



Solar Wizard

Household and Community
Solar Assessment Calculator



About the Centre for Sustainable Energy (CSE)

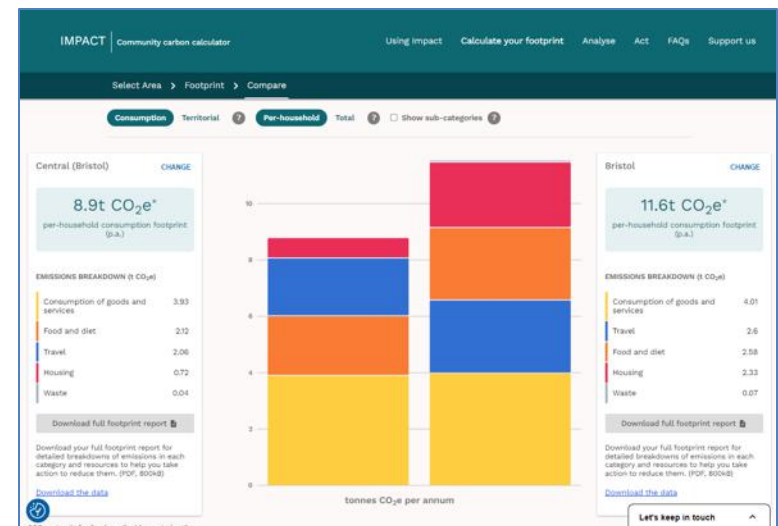
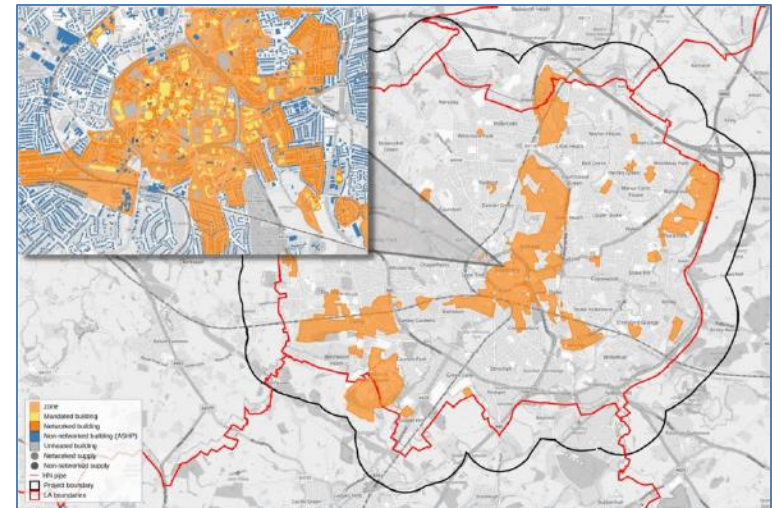
- The Centre for Sustainable Energy (CSE) is a **national charity supporting people and organisations across the UK to tackle the climate emergency and end the suffering caused by cold homes.**
- We do this by sharing our knowledge, practical experience and policy insights.
- We develop software and modelling tools to support others to make positive change.





A few project examples

- Co-author of Local Area Energy Planning Methodology (Ofgem)
- THERMOS heat network design tool (Horizon 2020)
- National Household Model (DESNZ)
- Understanding the barriers and enablers to supporting fuel poor households achieve net zero (DESNZ)
- Demand Flexibility Service evaluation (NG ESO)
- Gloucestershire renewable energy study (Glos. CC)
- London Heat Map (GLA)
- Social Housing Decarbonisation Fund monitoring and delivery support (DESNZ)
- Social indicator mapping for DNOs (various)
- National Zoning Model (DESNZ)
- Impact Tool (DESNZ)





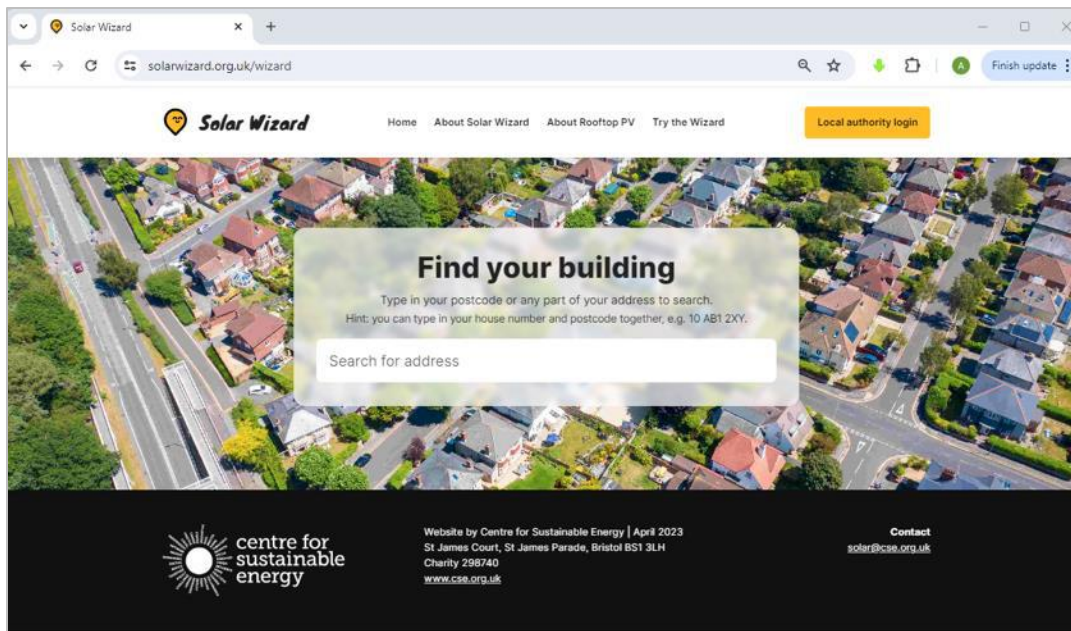
Solar Wizard: the problem...



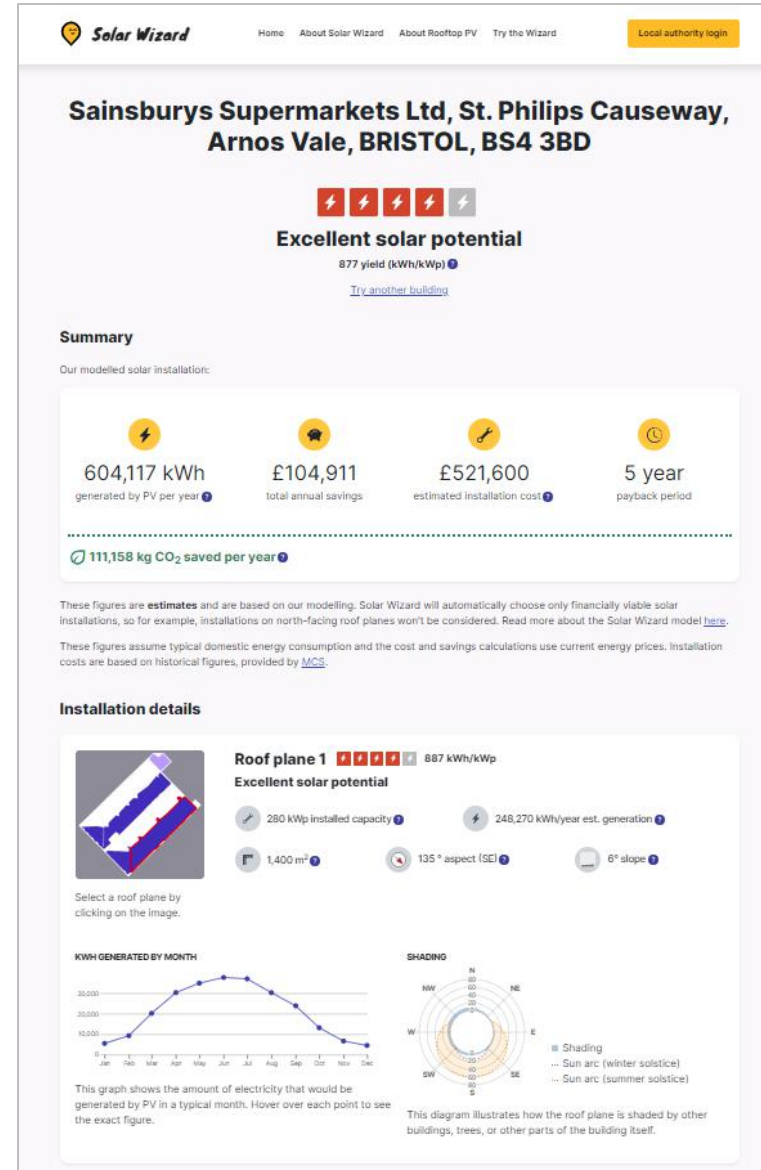
- Only 3.3% of UK homes have solar PV installations.
- Installations need to treble (i.e. 1.6m new household installs) by 2030.
- Households, community groups and local authorities need support to increase deployment.
- Many current tools have limited functionality or are restricted to a specific location.
- Limited open digital tools available.
- Lack of trusted, independent information.



The Solar Wizard



www.solarwizard.org.uk



Sainsbury's Supermarkets Ltd, St. Philips Causeway, Arnos Vale, BRISTOL, BS4 3BD

Excellent solar potential
877 yield (kWh/kWp)

Summary

Our modelled solar installation:

- 604,117 kWh generated by PV per year
- £104,911 total annual savings
- £521,600 estimated installation cost
- 5 year payback period

111,158 kg CO₂ saved per year

These figures are **estimates** and are based on our modelling. Solar Wizard will automatically choose only financially viable solar installations, so for example, installations on north-facing roof planes won't be considered. Read more about the Solar Wizard model [here](#).

These figures assume typical domestic energy consumption and the cost and savings calculations use current energy prices. Installation costs are based on historical figures, provided by [MCS](#).

Installation details

Roof plane 1 887 kWh/kWp
Excellent solar potential

- 280 kWp installed capacity
- 248,270 kWh/year est. generation
- 1,400 m²
- 135° aspect (SE)
- 6° slope

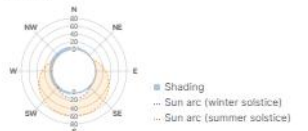
Select a roof plane by clicking on the image.

KWH GENERATED BY MONTH

Month	Estimated kWh
Jan	10,000
Feb	15,000
Mar	20,000
Apr	25,000
May	28,000
Jun	30,000
Jul	30,000
Aug	28,000
Sep	25,000
Oct	20,000
Nov	15,000
Dec	10,000

This graph shows the amount of electricity that would be generated by PV in a typical month. Hover over each point to see the exact figure.

SHADING



This diagram illustrates how the roof plane is shaded by other buildings, trees, or other parts of the building itself.



Map-based interface

Solar Wizard

solarwizard.org.uk/birmingham

Birmingham City Council | *Solar Wizard* | Map | User guide

Local authority login

Map Layers

Base map

Streetmap light | Streetmap dark | **Satellite**

Colour scheme

- Yield (kWh/kWp) ?
- Annual output (MWh) ?
- Installation size (kWp) ?

Additional layers

- Listed buildings ?
Displays the grade (I, II or II*) of any listed buildings.
- Conservation areas ?
Note: data on conservation areas is unavailable for some local authorities. [Find out more.](#)

[View on Google Maps](#)

Filters

Apply filters to exclude certain buildings from being displayed on the map.

Minimum array yield (kWh/kWp) ?

750

Minimum installation size (kWp) ?

0

Search locations

Annette Lamley (annettel@cse.org.uk) is signed in

Map key

Buildings	Yield (kWh/kWp)
<input type="checkbox"/> No data	
<input type="checkbox"/> Excluded by filters	
<input checked="" type="checkbox"/> 1	0 - 750
<input checked="" type="checkbox"/> 2	750 - 800
<input checked="" type="checkbox"/> 3	800 - 850
<input checked="" type="checkbox"/> 4	850 - 900
<input checked="" type="checkbox"/> 5	900+

Other

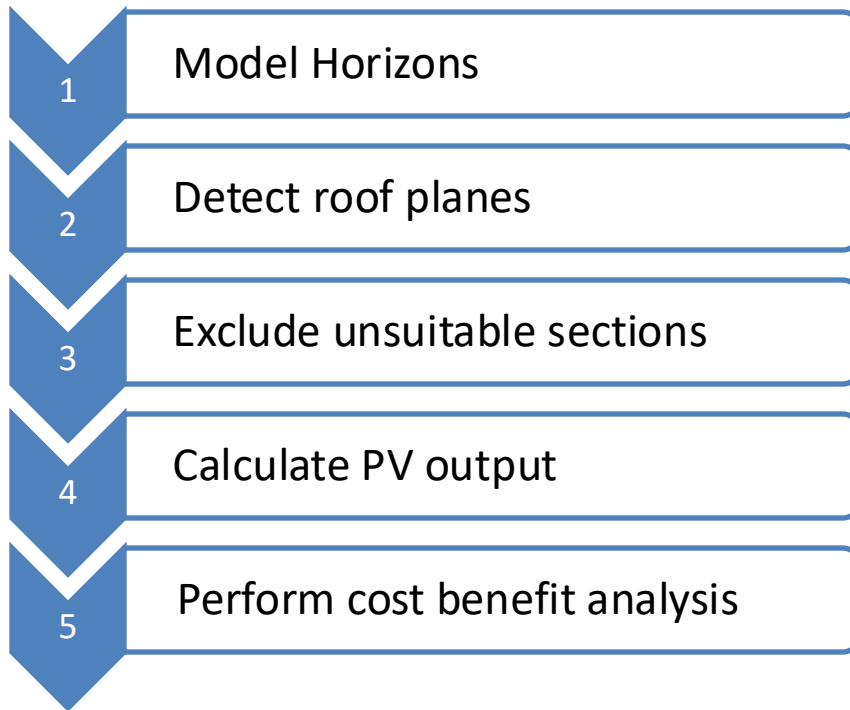
- Viewable area

mapbox

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Methodology overview





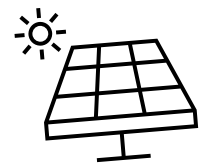
Strengths and limitations

Strengths	Limitations
<ul style="list-style-type: none">• Independent estimates• Fast indicator of viability• Easy to use – roof suitability is calculated automatically• Free to search for a building across England, Scotland and Wales – not limited to one local authority area• Includes guidance on what to do next	<ul style="list-style-type: none">• The tool is not a substitute for a building survey• Data licensing – map only available in some areas and difficult to share data with anyone that doesn't have a PSGA licence• LiDAR coverage is variable• Not all buildings have a unique postal address• Unable to assess roof materials or condition• Financial model does not account for energy price fluctuations over time



Next steps

- Household interface and map interface for Birmingham, Bristol, South Gloucestershire and North Somerset are already live (www.solarwizard.org.uk), and the map will soon be live across B&NES.
- Feedback welcome! (solar@cse.org.uk).
- A lot of ideas already around ways to improve the tool, but funding dependent.
- Code for underlying model openly available on GitHub (<https://github.com/cse-bristol/solar-wizard-model>)





Thank you!

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