Liveable Cities Tool

Rooftop Solar System Assessment Tool

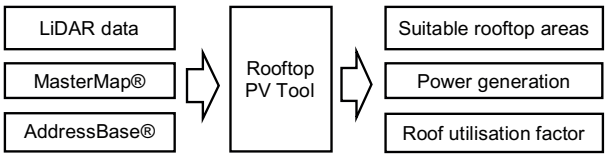
No. 10

Yue Wu, Luke Blunden, AbuBakr Bahaj and Patrick James - Southampton Liveable Cities Team

This tool is able to automatically identify suitable city-wide roof-top areas for the deployment of solar photovoltaics (PV) systems. The output provides an indication of the potential of renewable electricity generation and its contribution to the power needs of the city and contribution to emission reductions across the whole city. The tool reaches a fine resolution and is able to take into account the shading influence and economic/engineering feasibility in the actual PV system installation.

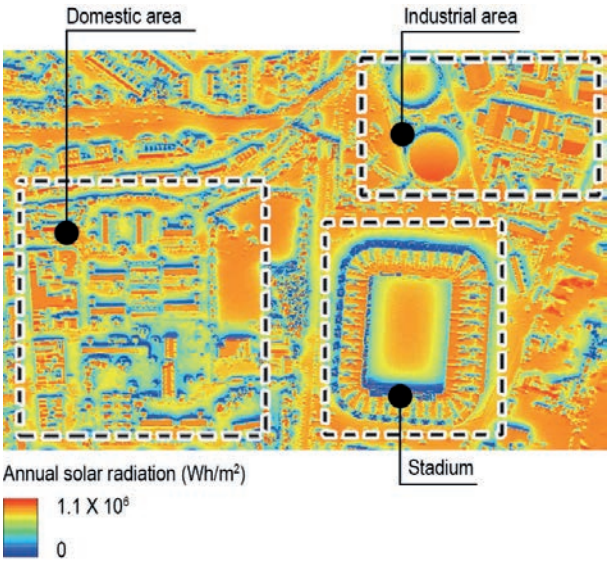
Tool Contents

This tool uses computer programs included under the ArcGIS® suite and requires Building outlines from MasterMap® and AddressBase® data from Ordnance Survey and Light Detection and Ranging (LiDAR) data from Environment Agency UK. It simulates the solar radiation on various surface areas in a city and identifies suitable rooftop areas for PV deployment. The results include 1) PV installation potential of individual buildings and city as a whole, and 2) estimates of annual power generation.



How has it been delivered?

An online application containing results from this tool has been made available from 25th October 2017 on: www.energyandcities.org/solar-city.



Estimated solar radiation on surface areas in St Mary's, Southampton

Where has it been published?

This tool was presented by Yue Wu in the 5th International Conference on Power and Energy Systems, Enhanced methodology for estimating city-scale roof-top solar PV installation potential.

Who participated?

University of Southampton; Southampton City Counil; Engineering and Physical Sciences Research Council (grant ref: EP/J017698/1, EP/N010779/1, and EP/K012347/1). Data provided by Environment Agency, Digimap, and Ordnance Survey.

Levels of Usability/Testability

This tool is directly applicable in cities in the UK as well as other regions. Validation results can be found in the Ph.D thesis of Yue Wu (2017), available from ePrints, University of Southampton.

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