Expert Judgement as:

*"the judgement of an expert who has the qualifications and experience to determine whether a Building Solution complies with the Performance Requirements."*

To use building energy analysis software under JV2 and JV3, the software user needs a comprehensive knowledge of building services, so that the energy used by these services can be determined. The software assesses the energy contribution of various components such as the building fabric, air infiltration and natural ventilation, internal heat sources, air-conditioning systems and vertical transport systems.

<sup>1</sup> For guidance on requirements for Class 1, 2 and 4 buildings, see Practice Note 2007-55.

<sup>2</sup> Australian Building Codes Board, "Protocol for Building Energy Analysis Software", Version 2006.1, January 2007 ABCB

The category of registered building practitioner most likely to have the relevant qualifications and experience for this task is a mechanical engineer. However, there may be situations where an architect, services draftsman or other consultant is deemed by the relevant building surveyor (RBS) to have the appropriate qualifications and experience.

#### 4. Relevant building surveyor's role

To perform a building energy analysis, a person needs to demonstrate to the RBS that they have the relevant qualifications and experience. One mandatory qualification under the ABCB Protocol is training in the use of the specific software package.

The RBS must apply their own judgement using their qualifications and experience to the specific matters being assessed when using JV2 and JV3. In some instances the RBS will need to seek the advice of other suitably qualified practitioners or industry experts in determining the acceptability or otherwise of a specific building, element of construction or use<sup>3</sup>.

#### 5. Further considerations for registered building practitioners

Registered building practitioners using building energy analysis software for the purpose of JV2 and JV3 or an RBS also need to be aware that regulation 1502 requires that "a registered building practitioner must perform his or her work as a building practitioner in a competent manner and to a professional standard."

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<sup>3</sup> In addition, Minister's Guideline MG/05 states "Municipal building surveyors and private building surveyors must only accept appointment as relevant building surveyors in the area of their own competence."