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EcoGrade

By TheSqua.re

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How We Calculate
EcoGrade

As part of a global economy, it is our duty to do our bit for the environment.

The tourism industry contributes around 8% of total greenhouse gas emissions globally, according to a recent study. Accommodation accounts for 30% of the total greenhouse gas emissions for the tourism industry, vital for the serviced apartment industry to examine our own habits and make a positive contribution in the ongoing fight against climate change.

That is why we have launched EcoGrade.

Gathering Data for **EcoGrade**

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Ecograde collects data that allows us to understand the impact that our apartments are having on the environment. We do this by assessing four main variables: Energy Efficiency, Energy Consumption, Green Energy Suppliers, and Green Transportation.

Each variable and the Ecograde itself is calculated using our proprietary algorithm as a value from 0 to 100, where higher values correspond to better scores. We then convert each numerical value into an easy-to-understand star rating from zero to 5 stars, where more stars corresponds to better.

One of our main sources of data for UK properties is the Energy Performance of Buildings Data, and specifically Energy Performance Certificates (EPCs) - published by the Department for Levelling Up, Housing & Communities (DLUHC) of the UK government. Where we have no information on the number of rooms for a property, we may instead calculate averages based on all the apartment data for the corresponding residential building of the property. As more data is gathered we are able to refine our correlation between apartment floor area and number of rooms for each postcode, and improve our averages. However, it is our ultimate aim for every supplier to provide exact address and number of room details for every apartment we list, enabling us to achieve best accuracy figures.

Calculating Energy Efficiency

We understand the Energy Efficiency of our serviced apartments by analysing the most recent EPC report. EPC reports are impartial assessments of an apartment building's features, but properties may have multiple reports listed and addresses are often poorly recorded. When we retrieve the data we pass it through multiple cleaning layers to ensure we have the most recent report recorded for the correct property. We then retrieve all available energy efficiency data for nine available categories: hot water, floor, windows, walls, secondary heating, roof, main heating, main heating controller, and lighting. These are used as they represent values determined by an expert human surveyor of the property. We then compute a scaled average of these scores to produce the overall Energy Efficiency rating. The higher the energy efficiency, the more environmentally friendly the apartment because it takes less energy to keep the apartment warm.

Calculating Energy Consumption

To understand our apartments' energy consumption, we use KWHm^2 (average energy used per metre squared) as predicted by the EPC. Where possible we improve on this figure using actual meter readings. We have embarked on an ambitious project to upgrade all our properties to smart meters enabling us to read energy usage automatically. However, the values we have for a given apartment only form part of the story because many properties have community heating and/or hot water, meaning that a central boiler within the apartment block provides a more efficient supply compared to individual boilers. We factor this into the calculation for all apartments marked as using a community scheme for heating or hot water. The lower the energy consumption, the more environmentally friendly the apartment. The use of this variable is designed to help reduce environmental impact.

Calculating Green Energy Supplies

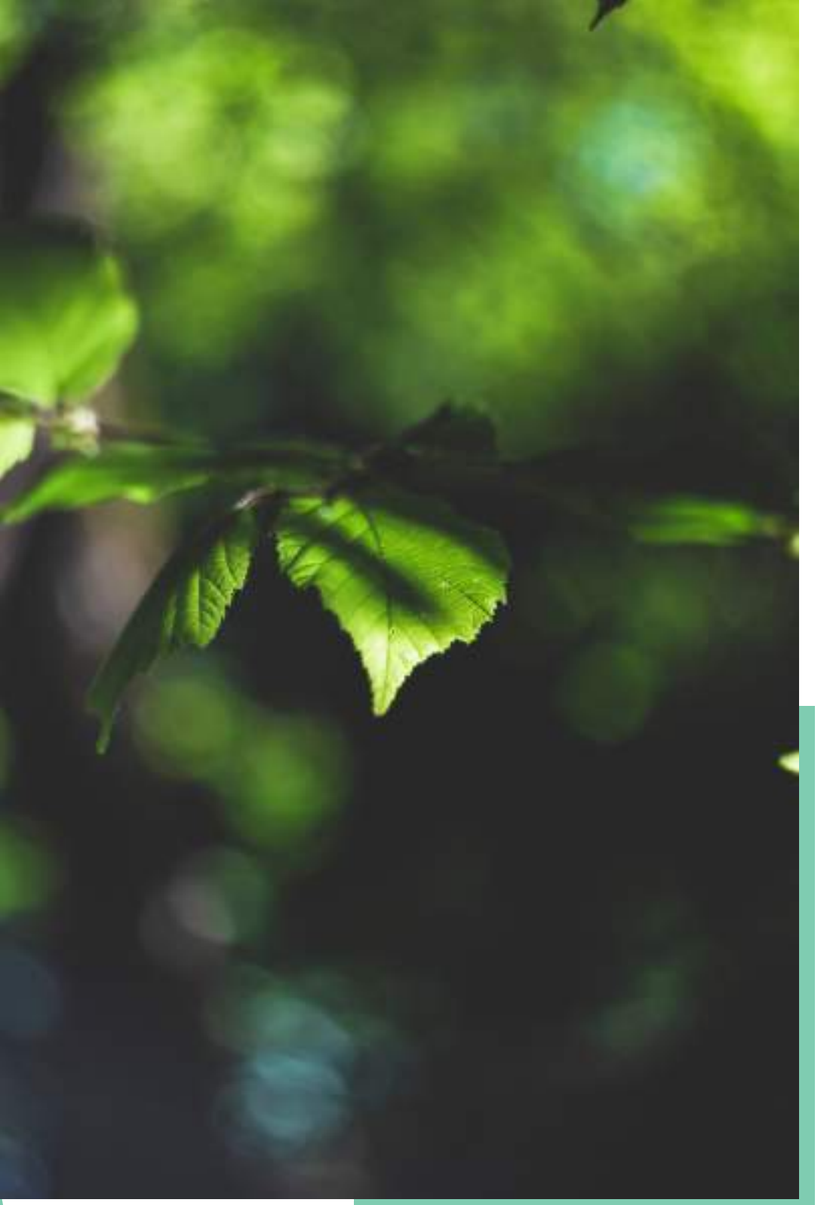
For this metric, we assess the energy suppliers of our apartments. We look at essential utilities such as electricity and gas and assess whether they are provided by companies who deliver on net zero carbon emissions. We do our best to ensure that all our apartments are switched to green energy suppliers and green tariffs. Where we do not have the data concerning suppliers or tariffs we do not include this factor in the overall Ecograde score.

Calculating Green Transport

Proximity to green forms of alternate transportation is crucial to help our guests offset carbon emissions. In London we make use of Transport for London's Unified API to access locations of Bike Points (bike sharing scheme locations) and tube stations. We calculate the average walking distance in minutes from the apartment location to the nearest bike point and tube station assuming an average walking speed of 4mph, transform this into a score, and then report the average score as the value for this factor.

Calculating EcoGrade Star Rating

We scale and normalise values for each variable in order to provide four rating values, which we display as stars. Five stars denote the best possible score for that rating and zero denotes the worst. We also provide an overall EcoGrade rating by combining the four scores and pushing through our proprietary nonlinear transformation function, designed using TheSqua.re's massive datasets and the latest data modelling research, to result in a clearly understandable overall star rating for each property.



Calculating Carbon Emissions

We use EPC data as described for the Ecograde calculation to form the basis of our carbon calculation per apartment, factoring in offsets where apartments may have community schemes for heating and hotwater. We use the latest conversion factors to convert values from energy to carbon emissions in tonnes/year. We will regularly update these values as new conversion factors are made available.

Example

Apartment A is a 71m2 ground-floor apartment in a Victorian building, in an affluent area. It has solid walls, no double glazing, little insulation, an old gas boiler supplied by a green supplier and is 8 minutes from the nearest green transport. Because of this, the apartment is not efficient and has very high energy usage. It scores poorly in EcoGrade:

EcoGrade: ☆			
Energy Efficiency: -	Energy Consumption: -	Green Energy Supplier: ☆ ☆ ☆ ☆ ☆	Green Transport: ☆ ☆ ☆

Apartment B is a large 74m2 mid-floor apartment in a modern block, which also provides heating through a community scheme. It is well insulated throughout and uses very low energy. Its electricity supplier is green, and five minutes from green transport. This apartment has an excellent EcoGrade score:

EcoGrade: ☆ ☆ ☆ ☆ ☆			
Energy Efficiency: ☆ ☆ ☆ ☆ ☆	Energy Consumption: ☆ ☆ ☆ ☆ ☆	Green Energy Supplier: ☆ ☆ ☆ ☆ ☆	Green Transport: ☆ ☆ ☆ ☆

Below are 4 examples of MySquare properties, 2 with high rated and 2 with low rated eco grade scores:-

Room Type (Link/URL)	Canary Gateway at Limehouse by MySquare - 2	Elephant & Castle by MySquare - 2	London City Apartments by MySquare - 1	Heathrow Lodges by MySquare - 1
Image				
Postcode	E14 7QZ	SE17 1GB	EC1V 2PQ	TW3 3GD
Transportation Rating	★★★★★	★★★★★	★★★★★	★★
Energy Efficiency Rating	★★★★★	★★★★★	★	★
Energy Consumption Rating	★★★★	★★★★★	-	★
Green Supplier Rating	★★★★★	★★★★★	★★★★★	★★★★★
Eco Grade Score	★★★★★	★★★★★	★★	★★
CO2 Emissions Highest (per square meter per year)	★	½★	★★★★★	★★
CO2 Emissions Lowest (per square meter per year)	★	½★	★★★★★	★★
CO2 Emissions Average (per square meter per year)	★	½★	★★★★★	★★

Below are 4 examples of supplier properties, 2 with high rated and 2 with low rated eco grade scores:-

Room Type (Link/UR)	Embassy Gardens Apartment - 2 Bedroom	The Stratford Escape - 2 Bedroom	Balham Studio Apartment	Marina Place - 1 Bedroom Apartment
Image				
Postcode	SW11 7AY	E20 1GQ	SW17 8RD	KT1 4BH
Transportation Rating	★★★★★	★★★★★	★★	★★
Energy Efficiency Rating	★★★★★	★★★★★	½	½
Energy Consumption Rating	★★★★★	★★★★	-	½
Green Supplier Rating	★★★★★	★★★★★	★★★★★	★★★★★
Eco Grade Score	★★★★★	★★★★★	★	★
CO_2 Emissions Highest (per square meter per year)	½	★	★★★	★★★
CO_2 Emissions Lowest (per square meter per year)	½	★	★	★
CO_2 Emissions Average (per square meter per year)	½	★	★★	★★

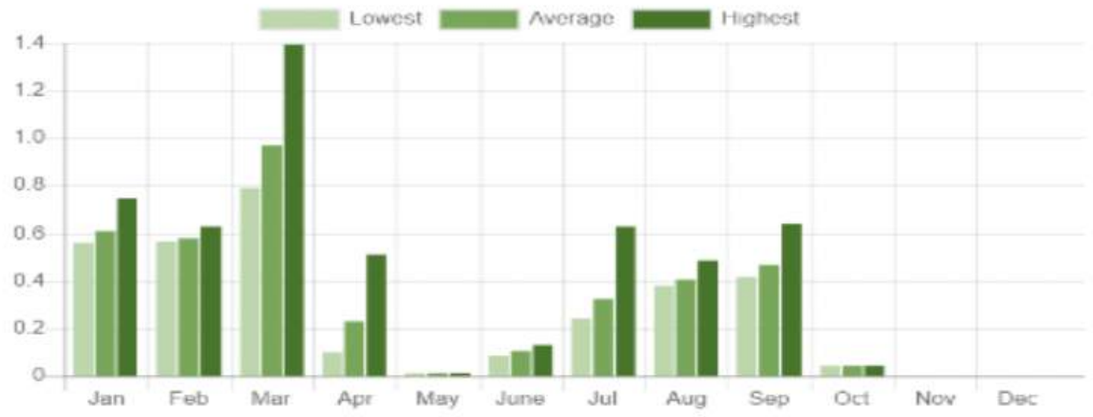
Real Time EcoGrade Dashboard (now live on TheSquare.ai)

Reduce emissions OKRs in your travel program month after month

CO_2 Emissions

Total	This Month
Average: 8.05 t	**Average: 0.41 t**
Lowest: 7.05 t	**Lowest: 0.38 t**
Highest: 10.3 t	**Highest: 0.49 t**

Emission by Month



Average Effciency

This Month		Historic | Last Month
0.97	↑4.18% From last month	0.93

Green Transport

This Month		Historic | Last Month
3.45	↓0.91% From last month	3.48

Green Energy Suppliers

This Month		Historic | Last Month
0.04	↓35.71% From last month	0.06

Energy Consumption

This Month		Historic | Last Month
1.08	↑8.17% From last month	1.0

Carbon emission comparison between name brand hotel in Canary wharf vs MySquare serviced apartment

Factors	Hilton	Apartment 2208 Duckman Tower 3,Lincoln Plaza	Flat 814 Denison House 20, Lanterns Way	Apartment 1401 Talisman Tower 6, Lincoln Plaza
Tonnes of CO_2 per year	2374.30	0.6	1	0.8
TCO_2/m_2 per year	0.12128	0.01277	0.02273	0.01231
TCO_2/m_2 per year	0.00033	0.00003	0.00006	0.00003
Avg room size (m2)	33	47	44	65
TCO2/m2 (per room/ per year)	4.00224	0.60000	1.00000	0.80000
CO_2 footprint during an stay of 30 days (T)	**0.32895**	**0.04932**	**0.08219**	**0.06575**

During a 30 night stay, the CO_2 footprint of a serviced apartment is 85% less than a name brand hotel in Canary Wharf.

Data sources
Energy performance certificate (EPC) - Hilton and Hilton (EPC RR)
Apartment 2208 , Flat 814, Apartment 1401
Hilton room size

What Next?

We are striving to be the world's most environmentally friendly accommodation provider.

In the coming months, we will be rolling out EcoGrade to all our suppliers and encouraging all of our global partners to upload their information to our website.

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