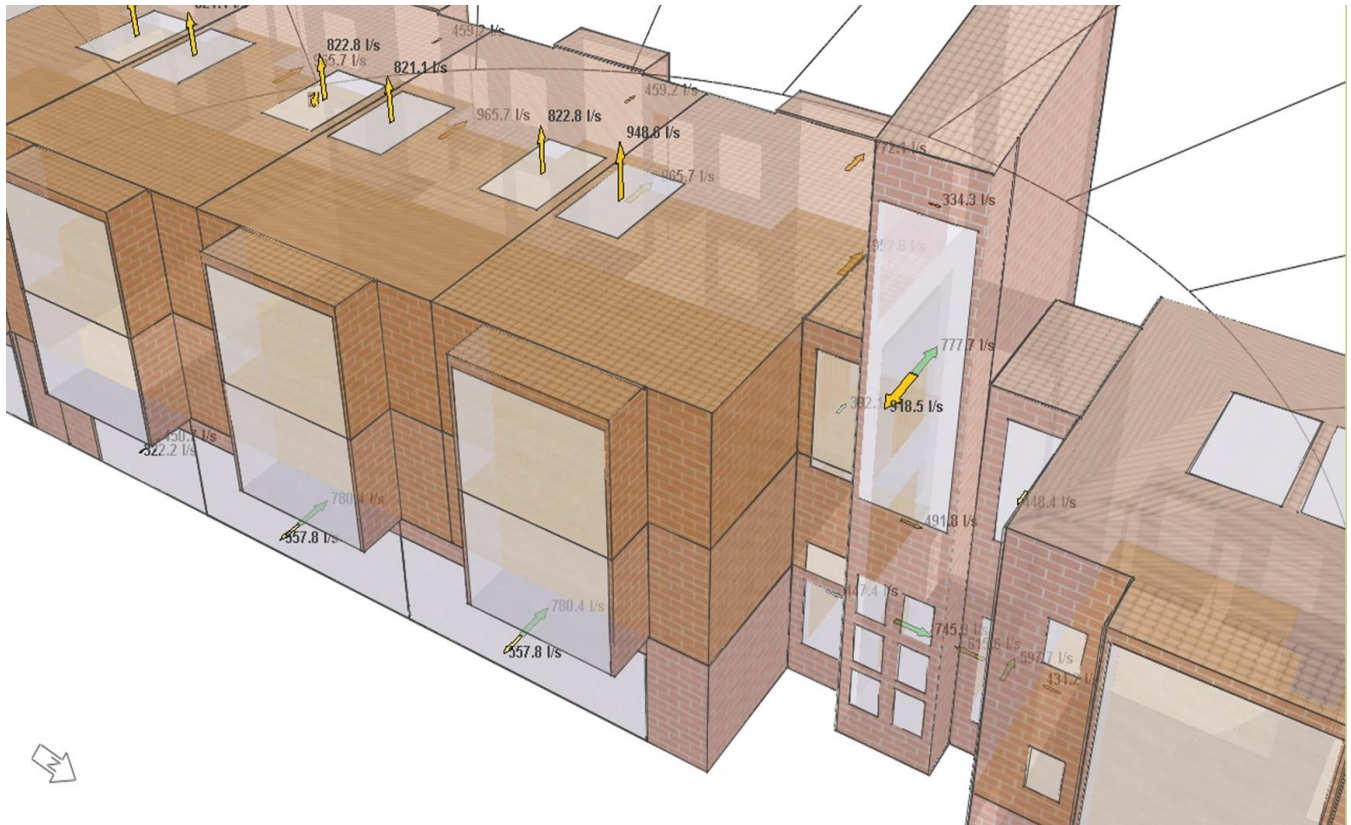


# LEED EAc1 Documentation using the IES Virtual Environment FAQ

Integrated Environmental Solutions Limited  
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# LEED EAc1 Documentation using the VE

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## Introduction

The Documentation submitted to the GBCI relating to EAc1 can vary depending on the specific of any given project e.g. is it shell and core, does it use DES or CHP, etc. The modeller should review all USGBC and GBCI information to make sure all documentation requirements are met.

As a general guide, the following could be considered:

### ***1: Input report:***

Where the relevant sections of the LEED letter template are insufficient to detail the model, a model input may be required.

This report details the complete model e.g. geometry, constructions, internal gains, HVAC elements, etc. This is submitted in tandem with the LEED letter template with the relevant sections of the template referring the reviewer to the input report.

A typical input report could contain the following sections (this may need to be expanded depending on the specifics of the project):

- Location & Site
- Climate
- Building Form, Layout & Zoning
- Materials & Constructions
- Thermal Comfort
- Indoor Air Quality
- Infiltration
- Occupancy
- Interior Lighting
- Equipment
- Refrigeration / Cooling
- Data Centre / IT
- Elevators and Escalators
- HVAC Systems
- Service Water Heating
- Exterior Lighting
- Energy Costs / Utility Tariffs

Appendices could be used to detail information relating to the above sections e.g. detailed schedule data.

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## 2: LEED Letter Template:

LEED letter template submission is a basic requirement. At present, the information has to be manually taken from the BPRM report generated by the VE and entered into the official LEED letter template. The IES BPRM report mirrors the official template to make this as effortless as possible.

### 1.8.2 Performance Rating Table - PRM Compliance

| End Use                             | Process | Proposed Design Energy Type | Proposed Design Units | Proposed Building Results | Baseline Design Units | Baseline Building Results | Percent Savings % |
|-------------------------------------|---------|-----------------------------|-----------------------|---------------------------|-----------------------|---------------------------|-------------------|
| Internal Lighting                   | No      | Electricity                 | Energy use kBtu       | 17,171.17                 | Energy use kBtu       | 23,612.85                 | 27.3              |
|                                     |         |                             | Demand MBH            | 5.29                      | Demand MBH            | 7.27                      | 27.3              |
| Exterior Lighting                   | No      | Electricity                 | Energy use kBtu       | 87,232.14                 | Energy use kBtu       | 91,845.89                 | 4.8               |
|                                     |         |                             | Demand MBH            | 17.67                     | Demand MBH            | 18.48                     | 4.8               |
| Space Heating (Fossil Fuel)         | No      | Gas                         | Energy use kBtu       | 116,287.03                | Energy use kBtu       | 124,955.21                | 7.0               |
|                                     |         |                             | Demand MBH            | 104.36                    | Demand MBH            | 105.13                    | 0.7               |
| Space Heating                       | No      | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Space Cooling                       | No      | Electricity                 | Energy use kBtu       | 20,612.81                 | Energy use kBtu       | 11,230.01                 | -83.6             |
|                                     |         |                             | Demand MBH            | 19.73                     | Demand MBH            | 13.76                     | -43.4             |
| Pumps                               | No      | Electricity                 | Energy use kBtu       | 1,286.92                  | Energy use kBtu       | 748.58                    | -71.9             |
|                                     |         |                             | Demand MBH            | 1.39                      | Demand MBH            | 1.09                      | -27.0             |
| Heat Rejection                      | No      | Electricity                 | Energy use kBtu       | 6,427.01                  | Energy use kBtu       | 3,308.46                  | -94.3             |
|                                     |         |                             | Demand MBH            | 4.20                      | Demand MBH            | 2.24                      | -51.5             |
| Fans Interior                       | No      | Electricity                 | Energy use kBtu       | 19,759.38                 | Energy use kBtu       | 13,933.80                 | -41.8             |
|                                     |         |                             | Demand MBH            | 17.24                     | Demand MBH            | 10.01                     | -72.3             |
| Fans Parking Garage                 | No      | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Service Water Heating (Fossil Fuel) | No      | Gas                         | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Service Water Heating               | No      | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Receptacle Equipment                | Yes     | Electricity                 | Energy use kBtu       | 32,196.44                 | Energy use kBtu       | 32,196.44                 | 0.0               |
|                                     |         |                             | Demand MBH            | 9.92                      | Demand MBH            | 9.92                      | 0.0               |
| Interior Lighting Process           | Yes     | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Refrigeration                       | Yes     | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Data Centre Equipment               | Yes     | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Cooling (Fossil Fuel)               | Yes     | Gas                         | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Cooking                             | Yes     | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Elevators Escalators                | Yes     | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Other Processes                     | Yes     | Electricity                 | Energy use kBtu       | 0.00                      | Energy use kBtu       | 0.00                      | 0.0               |
|                                     |         |                             | Demand MBH            | 0.00                      | Demand MBH            | 0.00                      | 0.0               |
| Total Annual Energy Use kBtu/year   |         |                             |                       | 301,004.00                |                       | 301,844.21                | 6.2               |
| Total Process Energy kBtu/year      |         |                             |                       | 32,196.44                 |                       | 32,196.44                 | 0.0               |

| File | Use | Total Annual Energy Use kWh/year | 568,488.96 | 725,860.23 | 21.7 |
|------|-----|----------------------------------|------------|------------|------|
|      |     | Total Process Energy kWh/year    | 180,569.71 | 180,569.71 | 0.0  |

### 1.8.2 (b) Energy Cost & Consumption by energy Type - PRM Compliance

| Energy Type                      | Units | Proposed Design              |                                  | Baseline Design       |                    | Percent Savings |              |
|----------------------------------|-------|------------------------------|----------------------------------|-----------------------|--------------------|-----------------|--------------|
|                                  |       | Energy Use                   | Cost                             | Energy Use            | Cost               | Energy Use      | Cost         |
| Electricity                      | kWh   | 408,774.83                   | \$49,052.96                      | 484,674.22            | \$58,160.91        | 15.86           | 15.86        |
| Gas                              | kWh   | 159,714.23                   | \$4,791.43                       | 241,186.01            | \$7,235.58         | 33.78           | 33.78        |
| <b>Subtotal (Model Outputs):</b> |       | <b>568,488.96</b>            | <b>\$53,844.38</b>               | <b>725,860.23</b>     | <b>\$65,396.49</b> | <b>21.68</b>    | <b>17.66</b> |
| <b>On site Renewable Energy</b>  |       | <b>Energy Generated(kWh)</b> | <b>Renewable Energy Cost(\$)</b> | <b>Narrative</b>      |                    |                 |              |
| Photovoltaic Panels              |       | 0.00                         | 0.00                             | Generated from source |                    |                 |              |
| Wind Power                       |       | 0.00                         | 0.00                             | Generated from source |                    |                 |              |
| Combined Heat and Power          |       | 0.00                         | 0.00                             | Generated from source |                    |                 |              |
| Solar Water Heating              |       | 0.00                         | 0.00                             | Generated from source |                    |                 |              |
| <b>Exceptional Calculations</b>  |       | <b>Energy Savings</b>        | <b>Cost Savings</b>              | <b>Narrative</b>      |                    |                 |              |
| Summary                          |       | Units                        | Proposed Design                  | Baseline Design       | Percent Savings    |                 |              |
| <b>Total</b>                     |       | <b>kWh</b>                   | <b>568,488.96</b>                | <b>725,860.23</b>     | <b>21.68</b>       | <b>17.66</b>    |              |
| <b>Percent Savings</b>           |       | <b>Energy use</b>            | <b>Cost</b>                      |                       |                    |                 |              |
|                                  |       | <b>21.68</b>                 | <b>17.66</b>                     |                       |                    |                 |              |

# LEED EAc1 Documentation using the VE

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## **3: Output reports:**

The output reports are supporting documentation that allows the reviewer to cross check inputs and outputs to check the validity of the model. These are the 'detailed simulation reports' in the VE.

- Building Utility Performance
- Building Energy Performance
- Unmet Load Hours
- Building Energy and End Use Summary
- Building Plant Energy Utilisation
- System Design Day Results
- System Relative Humidify Results

Cost reports can be generated from within the Tariff tool.

Typically any additional supporting documentation would also be provided in this section e.g. supporting documentation for any exceptional calculation measures.

## **4: Narrative:**

An overall narrative should also be provided. This gives a general overview of the model and its Energy Saving Measures (ESMs). It is also used to briefly explain to the reviewer the overall cost savings and credits achieved. Any additional documentation could also be provided here e.g. tenant/developer breakdown for shell and core, etc.