



**VGBC** | Vietnam Green  
Building Council

Hội đồng Công trình xanh Việt Nam

**LOTUS HOMES CERTIFICATION  
USER GUIDELINES**

# GREEN BUILDING DEFINITION



# LOTUS CERTIFICATION SYSTEM

LOTUS Certification system, currently includes the following Rating Systems:







# LOTUS HOMES

LOTUS Homes is the LOTUS Rating System to use for **individual residential houses** such as:

- Terraced house: Townhouse, terraced house with garden
- Villas: detached villa, semi-detached villa, deluxe and resort villa
- Traditional rural house

# POINTS AND CERTIFICATION LEVELS

0-31 points Uncertified	32-43 points Certified	44-51 points Silver	52-59 points Gold	≥ 60 points Platinum
				

- Certification is benchmarked at 40% of the total amount of points
- **LOTUS Certified** represents good practice and a first minimum level of performance for certification
- 4 different certification ratings (**Silver**, **Gold** and **Platinum**) to recognize projects with higher performance

# LOTUS HOMES CATEGORIES



**Energy**  
24 điểm



**Water**  
8 điểm



**Materials**  
14 điểm



**Innovation**  
4 điểm thưởng



**Health &  
Comfort**  
11 điểm



**Local  
Environment**  
16 điểm



**Community  
&  
Management**  
7 điểm





## ENERGY

**Weight:** 30% of the overall LOTUS rating

**Points:** 24 points + 5 bonus points

***Aim:** To monitor and reduce the energy consumption of a building*

Credit	Available points
E-1 Passive Design	5
E-2 Building Envelope	4
E-3 Home Cooling	6
E-4 Artificial Lighting	3
E-5 Water Heating	2
E-6 Energy Efficient Appliances	3
E-7 Energy Monitor	1
Best Practice Credits	5
<b>Total</b>	<b>29</b>



## WATER

**Weight :** 10% of the overall LOTUS rating

**Points:** 8 points + 4 bonus points

***Aim:** To reduce the water consumption of a building*

Credit	Available points
W-1 Water Efficient Fixtures	5
W-2 Water Efficient Landscaping	2
W-3 Drinking Water	1
Best Practice Credits	4
<b>Total</b>	<b>12</b>





# MATERIALS

**Weight:** 17.5% of the overall LOTUS rating

**Points:** 14 points

***Aim:** To encourage the use of sustainable materials*

Credit	Available points
M-1 Building Structure Materials	3
M-2 Non-structural Walls	3
M-3 Windows and Doors	2
M-4 Flooring Materials	2
M-5 Roofing Materials	2
M-6 Furniture	2
<b>Total</b>	<b>14</b>





## HEALTH & COMFORT

**Weight:** 13.75% of the overall LOTUS rating

**Points:** 11 points + 3 bonus points

***Aim:** To ensure high indoor environmental quality*

Credit	Available points
H-1 Fresh Air Supply	2
H-2 Ventilation in Wet Areas	1
H-3 Low-VOC Emission Products	4
H-4 Daylighting	3
H-5 Acoustic Comfort	1
Best Practice Credits	3
<b>Total</b>	<b>14</b>



## LOCAL ENVIRONMENT

**Weight:** 20% of the overall LOTUS rating

**Points:** 16 points + 5 bonus points

**Aim:** *To protect the ecology of the site of the building and surrounding area, to encourage recycling practices, and to integrate adaptation and mitigation strategies.*

Credit	Available points
LE-1 Site Selection	5
LE-2 Site Design	2
LE-3 Vegetation	2
LE-4 Heat Island Effect	2
LE-5 Stormwater Runoff	2
LE-6 Flood Mitigation	1
LE-7 Refrigerants	1
LE-8 Waste Management	1
LE-BPC-1 Composting	1
<b>Total</b>	<b>17</b>



# COMMUNITY & MANAGEMENT

**Weight:** 8.75% of the overall LOTUS rating

**Points:** 7 points + 3 bonus points

**Aim:** *To increase the awareness of how buildings affect the community and to ensure that, throughout the project, all targets up for the various stages (design, construction, and operations) are effectively managed.*

Credit	Available points
CM-1 Design Management	1
CM-2 Construction Management	5
CM-3 Operational Management	1
Best Practice Credits	3
<b>Total</b>	<b>10</b>





## INNOVATION

**Points:** 4 bonus points

***Aim:*** To reward exceptional performance or initiatives which are not specifically addressed by LOTUS.

Credit	Available points
Inn-1 Exceptional Performance Enhancement	4
Inn-2 Innovative techniques / initiatives	
Total	4

**WHAT MAKES LOTUS HOMES DIFFERENT FROM  
OTHER LOTUS RATING SYSTEMS?**

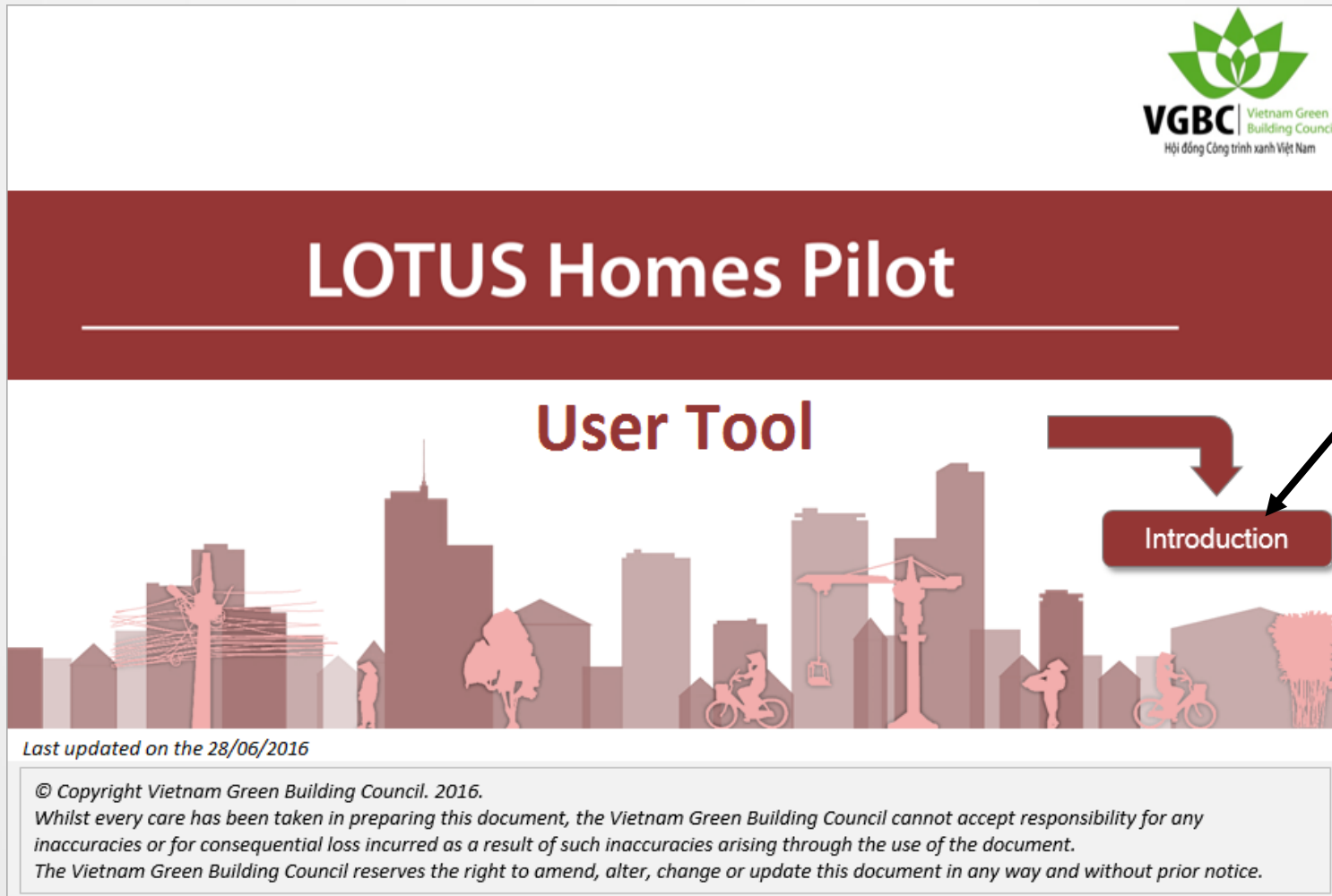
# SIMPLIFIED LOTUS SYSTEM

- Target of LOTUS Homes: Home owners
- Need to simplify LOTUS Homes to have an easy-to-use system:
  - User Tool
  - Pre-assessment Stage (for guidance)
  - A Single Certification Stage
  - Credits with a Prescriptive Path
- But remain a holistic system that considers a maximum of sustainable aspects



# USER TOOL

- Complete overview of Homes
- Ready to use
- Perform all the calculations
- Give all the results



Start here

# USER TOOL INTRODUCTION

Read the Introduction sheet first to find all important information on LOTUS Homes.

## Introduction on LOTUS Homes

[1. Scope](#)[2. Categories](#)[3. Credits](#)[4. Certification Levels](#)[5. Certification Process](#)[6. Submissions](#)

### Navigation

InstructionsRecommendationsScorecardProject InformationGraphical ResultsGlossary

### 3. LOTUS Homes Credits

LOTUS is a points-based system. Projects obtain points for complying with LOTUS credit criteria. Projects are not required to comply with every credit. Only target appropriate credits that projects can reasonably achieve. However, each project must target a minimum number of credits in order to achieve sufficient points to match the desired certification level (cf section 'LOTUS Homes Certification' below) For a project to comply with a credit, it must meet the intent of the credit, achieve the specific requirements of the credit and provide the required submission documents.

**Performance and prescriptive paths**

Some credits in LOTUS Homes can be achieved with either a Prescriptive path or a Performance path. The Prescriptive path requires specific solutions and is a "black-and-white" approach. The Performance path, provides flexibility so that a design team may design a solution taking into account project requirements. A project may choose a Performance path for one credit and a Prescriptive path for another.

**Options and strategies**

Some credits can be satisfied through different **options** or **strategies**. A project can select only one **option** with its assigned points. A project can implement any or all **strategies** and accumulate points for the credit (while being restricted by the maximum number of points).

**Best practice credits**

LOTUS Homes include some best practice credits rewarding bonus points for achieving best practice in design and construction. Best practice credits often require extra calculations or sophisticated documentation. These credits may be aspirational and not easily achievable for most projects, so, projects that do not achieve these credits will not lose points and the overall certification level will not be affected.

### 4. LOTUS Homes Certification Levels

100 points are available in LOTUS Homes (including 20 bonus points coming from the best practice credits and Innovation). The first certification level (LOTUS Certified) has been benchmarked at 40% of the total amount of points excluding bonus points. This value reflects a good first level of performance and the minimum required for certification. The following thresholds correspond to 55% (LOTUS Silver), 65% (LOTUS Gold) and 75% (LOTUS Platinum).

Click on Scorecard to access the main sheet

All the buttons in the Navigation menu help to navigate the Tool and find more information

# USER TOOL SCORECARD

## LOTUS Homes Pilot Scorecard

[Introduction](#)
[Instructions](#)

Please click on the images below to navigate to the different categories.

Energy	Possible points	Points
E-1 Passive Design	5	0
E-2 Building Envelope	4	0
E-3 Home cooling	6	0
E-4 Artificial Lighting	3	0
E-5 Water Heating	2	0
E-6 Energy Efficient Appliances	3	0
E-7 Energy Monitors	1	0
BPC Best practice Credits	5	0
<b>Total</b>	<b>29</b>	<b>0</b>

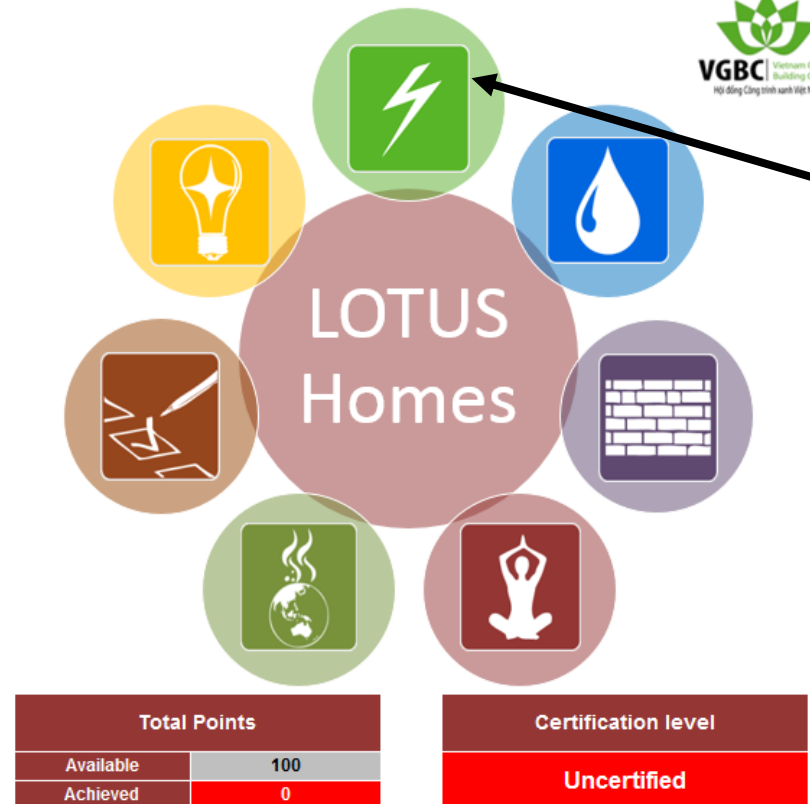
Local Environment	Possible points	Points
LE-1 Site Selection	5	0
LE-2 Site Design	2	0
LE-3 Vegetation	2	0
LE-4 Heat Island Effect	2	0
LE-5 Stormwater Runoff	2	0
LE-6 Flood Risk Mitigation	1	0
LE-7 Refrigerants	1	0
LE-8 Waste Management	1	0
BPC Best practice bonus credits	1	0
<b>Total</b>	<b>17</b>	<b>0</b>

Water	Possible points	Points
W-1 Water Efficient Fixtures	5	0
W-2 Water Efficient Landscaping	2	0
W-3 Drinking Water	1	0
BPC Best practice Credits	4	0
<b>Total</b>	<b>12</b>	<b>0</b>

Health & Comfort	Possible points	Points
H-1 Fresh Air Supply	2	0
H-2 Ventilation in wet areas	1	0
H-3 Hazardous Materials	4	0
H-4 Daylighting	3	0
H-5 Acoustic Comfort	1	0
BPC Best practice bonus credits	3	0
<b>Total</b>	<b>14</b>	<b>0</b>

Materials	Possible points	Points
M-1 Building Structure	3	0
M-2 Non-structural Walls	3	0
M-3 Windows and doors	2	0
M-4 Flooring materials	2	0
M-5 Roofing materials	2	0
M-6 Furniture	2	0
<b>Total</b>	<b>14</b>	<b>0</b>

Community & Management	Possible points	Points
CM-1 Design Management	1	0
CM-2 Construction Management	5	0
CM-3 Operational Management	1	0
BPC Best practice bonus credits	3	0
<b>Total</b>	<b>10</b>	<b>0</b>



Click on the images to access to the different categories sheets

Table showing the points achieved by the project

# USER TOOL CATEGORY SHEET

## Energy

To monitor and reduce the energy consumption of a building through, for example, passive design, the use of natural ventilation and the installation of energy-efficient equipment (HVAC, lighting, water heater, etc.)

See the Scorecard



Credit	Available points	Points
<a href="#">E-1 Passive Design</a>	5	0
<a href="#">E-2 Building Envelope</a>	4	0
<a href="#">E-3 Home Cooling</a>	6	0
<a href="#">E-4 Artificial Lighting</a>	3	0
<a href="#">E-5 Water Heating</a>	2	0
<a href="#">E-6 Energy Efficient Appliances</a>	3	0
<a href="#">E-7 Energy Monitors</a>	1	0
<a href="#">Best Practice Credits</a>	5	0
<b>Total</b>	<b>29</b>	<b>0</b>

Click on the links to access to the different credit sheets

Go back to the LOTUS Homes Scorecard

# USER TOOL CREDIT SHEET

## E-1 Passive Design

[Back to Energy](#)[See the Scorecard](#)[Strategy A](#)[Strategy B](#)[Strategy C](#)

Click on the links on  
the right to navigate to  
other Energy credits

[E-2](#)  
[E-3](#)  
[E-4](#)[E-5](#)  
[E-6](#)  
[E-7](#)[BPC](#)

**Aim:** To incorporate design techniques that take advantage of the natural climate and site to minimize mechanical cooling in the building, while ensuring comfort for all occupants

**Reference:** Page 24 of the LOTUS Homes Pilot - Technical Manual

**Instructions:** 3 strategies are available for this credit and they can all be followed at the same time with a maximum of 5 points available.

Read all the instructions and complete the information on passive design in the light red-coloured cells.

### Credit Requirements

Criteria	Points available	Points	Ready to submit?
<b>Strategy A: Building Orientation</b> For 1 point, east and west facades area is lower than 40% of the total facade area For 2 points, east and west facades area is lower than 20% of the total facade area	2	0	No
<b>Strategy B: Window-to-wall ratio (WWR)</b> For 1 point, WWR of the east and west facades is lower than 30% For 2 points, WWR of the east and west facades is lower than 15%	2	0	No
<b>Strategy C: Shading devices</b> 1 point for meeting each of the following requirements: - Install appropriate shading devices on windows of the north and south facades - Install appropriate shading devices on windows of the east and west facades	2	0	No
<b>Total</b>	5	0	No

### Strategy A: Building Orientation

Access to the  
different strategies in  
the credit

Table with the credit requirements,  
points available and points achieved



# USER TOOL CREDIT SHEET

Pay attention to the difference between **Strategy** and **Option** !

A project can implement any or all strategies and accumulate points for the credit (while being restricted by the maximum number of points).  
But, a project can select only one of the options with its assigned points.

## E-1 Passive Design

[Back to Energy](#)[See the Scorecard](#)[Strategy A](#)[Strategy B](#)[Strategy C](#)

Click on the links on the right to navigate to other Energy credits

[E-2](#)[E-3](#)[E-4](#)[E-5](#)[E-6](#)[E-7](#)[BPC](#)

**Aim:** To incorporate design techniques that take advantage of the natural climate and site to minimize mechanical cooling in the building, while ensuring comfort for all occupants

**Reference:** Page 24 of the LOTUS Homes Pilot - Technical Manual

**Instructions:** 3 strategies are available for this credit and they can all be followed at the same time with a maximum of 5 points available.

Read all the instructions and complete the information on passive design in the light red-coloured cells.

### Credit Requirements

Criteria	Points available	Points	Ready to submit?
<b>Strategy A: Building Orientation</b> For 1 point, east and west facades area is lower than 40% of the total facade area For 2 points, east and west facades area is lower than 20% of the total facade area	2	0	No
<b>Strategy B: Window-to-wall ratio (WWR)</b> For 1 point, WWR of the east and west facades is lower than 30% For 2 points, WWR of the east and west facades is lower than 15%			
<b>Strategy C: Shading devices</b> 1 point for meeting each of the following requirements: - Install appropriate shading devices on windows of the north and south facades - Install appropriate shading devices on windows of the east and west facades			
<b>Total</b>			

### Strategy A: Building Orientation

## E-5 Water Heating

[Back to Energy](#)[See the Scorecard](#)

Click on the links on the right to navigate to other Energy credits

[E-1](#)[E-2](#)[E-3](#)[E-4](#)[E-6](#)[E-7](#)[BPC](#)

**Aim:** To reduce the energy consumption of domestic water heating by using solar or heat pump water heating systems.

**Reference:** Page 37 of the LOTUS Homes Pilot - Technical Manual

**Instructions:** Choose to follow either Option A: Solar water heating **OR** Option B: Heat pump water heating.

Read all the instructions and complete the information in the light red-coloured cells.

[Option A](#)[Option B](#)

### Credit Requirements

Select the option pursued:

Select

Criteria	Points available	Points	Ready to submit?
<b>Option A: Solar water heating</b> A solar thermal system produces the domestic hot water	2		
<b>Option B: Heat pump water heating</b> A heat pump water heater produces all the domestic hot water consumption	2		

### Option A: Solar water heating

#### Approach & Implementation



Select a properly sized solar water heating system



Reply to the questions below:

• Has a solar hot water system been installed to cover the hot water demand of the house?	Select
• What is the capacity of the solar hot water system? (liters)	





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# USER TOOL CREDIT SHEET

## Strategy A: Building Orientation

### Approach & Implementation

-  Orientate the building in such way to limit the size of the west and east facing facades.
-  The west facing facade is defined as the facades oriented within the range of 45 degrees North of West and 45 degrees South of West. East facing facade is defined similarly as the facades oriented within the range of 45 degrees North of East and 45 degrees South of East.

### Calculations

-  Complete the information below on building facades:

East facade area (m <sup>2</sup> )	
West facade area (m <sup>2</sup> )	
North facade area (m <sup>2</sup> )	
South facade area (m <sup>2</sup> )	
Total facade area (m <sup>2</sup> )	0

East and west facades area [%]	0.0%
--------------------------------	------

### Submissions

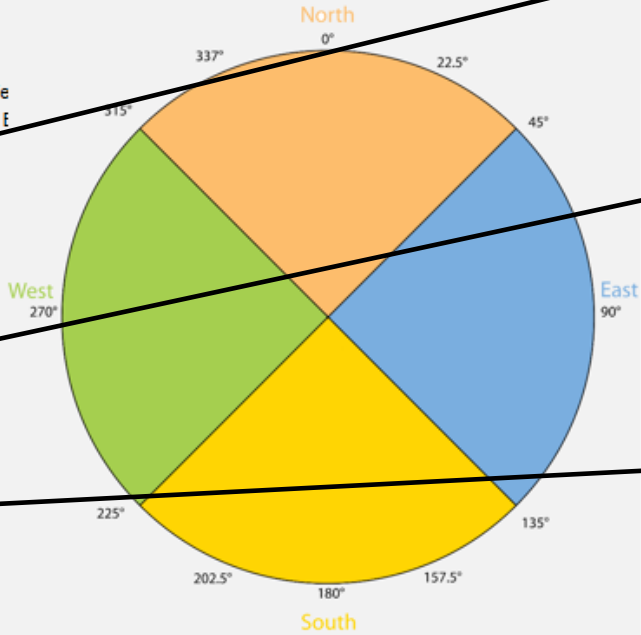
Submit all the documentation listed below at Certification stage:

• Elevations showing the size of the facades.	Select
• Photographs of the facades	Select

### Results

Points	0
Ready to submit?	No

Figure E.1: Definition of the different facing façades



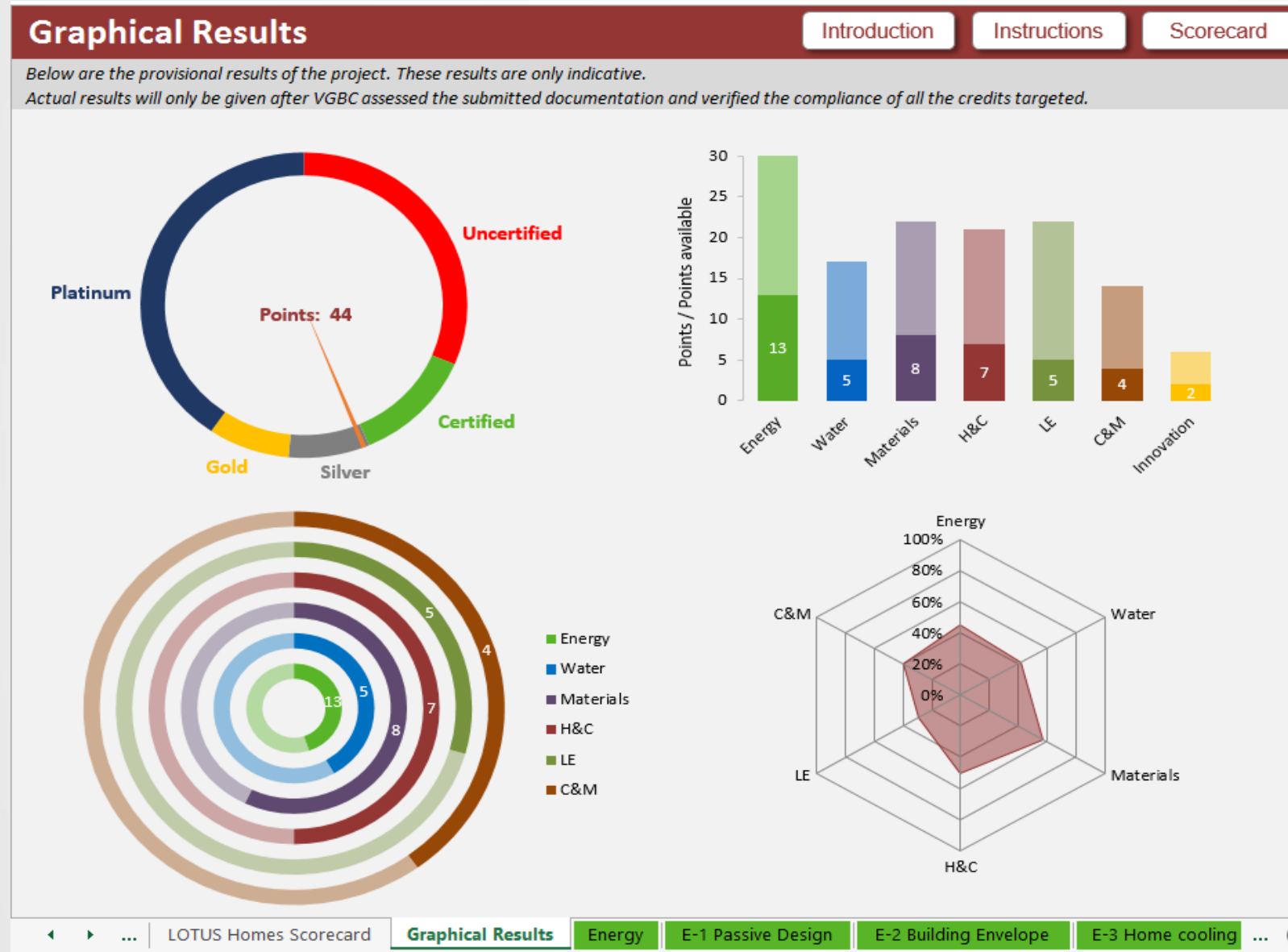
In Credit E-1 Strategy A, users should fill in information on the façade areas in the light-red colored cells.

The percentage of east and west façade area is automatically calculated by the Tool and displayed in a grey cell.

The Submissions section shows the list of documents required to demonstrate compliance with the credit. Users should select “Submitted” when a document is ready to be submitted.

The results are automatically computed and show the number of points achieved and whether the submittals are ready or not.

# USER TOOL: GRAPHICAL RESULTS



The **Graphical Results** sheet displays 4 graphics showing:

- The number of points achieved in comparison to the points needed for the different certification levels
- The number of points achieved in the categories
- The percentage of points achieved in the categories



# USER TOOL

## Introduction on LOTUS Homes

- [1. Scope](#)
- [2. Categories](#)
- [3. Credits](#)
- [4. Certification Levels](#)
- [5. Certification Process](#)
- [6. Submissions](#)

## Navigation

- Instructions
- Recommendations
- Scorecard
- Project Information
- Graphical Results
- Glossary

LOTUS Homes is part of the LOTUS Rating Systems 'family' which includes LOTUS Non-Residential, LOTUS Multi-family Residential and LOTUS Buildings in Operation.

### 1. LOTUS Homes Scope and

LOTUS Homes targets single family dwellings. These are formally described as individual residential houses under QCVN 03:2012/BXD & Circular 12/2012/TT-BXD, dated on 28.12.2012.

- Villas: detached villa, semi-detached villa, deluxe villa and resort villa
- Terraced house: Townhouse, terraced house with garden
- Traditional rural house

Refurbishment projects and individual villas built in developments such as resorts, as well as single dwelling-units in apartment buildings are also eligible for LOTUS Homes.

### 2. LOTUS Homes Categories

LOTUS Homes is composed of 6 categories (plus "Innovation"), each containing a varying number of credits.

- **Energy (E)** - To monitor and reduce the energy consumption of a building through, for example, passive design, the use of natural ventilation and the installation of energy-efficient equipment (HVAC, lighting, water heater, etc.).
- **Water (W)** - To reduce the water consumption of a building through the use of water-efficient fixtures, rain water harvesting, water reuse/recycling and associated water saving measures.
- **Materials (M)** - To encourage use of sustainable materials and reduce use of high-embodied-energy materials, for example through the use of re-used and/or recycled materials.
- **Local Environment (LE)** - To protect the ecology of the site of the building and surrounding area, to encourage recycling practices, and to integrate adaptation and mitigation strategies.
- **Health and Comfort (H)** - To ensure high indoor environmental quality, through the optimisation of indoor air quality, daylighting, and thermal comfort.
- **Community and Management (CM)** - To increase the awareness of how buildings affect the community and to ensure that, throughout the project, all targets set up for the various stages (design, construction and operations) are effectively managed.
- In addition to the above Categories, an **Innovation (Inn)** category rewards exceptional performance or initiatives which are not specifically addressed by LOTUS. This category awards additional "bonus" points.

### 3. LOTUS Homes Credits

LOTUS is a points-based system. Projects obtain points for complying with LOTUS credit criteria.

Projects are not required to comply with every credit. Only target appropriate credits that projects can reasonably achieve. However, each project must target a minimum number of credits in order to achieve sufficient points to match the desired certification level (cf section 'LOTUS Homes Certification' below)

For a project to comply with a credit, it must meet the intent of the credit, achieve the specific requirements of the credit and provide the required submission documents.

Navigate through the User Tool to access to all the worksheets and find all necessary information.

- Instructions on how to use the tool
- Recommendations
- Glossary



# USER TOOL CHECKLIST BEFORE

Certification stage checklist

IntroductionInstructionsScorecard

!

Please make sure the checklist below is completed before sending submissions to VGBC for Certification.

Admin

1	Signed Certification Agreement received by the VGBC	Please confirm
2	Certification fee received by the VGBC	Please confirm
3	Notification Form submitted to VGBC a minimum of 2 weeks before	Please confirm

Submission content

Submit the complete User Tool together with:

1	Completed Project information sheet	Please confirm
2	Completed credit sheets for all targeted credits	Please confirm
3	Consistent information throughout the credits (for example, same information input on window openings for credits E-3 Home Cooling - Strategy A Natural Ventilation; Credit H-1 Fresh Air Supply; and Credit H-4 Daylighting)	Please confirm

Submit the following:

1	All relevant communication with the VGBC (technical queries, credit interpretations, etc.)	Please confirm
2	Credit folders with all required documentation for all targeted credits	Please confirm

Submission presentation

Respect the following requirements:

1	Inside of documents, highlight relevant information for credits where suitable	Please confirm
2	All documents are legible (drawings, plans, photographs when showing written information, etc.)	Please confirm
3	All documents (except technical data) are dated	Please confirm
4	All drawings, plans, elevations or other documentation drawn by hand must be signed	Please confirm
5	Documents are clearly named with a reference to the credit (for example, E-2 - Technical data of	Please confirm

Click here to see some definitions of submission terms

Complete the checklist to make sure that the project follows all requirements and is ready to send submissions to VGBC for Certification.



# PRE-ASSESSMENT STAGE

- Optional stage to verify that the project is on right track:
  - realistic targets have been set,
  - no mistakes have been made,
  - there is a safety margin for certification, etc.
- Only need to complete the User Tool, no documentation needed
- VGBC to reply in approximately 2 weeks with an assessment report including corrections, advices and recommendations.

→ No definitive score or certification will be given at this stage.

**VGBC strongly encourages the applicants to submit for this stage.**

# SINGLE CERTIFICATION STAGE

- Actual submission stage for certification under LOTUS Homes.
- Happening at the end of the construction stage.
- Along the User Tool, projects need to submit evidence such as:
  - Photographs;
  - Technical data;
  - Invoices, receipts, etc.

VGBC will issue the LOTUS Certificate upon successful assessment.



# PRESCRIPTIVE PATH

Prescriptive path include simple, prescriptive requirements.

Examples:

- Credit E-3 Home Cooling
  - 1 point if all air-conditioners have at least 2 stars in the energy labelling program of VNEEP
  - 2 points if all air-conditioners have at least 3 stars in the energy labelling program of VNEEP
- Credit W-1 Water Efficient Fixtures
  - 1 point if all WCs are dual-flush models with flush rates lower than (or equal to) 3 / 4.5 litres per flush
  - 2 points if all shower heads have flowrates lower than (or equal to) 0.14 litres per second



# BEST PRACTICE CREDITS (BPC)

- 13 BPC rewarding up to 16 bonus points for achieving best practice in design and construction
- BPC often require extra calculations or sophisticated documentation
- BPC are not easily achievable for most projects
- Overall certification level is not affected by the BPC

