

## < Virtual Environment >



# VE-TOOLKITS

EARLY-STAGE ANALYSIS FOR QUICK, ITERATIVE ASSESSMENTS

The greatest impact on sustainability is made in the earliest design stages, when time is short and feedback needs to be rapid. The IES VE-Toolkits are intended for these early design decisions and quick iterative assessments.

They answer the 'Am I moving in the right direction?' questions and help users build an understanding of how the proposed design performs and responds to its environment. The IES VE-Toolkits are accessed by the IES plug-ins to either Google SketchUp™ (which is free) or Autodesk® Revit®, or via our gbXML connection to GraphiSoft® ArchiCAD®. Real climate data is used and a choice of typical building properties is offered to eliminate the need for detailed information; this enables quick and effective feedback direct from early architectural models.

### VE-TOOLKITS FEATURES

- > Climate metrics, availability of natural resources, building metrics and materials in use;
- > Building water usage and renewable/low carbon technologies;
- > Daylight assessments and solar shading animations;
- > Global 'climate energy index' that shows users the potential of a climate in a global context;
- > ASHRAE and CIBSE loads calculations;
- > Rich, visual, automated reporting;
- > LEED capability that covers daylighting, comfort, water and renewables across LEED NC 3.0 and 2.2, LEED Schools, LEED Core and Shell;
- > Building energy/carbon analysis via dynamic thermal simulation, with or without external shading and solar penetration, including carbon footprint, annual energy usage, peak internal conditions and thermal comfort.

Visualising the Results

Reporting the 'key results'

Contextual Information



The VE-Toolkit dialogue box has three tabs (overview, sustainability and LEED) to allow you to analyse your design ideas in more ways and assess feasibility at different levels to inform on potential impact and if detailed analysis should be pursued. There are currently two VE-Toolkits available: Sustainability (overview and sustainability tabs), and VE-Toolkit for LEED® (LEED tab). BREEAM and Green Star VE-Toolkits will be available soon.

### ↑ VE-TOOLKIT OUTPUT REPORT



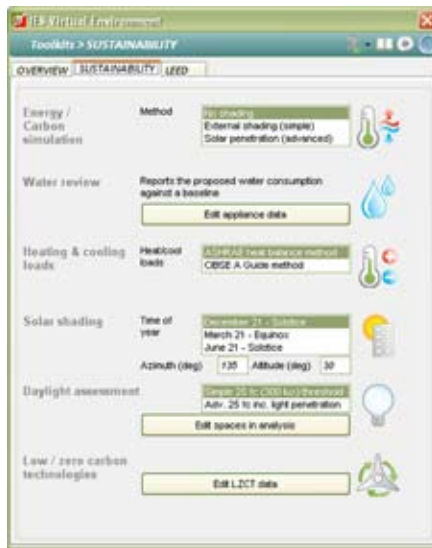
## OVERVIEW

**Overview Tab:** Addresses the question of what strategies are candidates for further investigation?

The new 'Climate Metrics' capability analyses the climate data for the location, bringing the relevant characteristics to the surface for evaluation.

The output is presented in a new report format that brings together output and graphics. 'Climate Metrics' assesses how this impacts energy consumption to provide a closer look at when efficiency measures can have an impact.

With some additional inputs, 'Natural Resources' then analyses this data across multiple strategies (PV, wind, biomass, ground source heat pumps, etc.) to highlight which strategies are beneficial to keep pursuing.

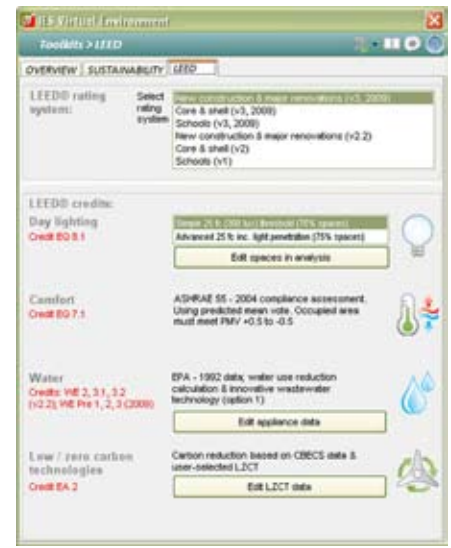


## SUSTAINABILITY

**Sustainability Tab:** Energy/carbon, heating & cooling loads, solar shading, and daylight assessment plus two important new features:

**Water Review:** analyses the occupancy and fixture type selections to establish a proposed and baseline case for comparison. The output provides overall water consumption, a 'water scarcity' global metric, and identifies what water use reduction measures are the biggest drivers to achieving higher and higher percentages of savings.

**Low Zero Carbon Technologies (LZCT):** The default sizes, which can be adjusted within the additional input, for the different strategies are based on the building type and size targeting a 20% contribution of LZCT to reducing energy consumption. Providing a starting point for comparison across the different strategies, key outputs include an energy consumption breakdown, and renewable energy delivered for a range of selected strategies.



## LEED

**LEED Tab:** LEED credits, rating system versions and types are covered. By selecting the rating system at the top the appropriate requirements are carried through. In terms of LEED 2009 up to 15 points can be influenced. The VE-Toolkit for LEED® output provides an 'indicator' of if the credit can be achieved. For LEED certification submission you will need to use VE-Gaia or VE-Pro where the ability to input and manipulate exact building data is offered.

**Daylighting:** analyses both the new LEED 2009 and past requirements. For a scenario of daylight passing through one space, a glazing layer, and into another space, select 'advanced', but realise that the simulation time will be increased.

**Comfort:** Analyses compliance with ASHRAE 55 for all the inputs influencing the predicted mean vote (PMV) metric.

**Water:** incorporates the LEED calculation methodology to determine the percentage water use reduction. Also demonstrates the potential impact of rainwater harvesting, grey water, and black water reuse.

**LZCT:** Runs annual energy simulation to determine overall consumption for the proposed design, determines the renewable energy delivered for the targeted strategy, and provides feedback on the renewable energy percentage by comparing the two.

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