

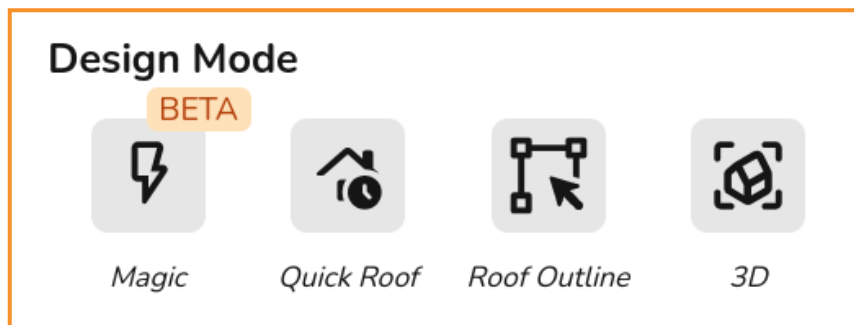
Buildings and roofs

- [Choosing a design mode](#)
- [Introduction to 3D design mode](#)
- [Irregular Buildings in 3D design mode](#)
- [Introduction to Quick Roof design mode](#)

Choosing a design mode

When you first create a project you will get the choice of the which design mode you would like to use. The design mode affects how you model the roofs you plan to put panels on.

In Easy PV there are four options:



3D

- Create **3D** property model by designing the roof from a **satellite** image and **dimensions**.
- Model obstructions and nearby buildings or trees that may cast shade on the roofs you're working on to get **automatic shade analysis** and improve the accuracy of the performance calculations.
- Automatically calculate **scaffolding costs** if using [automatic pricing calculator](#).

For more info:

- [Intro to 3D design mode.](#)
- [Irregular buildings in 3D mode.](#)
- Join our [3D designing training session](#).

Magic **BETA**

- Create an **automatic 3D design** - works out the height and pitch of buildings and identifies any obstructions.
- Three free magic designs per day for standard users and unlimited for pro.

Roof outline

- Create roof model by outlining the roof from a **satellite** image and adjust the **dimensions** in the roofs task.
- 2D model so requires manual **sunpath diagrams**.

Quick Roof

- Create **2D** roof using dimensions, pitch, orientation and tile type, can also spec ground mount systems.
- Does not use satellite imagery so a good option if the **satellite imagery isn't usable**.

For more info: [Intro to Quick Roof](#).

Demo

Watch the same property be designed in each design mode:

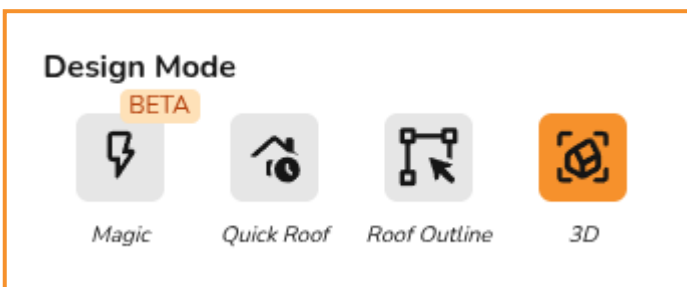
<https://www.youtube.com/embed/UnqzgYn4ynk>

Introduction to 3D design mode

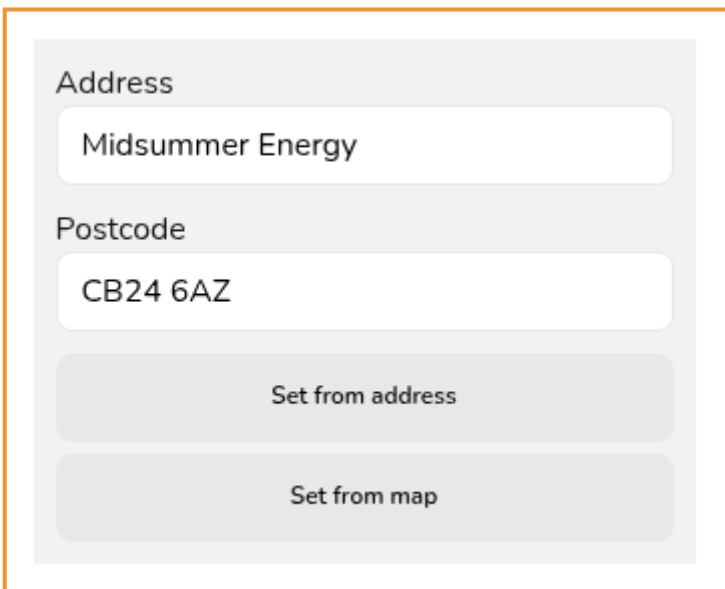
3D design mode allows you to take into account nearby buildings or trees that may cast shade on the roofs you're working on. Easy PV can then complete and **automatic shade analysis** which saves you time and leads to more accurate projections for your customer.

Starting a 3D project

When creating your project, select the "3D" option.



Since 3D mode relies on the satellite map, you must then set the map either by zooming into the right location and selecting **set from map** or inputting the address and clicking **set from address**.



The image shows a form for setting the location. It has two input fields: 'Address' with the text 'Midsummer Energy' and 'Postcode' with the text 'CB24 6AZ'. Below the input fields are two buttons: 'Set from address' and 'Set from map'.

You can then click **create** and start your 3D design.

Examples

- [Quick demo](#) of a 3D design.
- [Walk-through examples](#) using the [irregular building tool](#).
- [Join our dedicated 3D design training session](#) for more live examples.

Overview of 3D design

<https://www.youtube.com/embed/YQHPPNluig4>

There are three views you can use to complete your design in 3D:

1. **Plan:** This is a top down satellite view of the property.
 - **Drag and drop** buildings and obstructions from the left-side menu and align with the satellite map.
 - Click in the **corners** to view and edit dimensions.

Note that all dimensions in the plan view are all **top-down**. Use **elevations** view for pitched dimensions.

 - Where available this will load with a property boundary. Only roofs within this boundary will be usable in the project.
2. **3D:** 3D view of the model.
 - Useful to check elevations are correct.
 - Expand 3D view to view full shading model.
3. **Elevations:** View of heights and pitched dimensions.
 - Click on a building, extension or obstruction in the plan view to display heights and pitched dimensions.
 - Adjust dimensions by dragging or input directly by clicking on value.

Choosing satellite map: orthorectified and standard imagery

When designing atop the satellite map, you have two choices of which map data to use:

- **Orthorectified:** This uses geometrically corrected satellite data to give more accurate dimensions. This will not always be available
- **Standard:** This uses raw satellite data. Dimensions may be distorted, particularly for sloped structures.

If you are relying on the satellite map for dimensions, then **orthorectified is the recommended option**. We cannot guarantee the accuracy of the dimensions when

using the standard imagery.

Selecting roofs to use

<https://www.youtube.com/embed/m-wrd2a5jvU>

Once you have completed your design, click **Next**. A menu will then pop up showing the roofs.

- Easy PV will automatically select the roofs it thinks are most suitable based on the size, pitch and orientation.
- If a property boundary is included, **only roofs within this property boundary will display** - remove or edit the property boundary if roofs you modelled are missing.
- Select or de-select roofs using the **checkbox** on the right.
- Place cursor over roofs to highlight them in the map on the left.

Once all the roofs you want to place panels on are selected, click **Next** in the bottom right to go to the panels task.

Automatic shade analysis

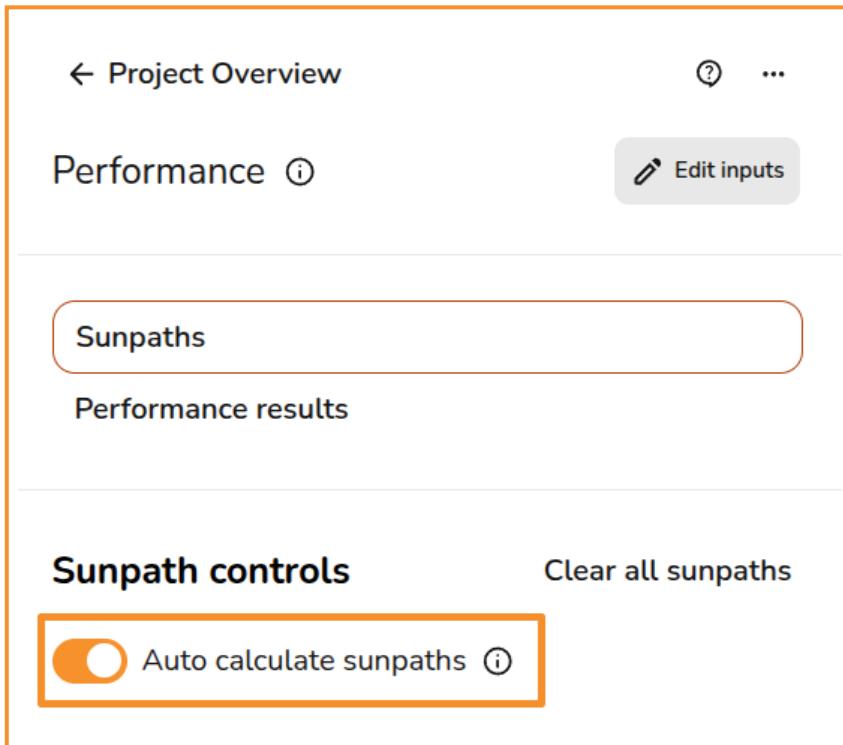
One of the key benefits of designing in 3D is Easy PV will calculate the shading on the panels automatically. In order to make the most out of this feature, it's therefore important to model any surrounding buildings or obstructions that would cast shade on the panels.

Drag and drop obstructions from the Misc. section, adjusting any heights in the elevations view:

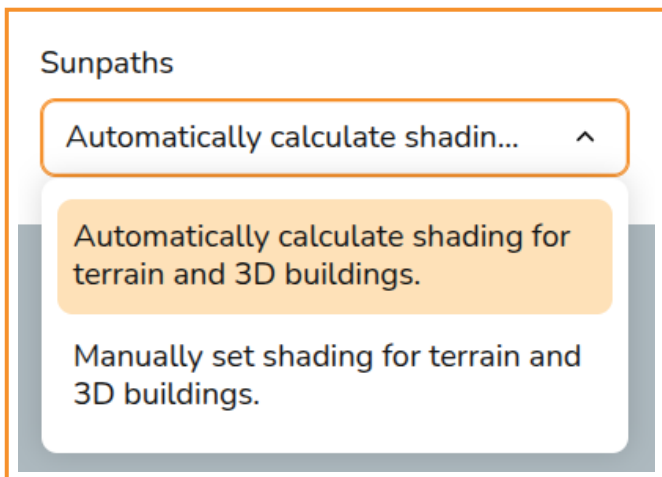


Performance task

On all 3D projects, you will have the additional option in the performance task to automatically calculate sunpath diagrams:



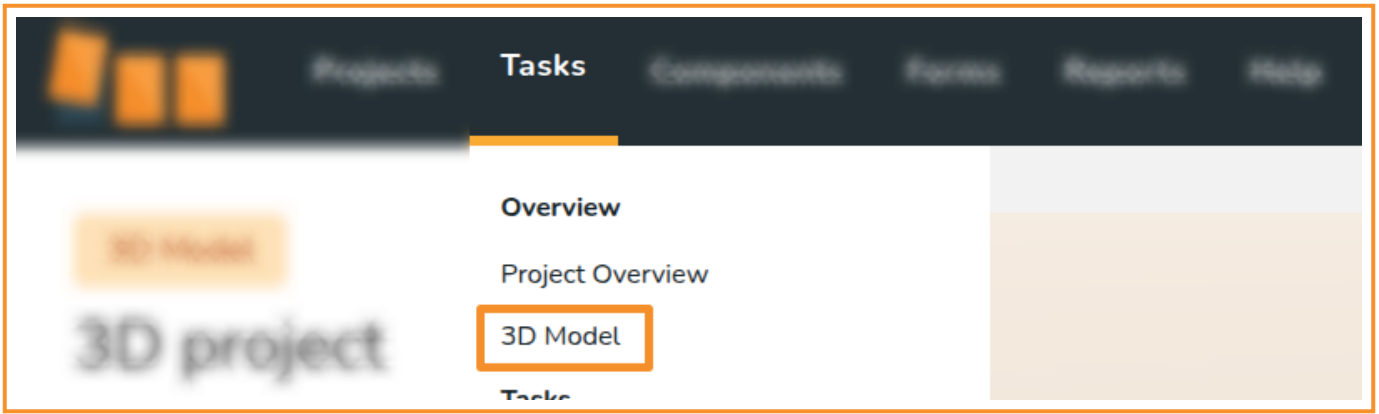
When this is selected, the shading factor/losses will be calculated for you. If you would like the shading to be calculated automatically each time, make sure this option is selected in your (pro) account performance settings:



Note that when using **optimisers** shading is not calculated per panel but **per shading group**. Read more about that [here](#).

3D model

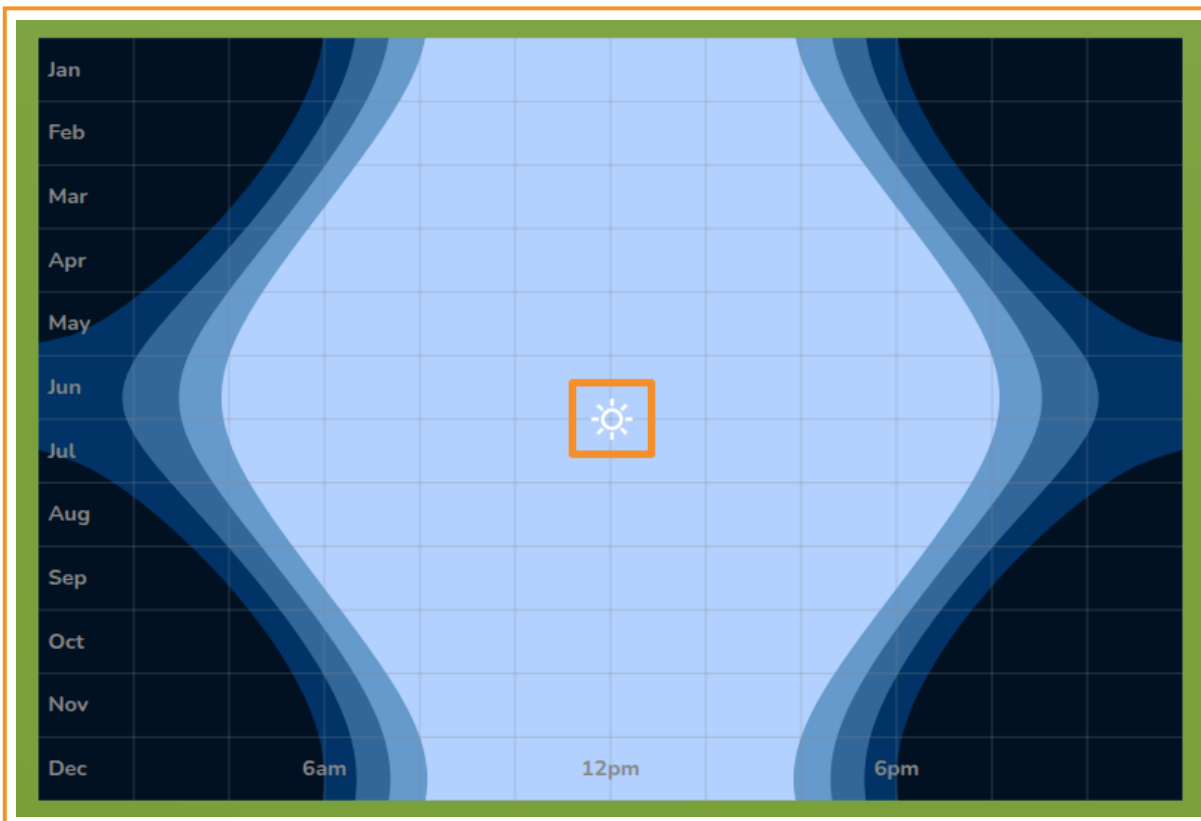
You can use the 3D model to check the shading on the roof. From the tasks drop-down, select 3D model:



In the top left you will see the date and time currently being modelled and a slider to adjust how quickly time passes.



If you click the **pause icon**, this diagram will appear in the bottom left. Drag the sun across the dates and times to see the shading at specific times.



Irregular Buildings in 3D design mode

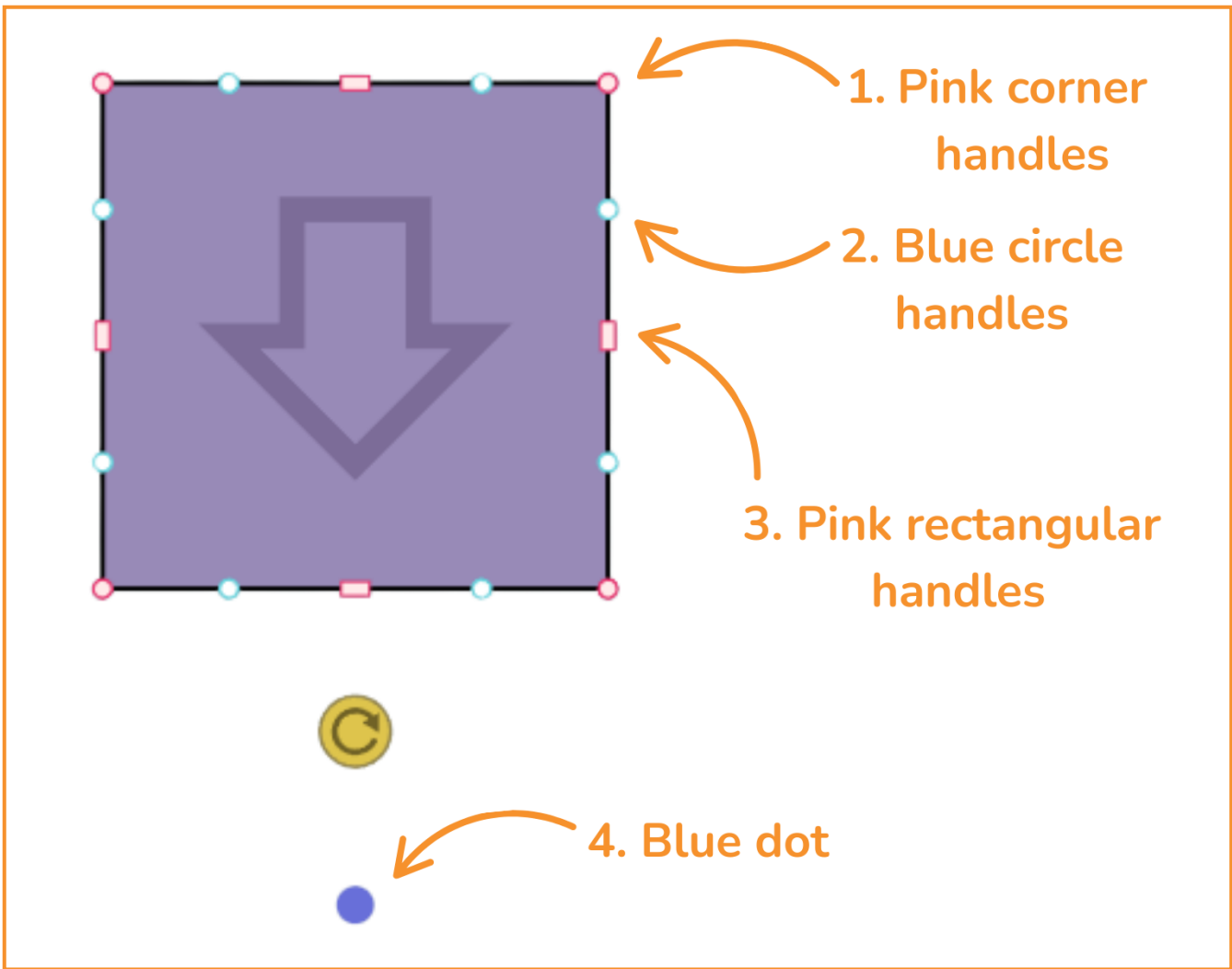
The irregular building tool allows you to create unusual roof shapes that cannot be modelled using the standard roof options.

Using irregular building tool

The irregular building tool can be found at the bottom of the Misc. section on the 3D left side-bar.



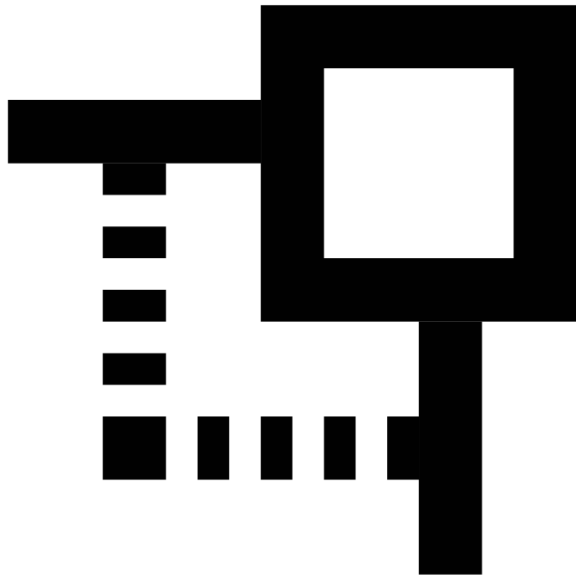
When creating a roof using the irregular building tool, there are a variety of additional handles you can use to accurately adjust the shape of the roof:



1. Pink corner handles

Click the **pink corner handles** to show dimensions of the associated roof sides. You can then click on the values to manually change these.

Click on the pink corner handles to use the following options:



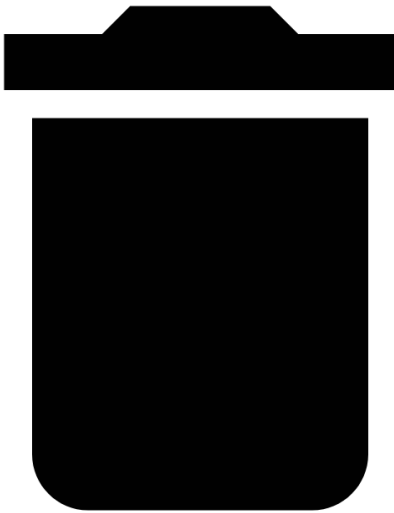
Square corner handle

Use to resize the roof whilst keeping the adjacent sides at the **same angle**.



Circle corner handle

Use to move that point **independently** of the other points to create angled sides. This is the default option for the irregular building tool.



Delete

Delete the corner. This option is only available if there are 4 or more corners on a roof.

See [Example 1](#).

2. Blue circle handles

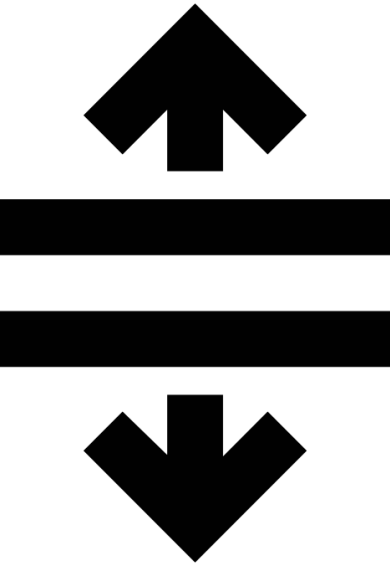
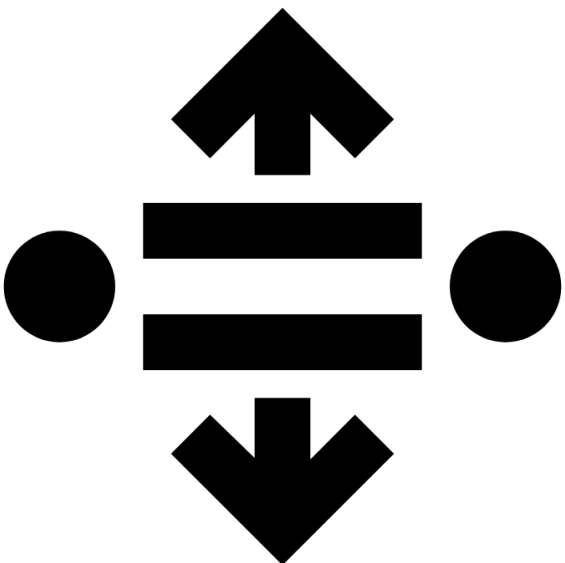
Click and drag the **blue circle handles** to allow you to split a side and create irregular shapes.

These will then convert to pink handles which you can delete if needed.

See [Example 2](#).

3. Pink rectangular handles

Use the rectangular handle to resize the roof. Click on the **pink rectangular handles** to toggle between a square and curved cornered handles:

 A black icon for a square cornered handle. It consists of a central horizontal bar with two shorter horizontal bars above and below it. Above the top bar is a square-headed arrow pointing up, and below the bottom bar is a square-headed arrow pointing down.	<p>Square cornered handle Use to extend a roof side out.</p>
 A black icon for a curved cornered handle. It features the same central horizontal bar and top/bottom bars as the square handle. Above the top bar is a square-headed arrow pointing up, and below the bottom bar is a square-headed arrow pointing down. On the left and right sides of the middle bars are two solid black circles.	<p>Curved cornered handle Use to extend the adjoining rood side independently of the others. This will create new corners and sides which can be deleted by clicking on the corners and then the bin icon.</p>

See [Example 1](#) and [Example 2](#).

4. Blue dot

Drag the **blue dot** below the yellow rotation icon to indicate the direction that the panels will face. Whichever direction the arrow is facing is the panel and roof pitch direction.

See [Example 1](#).

Examples

See below for some examples that demonstrate using the irregular building tool on actual roofs.

Example 1

<https://www.youtube.com/embed/KNO8iM43D1E>

Example 2

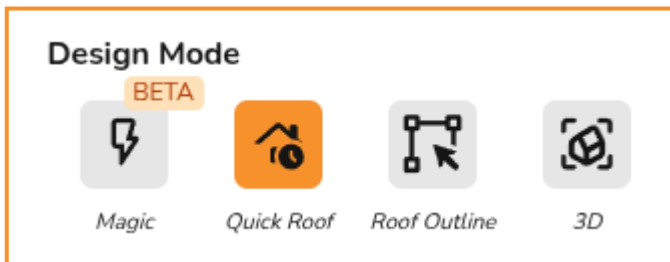
<https://www.youtube.com/embed/BdH4Nj57c-g>

Introduction to Quick Roof design mode

With Easy PV's Quick Roof design mode you can model a roof without using satellite imagery, making it a good option if the satellite data isn't available. Simply model the roof using the dimensions, pitch and roof covering and add any obstructions.

Creating a Quick Roof design

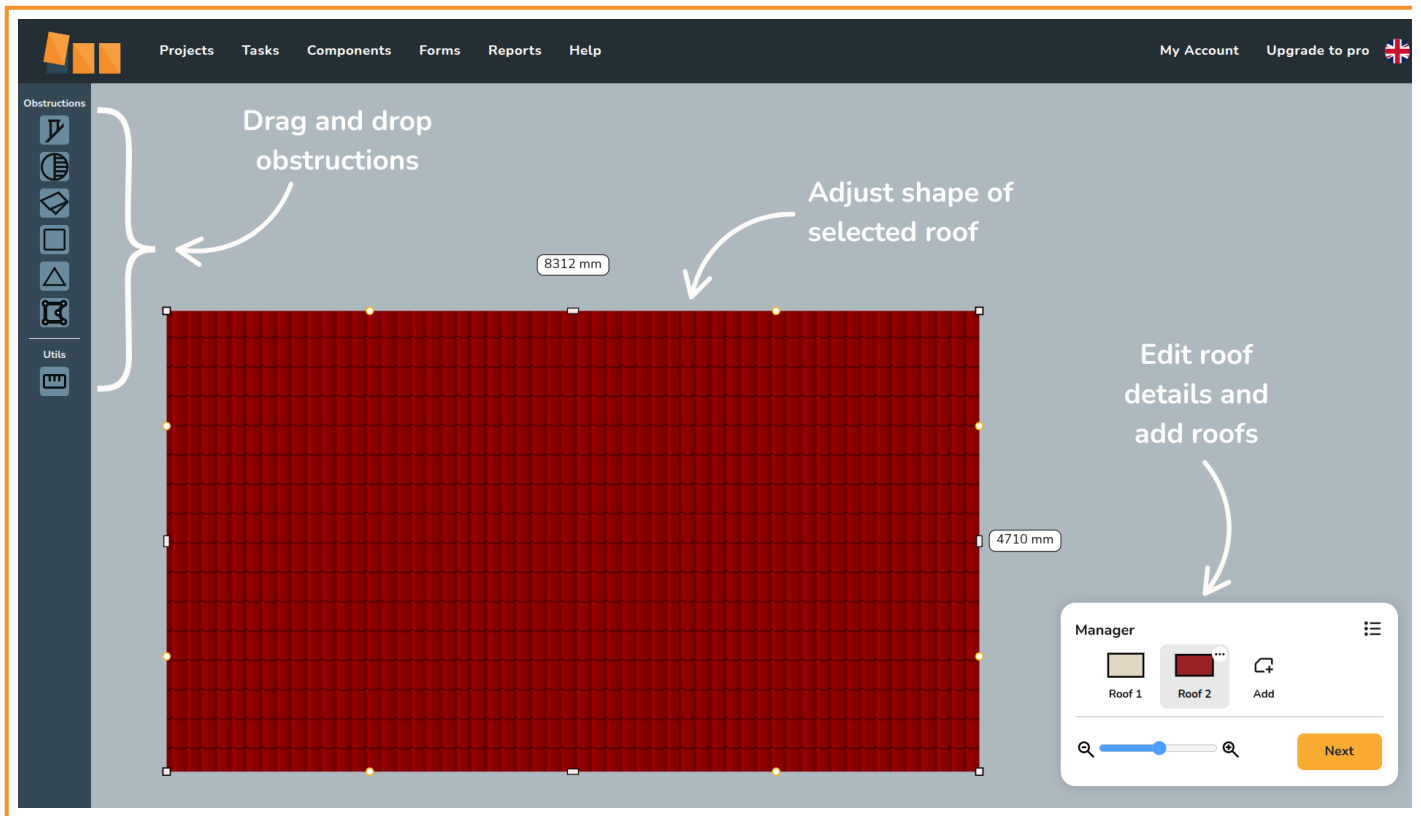
Quick Roof is selected when you first create a project, input project details and under **Design Mode** select **Quick Roof**. Then click **Create** in the bottom right.



This will then take you to the Roof task where you can model the roof.

Roof task overview

In the Roof task you can create and edit your 2D roof model:



In the **Roof Manager** in the bottom right, clicking the three dots icon on the individual roofs will show the following options:



Edit details

Edit the roof type and dimensions. Changing the roof covering may affect the Panels task if the roof has panels on it and mounting selected.



Clone roof

Copy the roof. This option will prompt you to input the name for the clone.



Delete

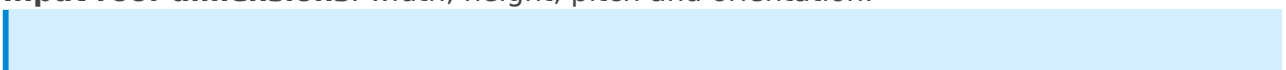
Delete the roof from the project. This cannot be undone.

Creating roof model

Initial roof details

When you first open a Quick Roof project, you will be prompted to fill in some initial roof details:

1. **Select the roof type and roof covering:** this determines what mounting options are available to select.
2. **Input roof dimensions:** width, height, pitch and orientation.



Orientation is taken in degrees from south going clockwise. Read more about [setting the right orientation](#).

Details

Pitched Roof

- Slate
- Concrete or pan tile
- Plain tile
- Sheet metal
- Standing seam
- Fibre cement

Dimensions

Width m

Height m

Optional label

Pitch

Orientation

Orientation is degrees from South. For example, West is 90°, and South-East is -45°.

Flat Roof

- Flat

Ground Level

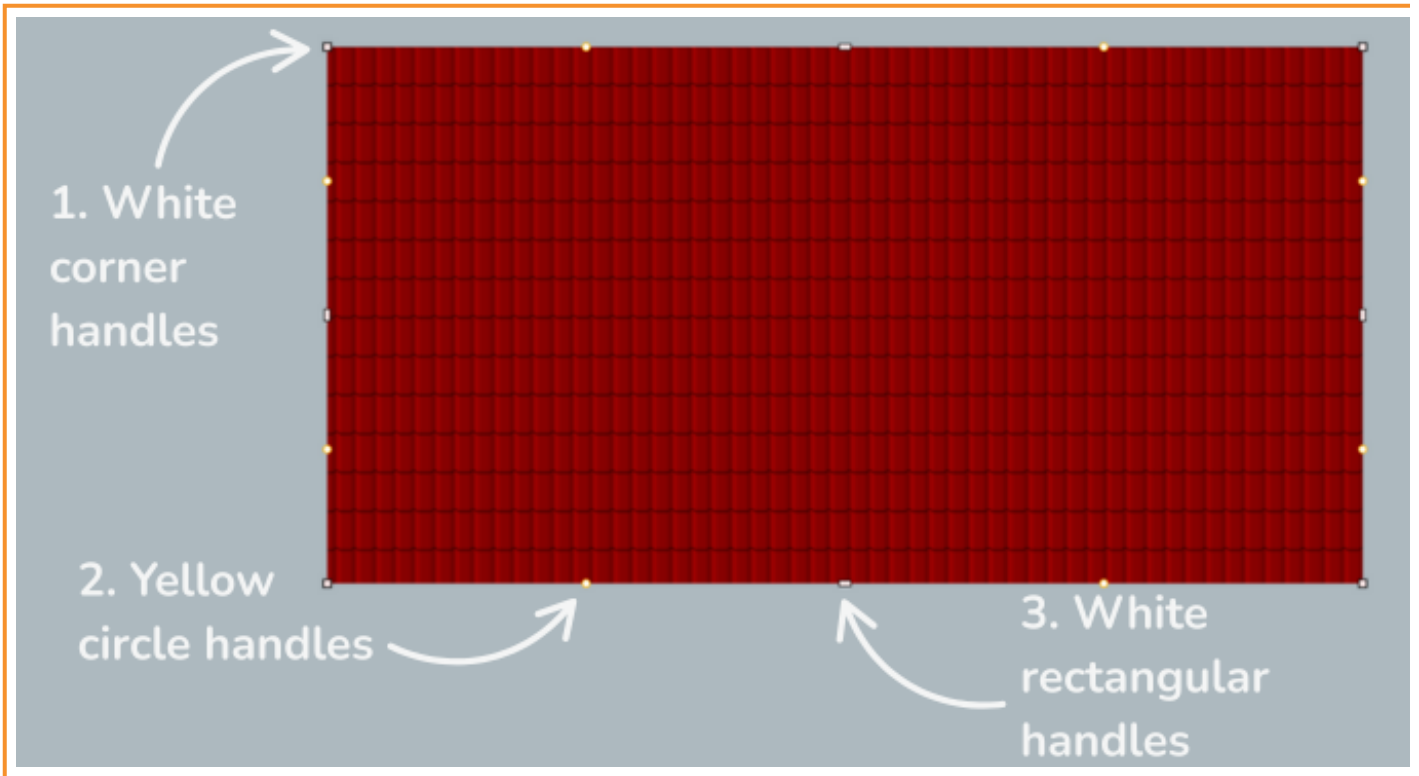
- Ground mounted

confirm

These details can be adjusted by clicking the three dots in the **Roof Manager** and selecting **Edit**. The dimensions can also be adjusted directly from the model by clicking on the corners and inputting the length.

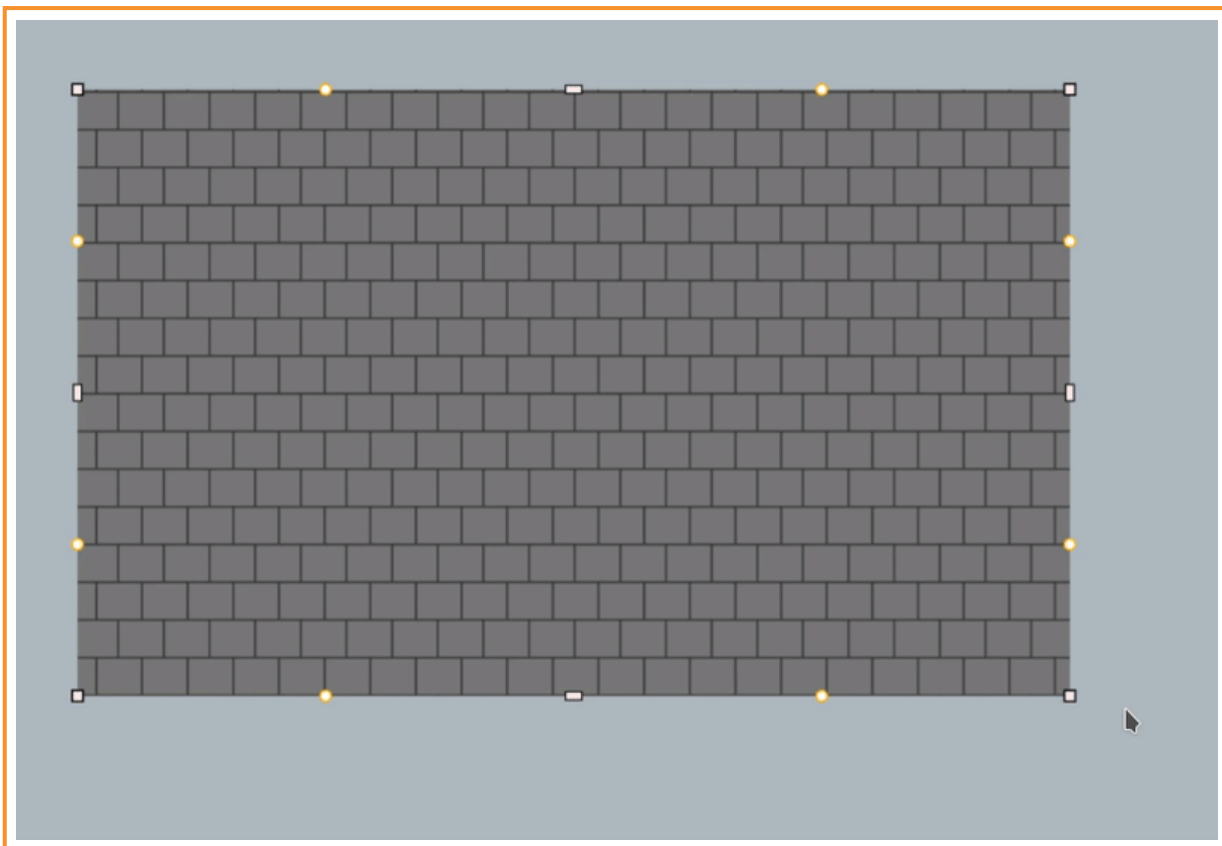
Adjusting roof shape

When creating a roof in the Roof task, there are a variety of different handles you can use to accurately adjust the shape:



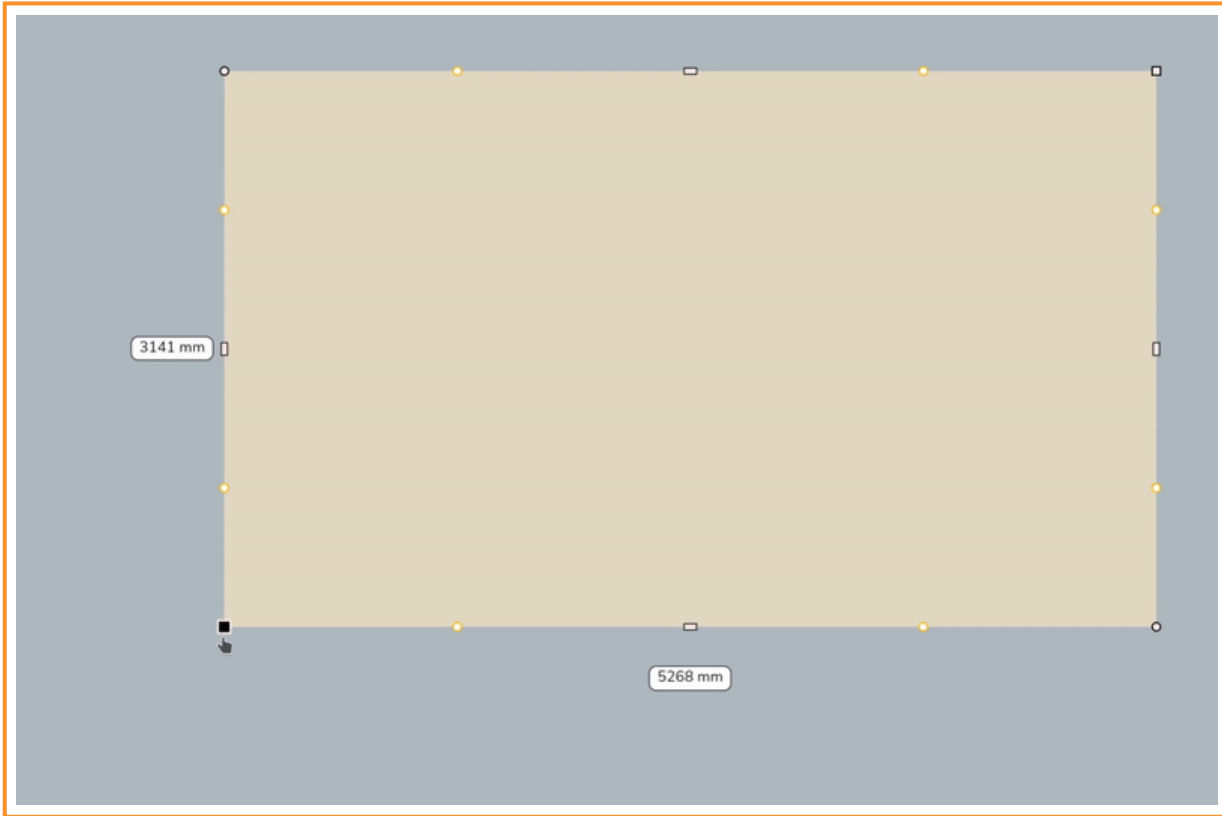
1. White corner handles

Click the **white corner handles** to show dimensions of the associated roof sides. You can then click on the values to manually change these.



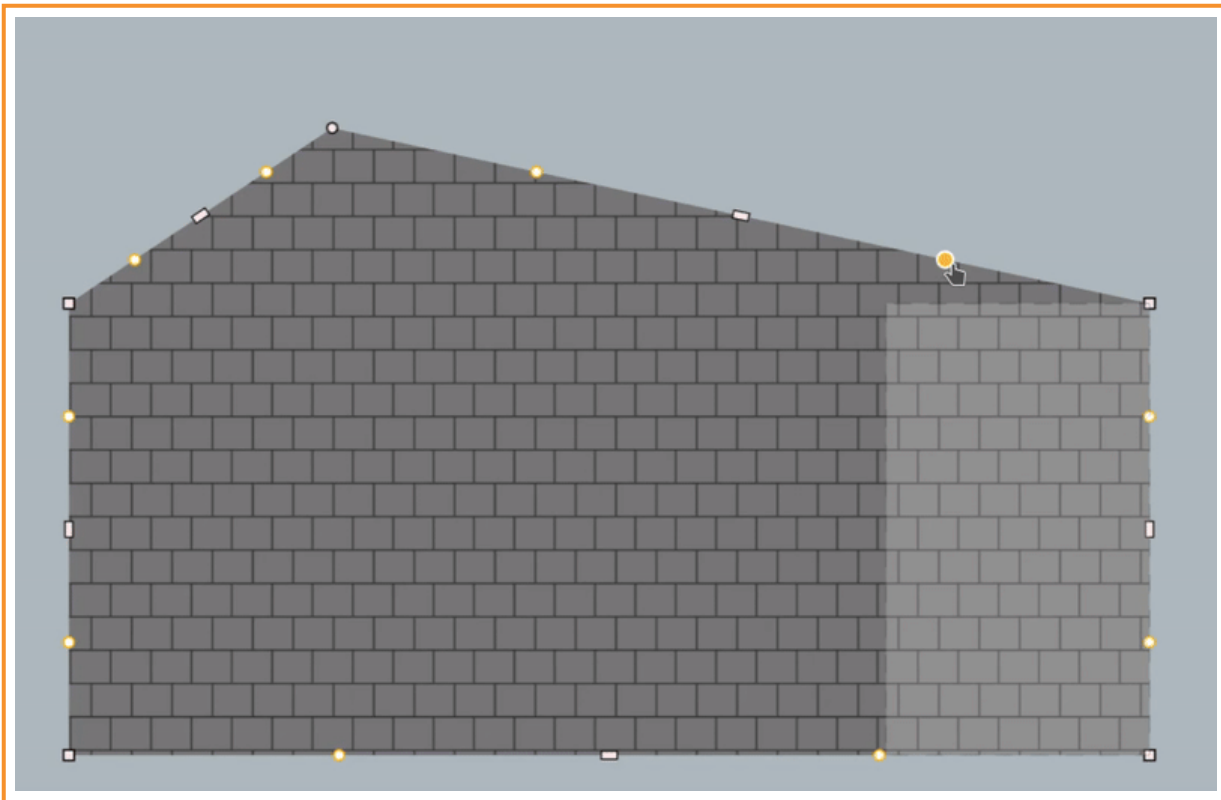
Click on the white corner handles to switch between a square and circle handle:

- Use the **square corner handles** to resize the roof whilst keeping the adjacent sides at the **same angle**.
- Use the **circle corner handles** to move that point **independently** of the other points to create angled sides.



2. Yellow circle handles

Click and drag the **yellow circle handles** to allow you to split a roof edge and create irregular shapes. These will then convert to white handles which you can delete if needed.

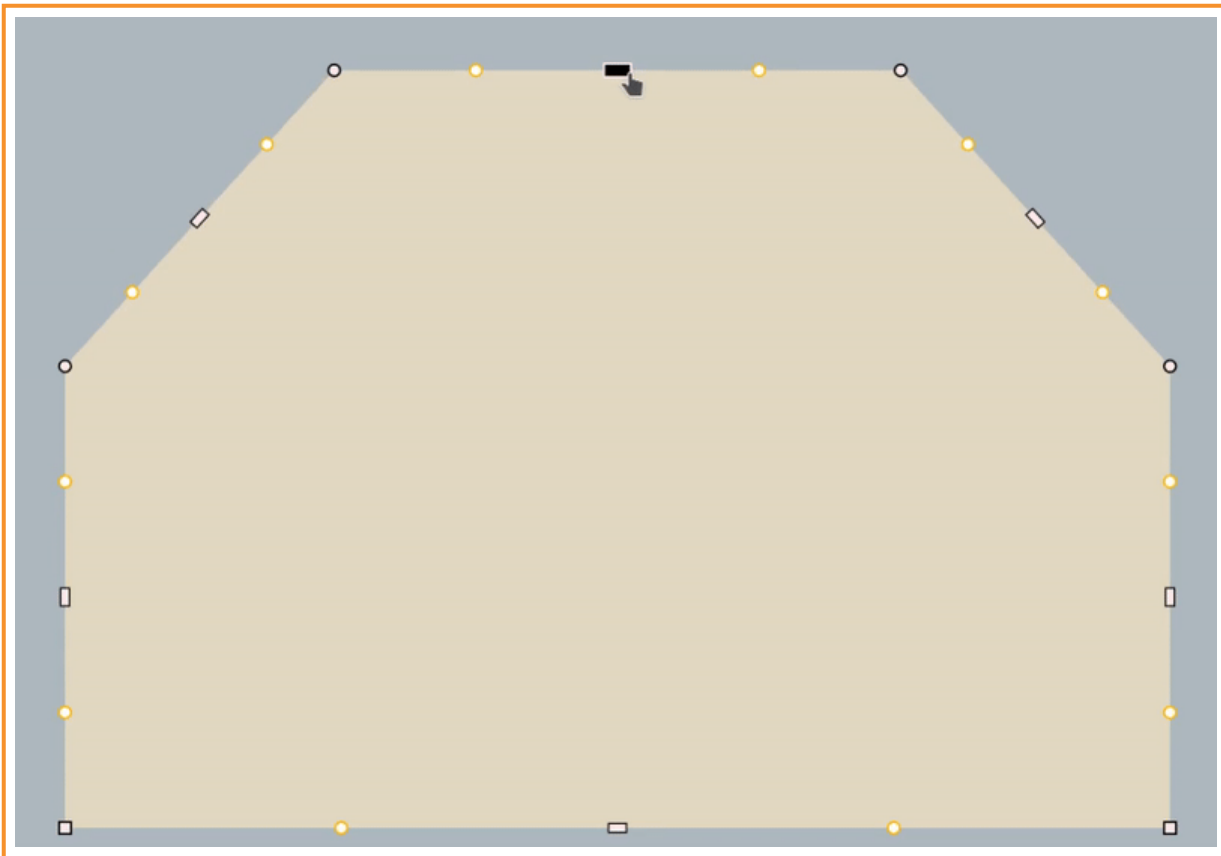


Read more about the **snapping guide** (transparent rectangle) used here in the [next section](#)

3. White rectangular handles

Click on the **white rectangular handles** to toggle between a square and curved cornered handles:

- Use the **square cornered handle** to extend the side of the roof.
- Use the **curved cornered handle** to extend the adjoining side independently of the others.



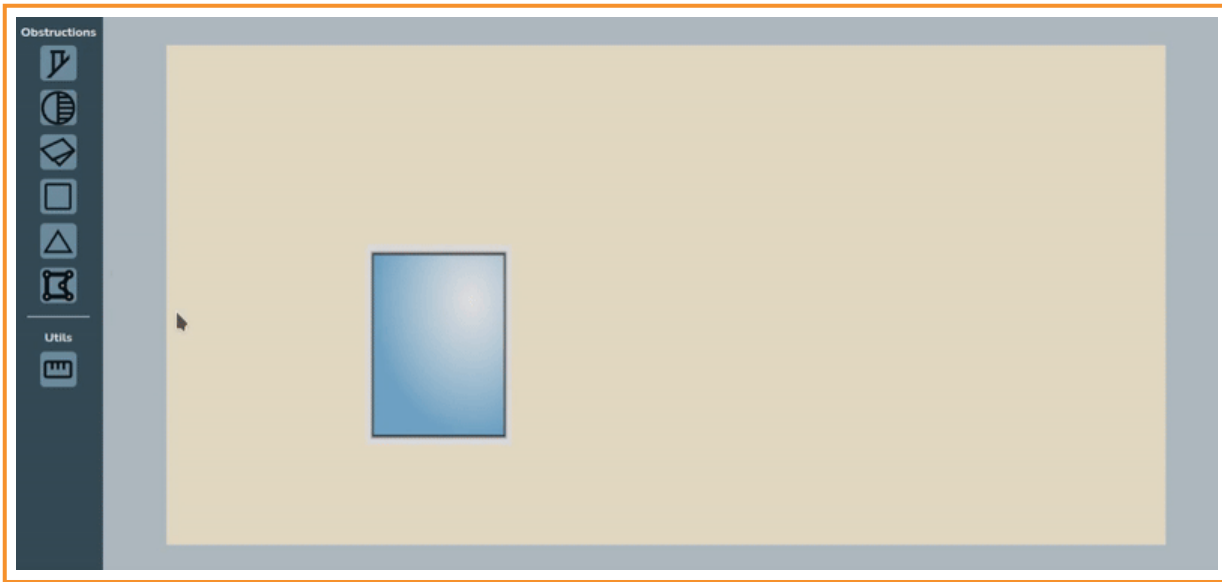
Adding obstructions

Once you have your overall roof shape, you can add obstructions. Including obstructions will help when planning where to place panels in the Panels task. **Drag and drop** any obstructions and use the **snapping guide** to ensure the obstruction positioning is correct.



The **snapping guide** is a rectangle guide that you can set the dimensions of to help position obstructions correctly on a roof and to size your roof. Obstructions and roof sides will align with the sides and corners of the snapping guide.

Here is an example of using the snapping guide to position a roof light. Use the same white handles described above to resize the snapping guide and obstructions.



If you are modelling an irregularly shaped obstruction, you can use the polygon obstruction. This
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