

Introduction to SBEMie:

Background

The Non Domestic Energy Assessment Procedure (NEAP) is the methodology for demonstrating compliance with aspects of Part L of the Building Regulations and publishing Building Energy Ratings.

SBEMie, the Simplified Building Energy Model for Ireland, is the freely available software for NEAP developed by BRE. The SBEMie includes some of the following changes from previous versions of the software:

- NZEB Compliance Check
- Incorporation of the Renewable Energy Ratio
- Compliance Check for Solar Overheating
- Compliance Check for Heating, Cooling, Ventilation and Lighting Systems
- Change in Primary Energy Factor for Electricity
- Update to activity database to reflect Irish specific circumstances and research carried out by BRE
- Update in methodology for Unconditioned Adjoining Spaces
- Update in treatment of unconditioned zones in the Notional building.
- Enhanced calculations for heating and cooling demands
- Enhanced HVAC calculation including
 - o Bivalent Systems
 - o Demand Control Ventilation
 - o Local SFP entry for systems such as FCU
 - o VSD pumps for Heating and Cooling
 - o Provision for night cooling
- Enhanced Lighting calculation including
 - o Provision for LED lighting
 - o Inclusion of the Light Output Ratio
 - o Updated approach to display lighting time switching
- Enhanced Renewable calculation including
 - o Inclusion of allowance for Renewables from District Heating Schemes
 - o Inclusion for Peak Power in photovoltaics
 - o Inclusion for allowance of renewables from process energy.
- Enhanced shading calculations

The compliance check for NZEB and Part L compares the performance of the actual building to that of the reference building. The specification of the reference building has been updated from previous versions of the software to account for changes to the Building Regulations.

The Building Energy Rating compares the performance of the actual building to that of the notional building. The specification of the notional building has not been updated from previous versions of the software. However with the development of the software to incorporate improvements to the calculations, additional features, modifications to databases and corrections of known issues, the Building Energy Rating may differ from those generated in previous versions of the software, depending on individual projects. However, the enhanced functionality and additional features to

the software will also allow assessors more accurately account for energy saving measures such as night cooling, demand control ventilation etc.

Note: The ability to publish BERs using the iSBEMie software will be added early in 2019, only BERs created in iSBEM v3.5b will be accepted by NDNAS until this changeover.

iSBEMie file conversion

It is possible to convert files created in previous versions of the iSBEMie software.

Due to the nature of the changes introduced in the new version some fields may not be refreshed automatically. Therefore it is essential to do the following:

- Click through all the zones in the Geometry form
- Click through all the envelope elements in the Geometry form
- Click through all the HVAC systems in the Building Services form
- Click through all the sub tabs in the Building Services form > Zones tab

As outlined in this document there are key differences in the software between iSBEMie and previous versions of the software. It is essential that BER assessors review **all** of the tabs and sub tabs to provide input for parameters that did not exist in previous versions. Some key features that were identified during testing as requiring further review include:

- General Information > Building Details:
An Eircode is a Mandatory Field to run the software
- General Information > Energy Assessor Details:
May need to be completed
- Project Database:
Default constructions within the database have been updated and may need adjustment
- Geometry > Zones
The activity database has been updated and may need to be considered.
- Geometry > Global Thermal Bridges:
Accredited detail "Tick" box is no longer a function in the tool, Psi values will need to be manually entered.
- Geometry > Envelope
A new "Perimeter" field in the tool, this will default to a value however may impact on thermal bridging calculations and should be updated appropriately.
- Geometry > Windows & Rooflights
New fields for "Aspect Ratio", "Shading Position", "Shading Colour", "Shading translucency" and "Tick if overhang is a brise soleil" which may need to be addressed.
- Building Services > HVAC Systems > System Adjustment
New entries associated with Variable Speed Pumps therefore may need to be updated.
- Building Services > PVS
New entries associated with "Peak Power", "Overshading" and "Ventilation Strategy", this will be defaulted to conservative values and therefore should be updated appropriately.
- Building Services > Zones > Ventilation
New entries associated with Demand Controlled Ventilation
- Building Services > Zones > Ventilation (cont)

New entries associated with “Night Cooling”, “SFP of system terminal units” and “SFP for Night Cooling” that will default. Heat Recovery from previous version may not convert correctly as it’s a new tab therefore should be updated appropriately.

- Building Services > Lighting

New entry for Light Output Ration under “Lighting Chosen but calculation not carried out” which will be defaulted to conservative value and should be updated appropriately.