BBP | BETTER BUILDINGS PARTNERSHIP

REAL ESTATE ENVIRONMENTAL BENCHMARK: 2020 ENERGY SNAPSHOT

AUGUST 2021

Introduction

Every year, members of the Better Buildings Partnership (BBP) submit data on their managed UK commercial real estate portfolio into the Real Estate Environmental Benchmark (REEB).

The REEB data set is one of the most comprehensive and up to date databases concerning performance in-use and contains 2028 unique properties. REEB plays an important role in helping property owners to understand how their portfolios compare to industry peers and track performance alongside a net zero carbon trajectory. It also provides valuable insight into the energy performance trends of commercial properties in the UK. The data is made available on an anonymous basis to support a wide range of industry initiatives and research projects. This year the REEB data provided vital evidence to support the BBP led Design for Performance and the recent BEIS consultation on performance in-use.

With the initiative now in its tenth year, this report provides a summary of the 2019/20 results, a retrospective assessment of how BBP members' portfolios have performed over time and a number of new analytical insights. The key highlights include:

- **Performance Improvements:** The energy intensity of properties submitted into REEB continues to improve year-on-year, achieving a 27% improvement over the past 10 years and a 3% improvement between 2018/19 and 2019/20.
- **Progress towards Net Zero:** This year we have added new analysis showing how the REEB office portfolio is performing against the wider industry targets such as the UK Green Building Council's (UKGBC) Energy Use Intensity (EUI) targets and the Carbon Risk Real Estate Monitor (CRREM) energy and carbon pathways. The analysis shows that currently 97% of the REEB Offices fall short of the UKGBC EUI 2035-50 target. The analysis also demonstrates the rate of improvement that will be required to meet these targets.
- **Data Coverage:** The floor area covered by REEB has increased by 171% since 2010/11. This year, five members of the Managing Agents Partnership (MAP) piloted submitting data for REEB. This increase in the size of the data set is expected to continue as more organisations join the BBP and REEB is further rolled out to the wider MAP membership.
- **Data Quality:** The new data validations process continues to improve data integrity, with 2019/20 having the lowest error per property rate to date.

KEY FACTS (2019/20)

31
BBP MEMBERS SUBMITTING DATA

5
MAP MEMBERS SUBMITTING DATA

1,142
PROPERTIES

12.5M
M² OF FLOOR AREA

1,716
GWH ENERGY CONSUMPTION

3%
IMPROVEMENT IN LIKE-FOR-LIKE ENERGY CONSUMPTION SINCE 2018/19

Comparing your own properties

A major output of the REEB project is to produce operational energy benchmarks for the wider industry. These allow other organisations to compare the performance of their own properties using a publicly available tool.
The latest publication detailing the 2020 Benchmarks can be found here.

The Data set

Chart 1. REEB Property Profile

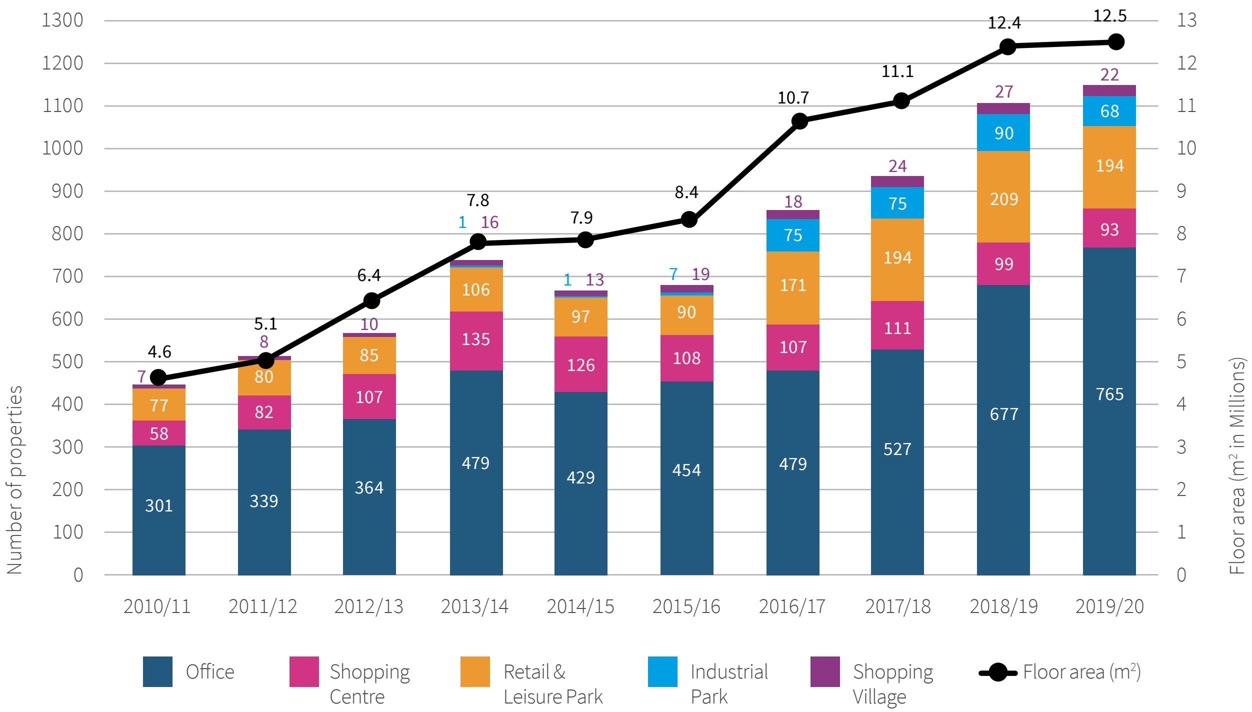

Chart 2. 2019/20 Floor Area Breakdown

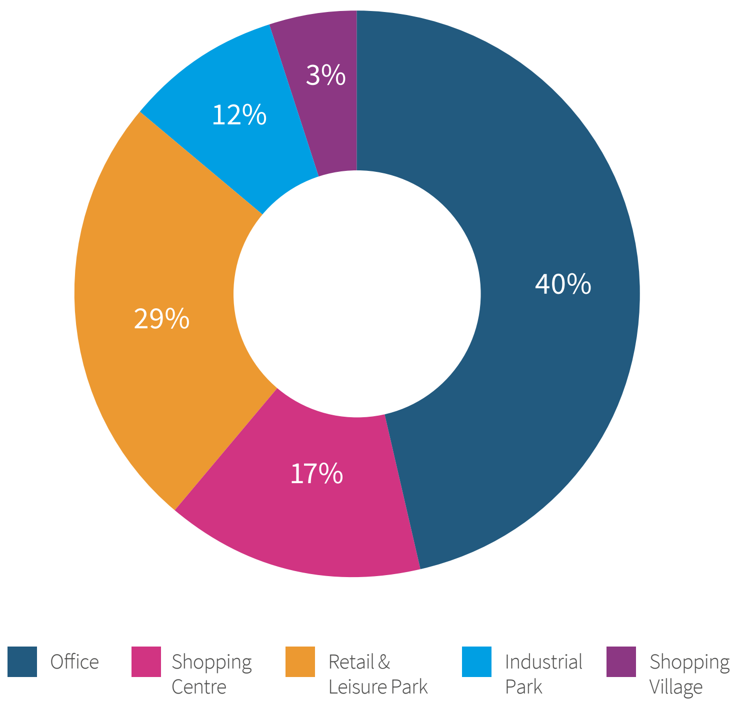

Chart 1 shows the size of the REEB data set over time, by both floor area and the number of properties broken down by property type. Chart 2 provides a breakdown of the 2019/20 floor area by property type. The REEB property profile is dominated by offices accounting for 67% of the properties by number. However, when this is broken down by floor area, offices account for only 40% of the floor area. The REEB office floor area represents approximately 7% of the UK Commercial Office floor area in England & Wales (VOA Database).

The REEB data set continues to grow over time. This year, five members of the Managing Agents Partnership (MAP) piloted the submission of data for a small number of properties. The increase in property numbers and area represent a combination of new BBP and MAP members submitting data for the first time, as well as newly purchased and/or refurbished properties entering the data set. This trend is expected to grow as the BBP membership expands and the members of MAP submit more properties into the database.

THE REEB DATA SET IS GROWING; THE TOTAL NUMBER OF PROPERTIES HAS INCREASED BY 158% AND THE FLOOR AREA BY 171% SINCE 2010/11

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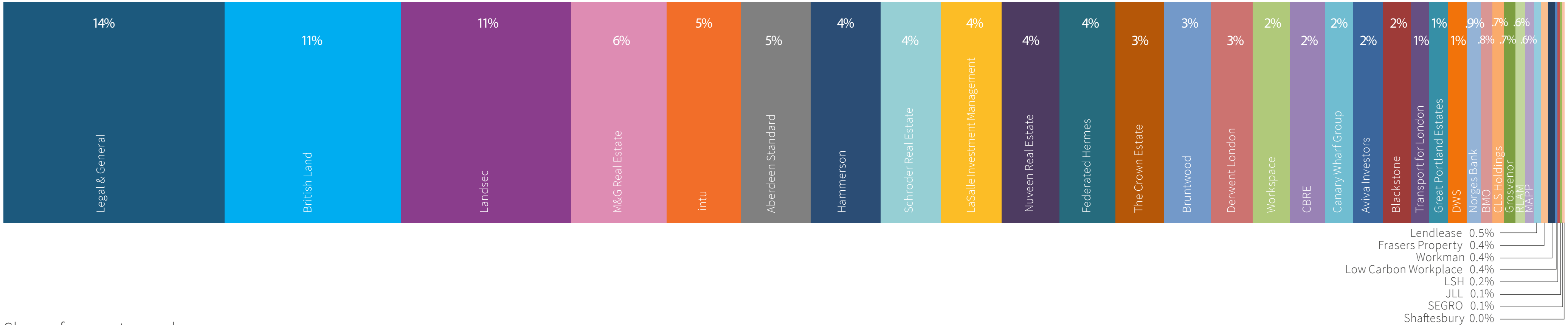
Chart 3: 2019/20 Data set Breakdown by BBP Member

Share of floor area



Share of property numbers

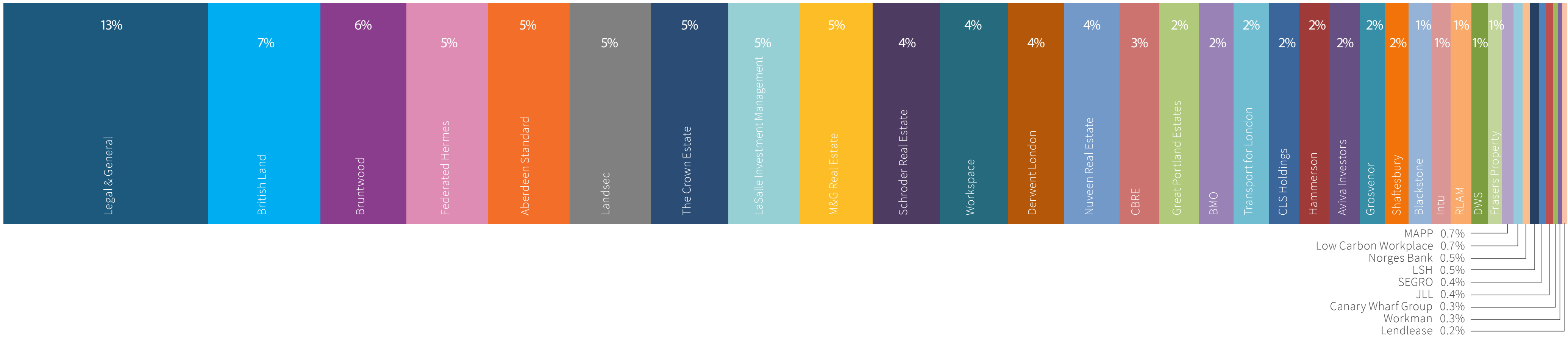


Chart 3 provides a breakdown of the 2019/20 data set by individual BBP member. The upper row provides a breakdown of the total floor area by member, whilst the lower row provides a breakdown of the total number of properties by member.

The chart highlights that not all members are equal in terms of their respective contributions to the data set. Five of the 36 members account for half of the floor area submitted in 2019/20 and nine members represent 50% of the data set by property numbers.

IN 2019/20, 36 COMPANIES SUBMITTED THEIR MANAGED PORTFOLIOS INTO THE REAL ESTATE ENVIRONMENTAL BENCHMARKS.

Energy Trends

Chart 4: Absolute Consumption

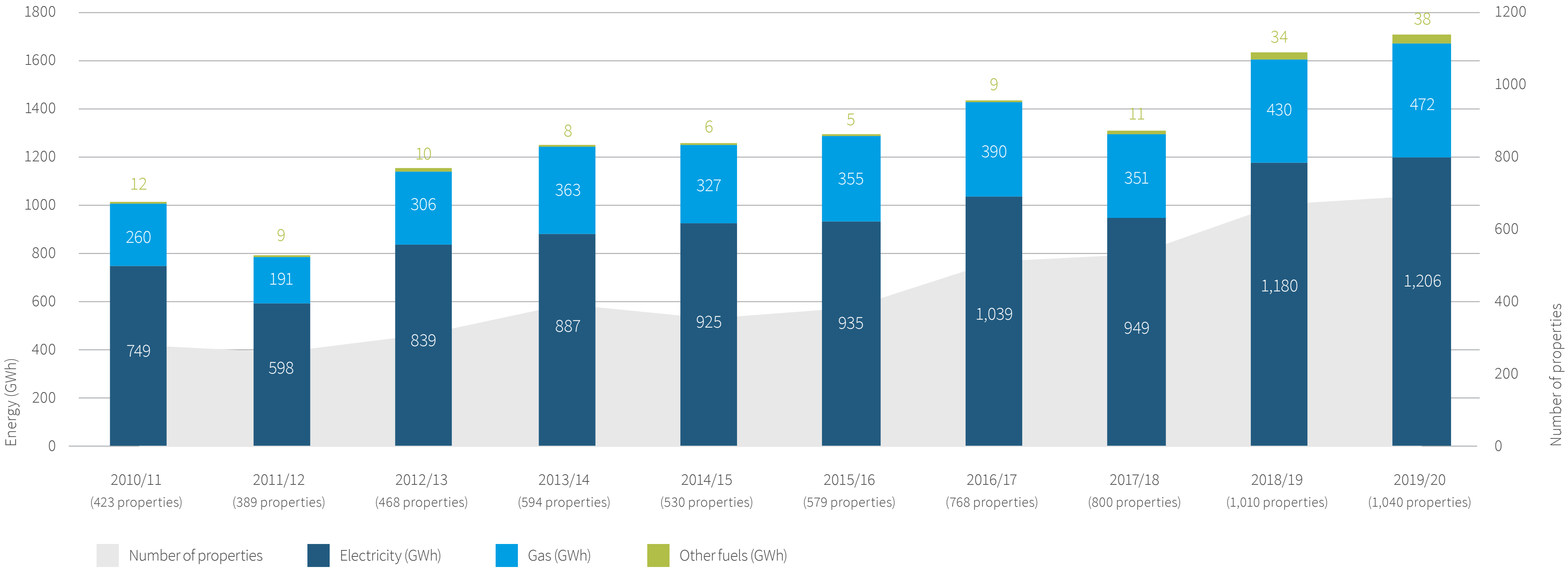


Chart 4 shows the total energy consumption of the REEB data set in GWh over time, broken down by fuel type. The 'Other fuels' here represents consumption related to district heating and cooling, LPG, wood pellets, diesel and fuel oils. In 2019/20, 99% of the other fuel consumption was attributable to district heating while the remaining 1% was from district cooling.

Absolute consumption changes each year based on a number of factors including the number of properties in the data set and the respective activities occurring on site.

THE REEB PORTFOLIO FOR 2019/20 REPRESENTS 1.6% OF TOTAL ELECTRICITY CONSUMPTION AND 1% OF THE TOTAL GAS CONSUMPTION FROM COMMERCIAL PROPERTIES IN THE UK.

(BASED ON DATA COLLECTED FROM THE DUKES)

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Chart 5: 2019/20 Energy Breakdown by Member

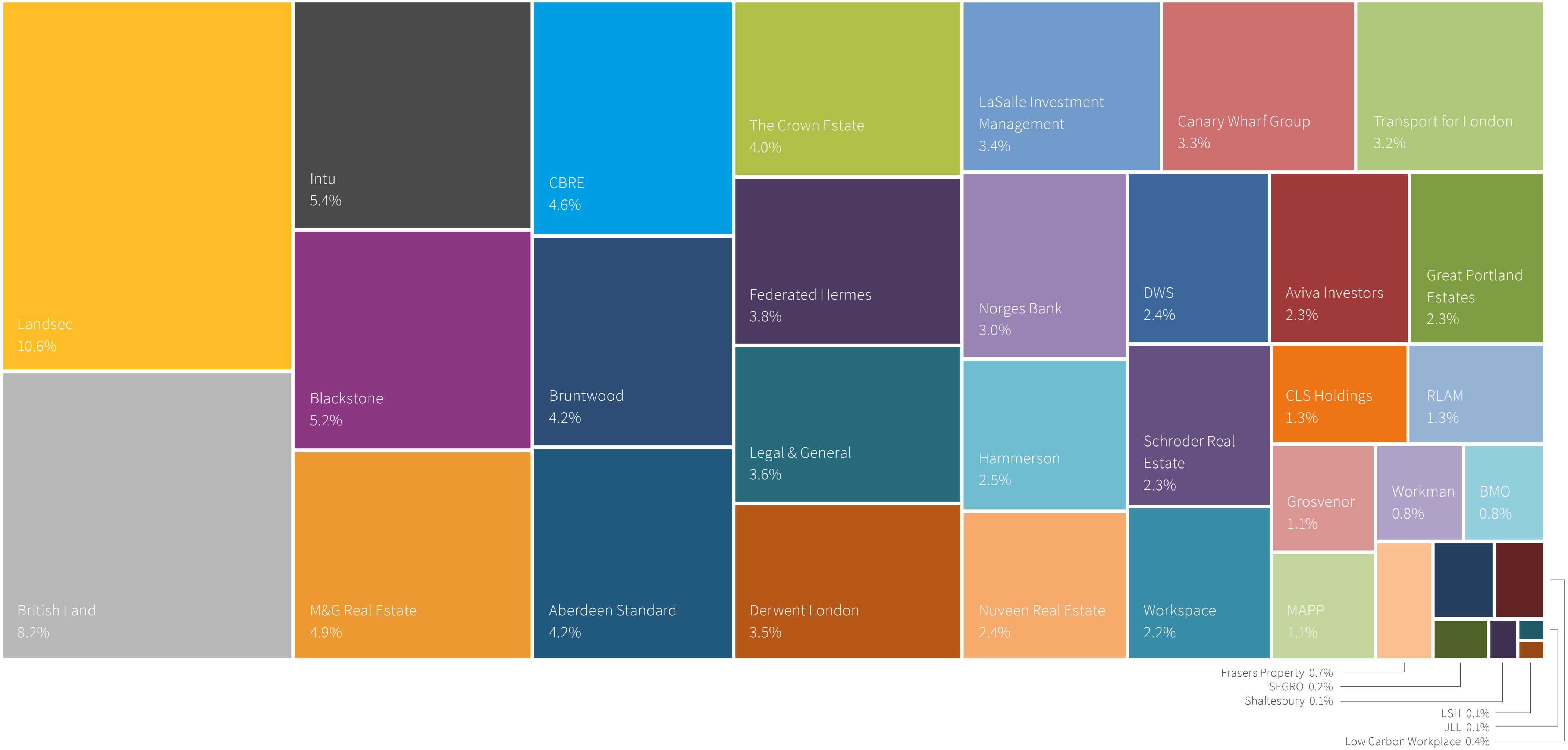

Chart 5 presents the breakdown of total energy consumption of the 2019/20 data set by individual BBP member. The total energy consumption of a portfolio is reliant on the total number of properties in the portfolio and the property types.

THE TOP 25% OF MEMBERS ACCOUNT FOR OVER 50% OF THE 2019/20 ENERGY CONSUMPTION

Chart 6: Like-for-Like Energy Savings Over Time

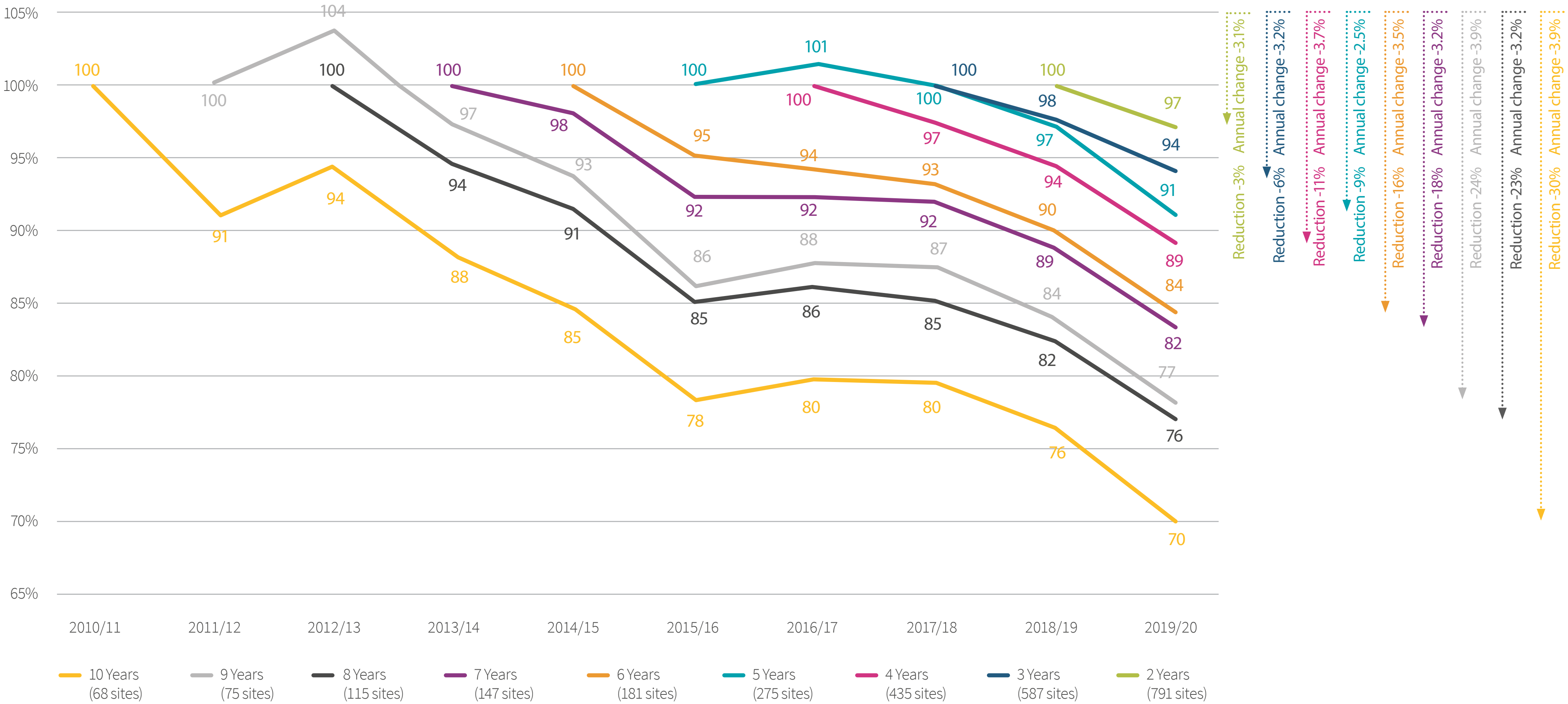

Chart 6 shows the like-for-like energy performance of properties over time. Each line represents a consistent set of properties starting at a different base year and the percentage change in energy consumption tracked each year from that baseline. Figures on the right show the total percentage energy reduction and the annualised rate of reduction per year for the corresponding period.

Comparing properties on a like-for-like basis removes the impact of portfolio churn and provides a fair comparison between a consistent set of properties across years. It demonstrates the action members have taken to drive energy reductions across their portfolios. The properties that have been within the REEB data set the longest have also achieved the greatest like-for-like savings.

68 SITES THAT HAVE REMAINED CONSISTENT WITHIN THE DATA SET SINCE 2010/11, HAVE SEEN AN OVERALL ENERGY REDUCTION OF 30%, EQUATING TO AN ANNUALISED RATE OF REDUCTION OF 3%.

Chart 7: Like-for-Like Energy Savings

Chart 7 shows the change in like-for-like energy consumption of 791 properties that remained consistent over the past two reporting years. The change in energy consumption is further broken down by property type.

A combined total of 3% energy reduction was achieved by BBP members between 2018/19 and 2019/20. Such savings are likely to have been achieved through a combination of energy conservation measures and engagement with occupiers to reduce energy consumption.

THE 791 PROPERTIES THAT REMAINED CONSISTENT WITHIN THE REEB DATABASE OVER THE LAST TWO YEARS, REDUCED IN OVERALL ENERGY CONSUMPTION BY 3.0%

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Chart 8: Indexed Energy Intensity Trend (Electricity Equivalent)

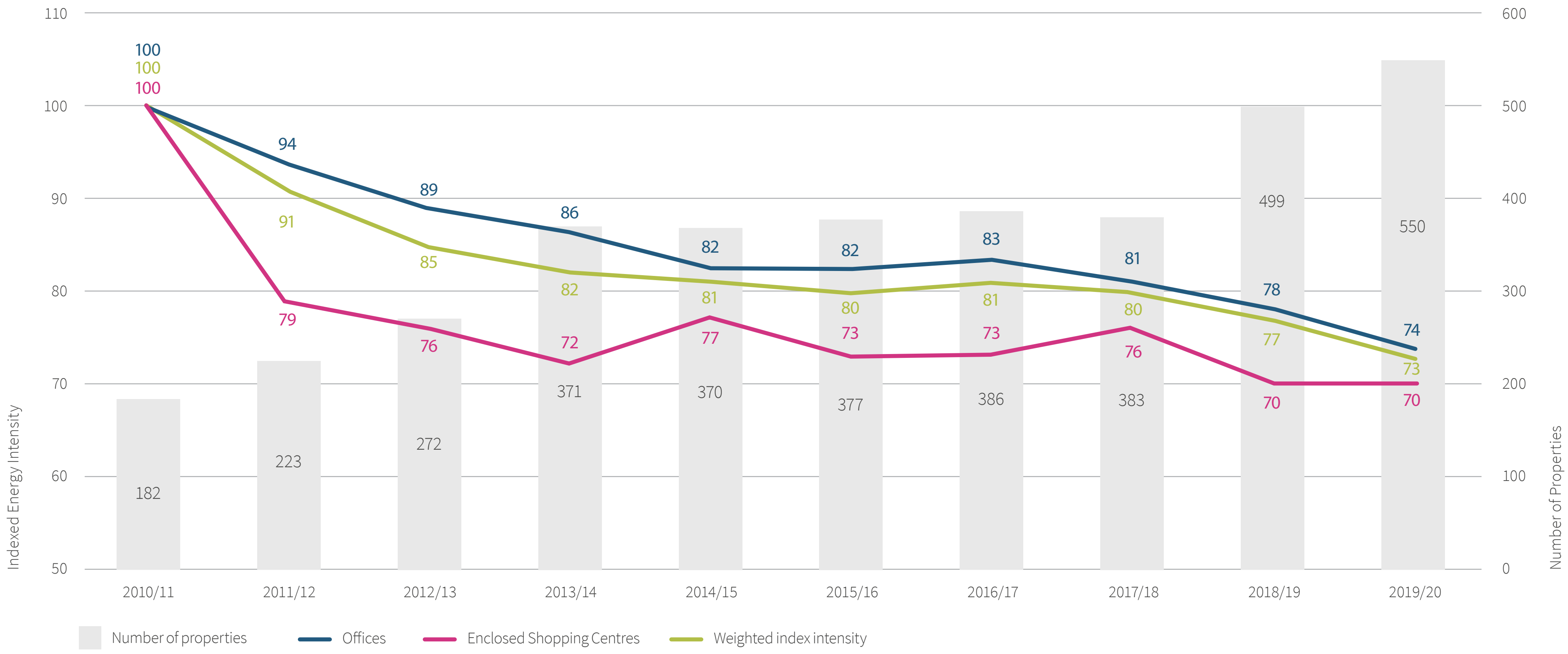

Chart 8 shows the change in the energy intensity of BBP Members' Office and Shopping Centre portfolios as they stood each year. The dynamic nature of commercial real estate portfolios presents a challenge to reporting performance over time. Starting at a baseline of 100, the chart tracks how the energy intensity of properties changes annually over time, in relation to the baseline year. An indexing approach is used, as it allows multiple property types to be combined together into one simple performance metric.

Performance is separated out for Offices and Shopping Centres, which are the largest energy consumers in the data set. The energy intensity of Offices has reduced by 4% in the last year and improved by 26% since 2010/11. The energy intensity of Shopping Centres has improved by 30% in the last 10 years. Both of these property types are combined based on the proportion of the energy consumption they represent to create a weighted intensity figure , with a 4% improvement in the last year and a 27% improvement over 10 years.

BBP MEMBERS ARE DEMONSTRATING CONTINUOUS IMPROVEMENTS IN ENERGY EFFICIENCY OVER TIME.

OVER THE LAST 10 YEARS THE COMBINED ENERGY INTENSITY FOR OFFICES AND ENCLOSED SHOPPING CENTRES HAS REDUCED AT AN ANNUALIZED RATE OF 3% PER YEAR.

Chart 9: Office Energy Intensity (Electricity Equivalent) by EPC Rating 2019/20

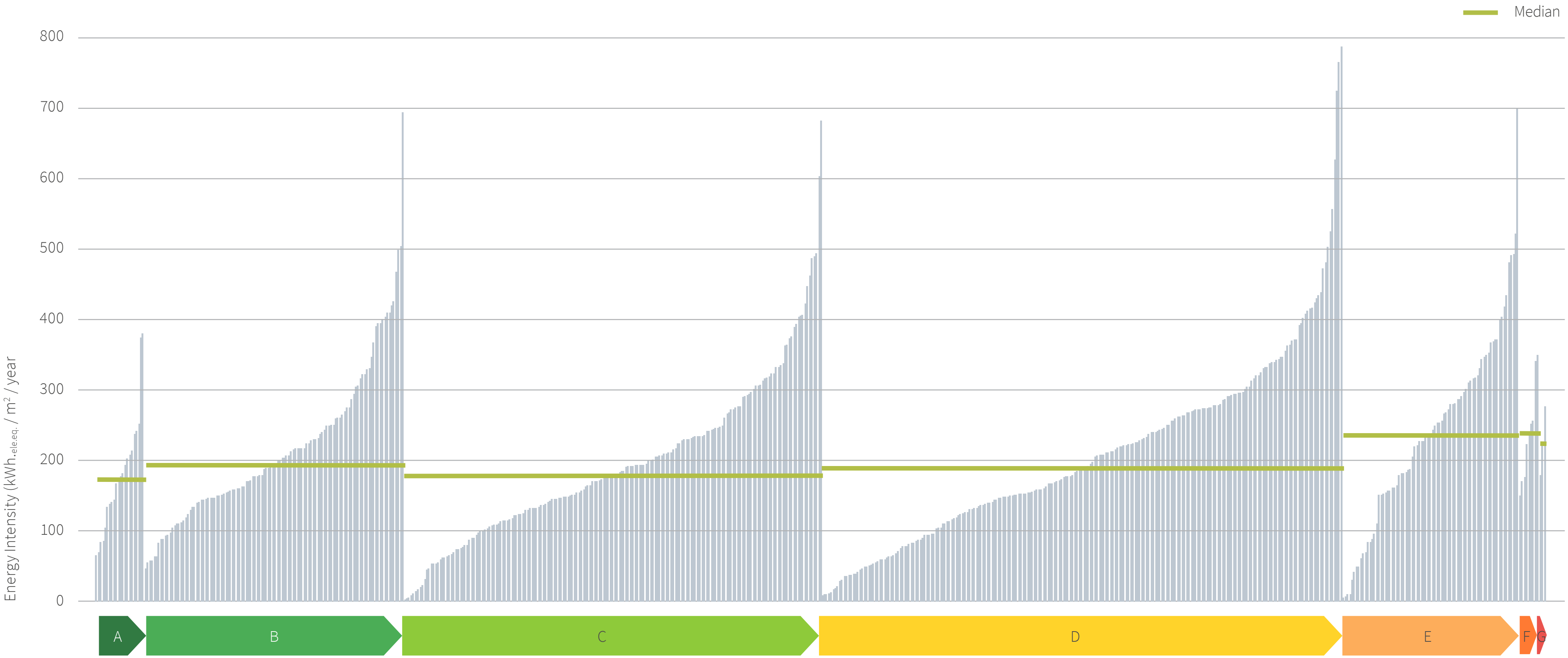

Chart 9 and 10 compare the energy intensities from offices and enclosed shopping centres respectively, with the EPC ratings for those properties. Each grey column represents a single office/enclosed shopping centre's energy intensity for a year. They are then grouped together by their EPC rating. The green horizontal line represents the median value of the energy intensities for that group.

When looking at the relationship between EPC ratings and operational energy intensity, the data suggests a very weak relationship, if any at all, between how efficiently a building uses energy and its EPC rating. When comparing the energy intensities, it can be seen that properties within a high performance band can have intensities higher than a lower performance band. Furthermore, there is a significant variation in the range of energy intensity within each EPC band. This demonstrates that EPCs are not a good indicator of operational energy use and a continuous ratcheting up of design ratings alone will not be adequate to achieve the energy efficiency targets for the UK.

"78% OF OFFICES WITHIN THE REEB DATABASE ARE RATED C OR LOWER, INDICATING THAT INVESTMENT IN IMPROVEMENTS WILL BE REQUIRED TO COMPLY WITH THE MINIMUM ENERGY EFFICIENCY STANDARD OF EPC B BY 2030"

Chart 10: Enclosed Shopping Centre Electricity Equivalent Intensity by EPC Rating 2019/20

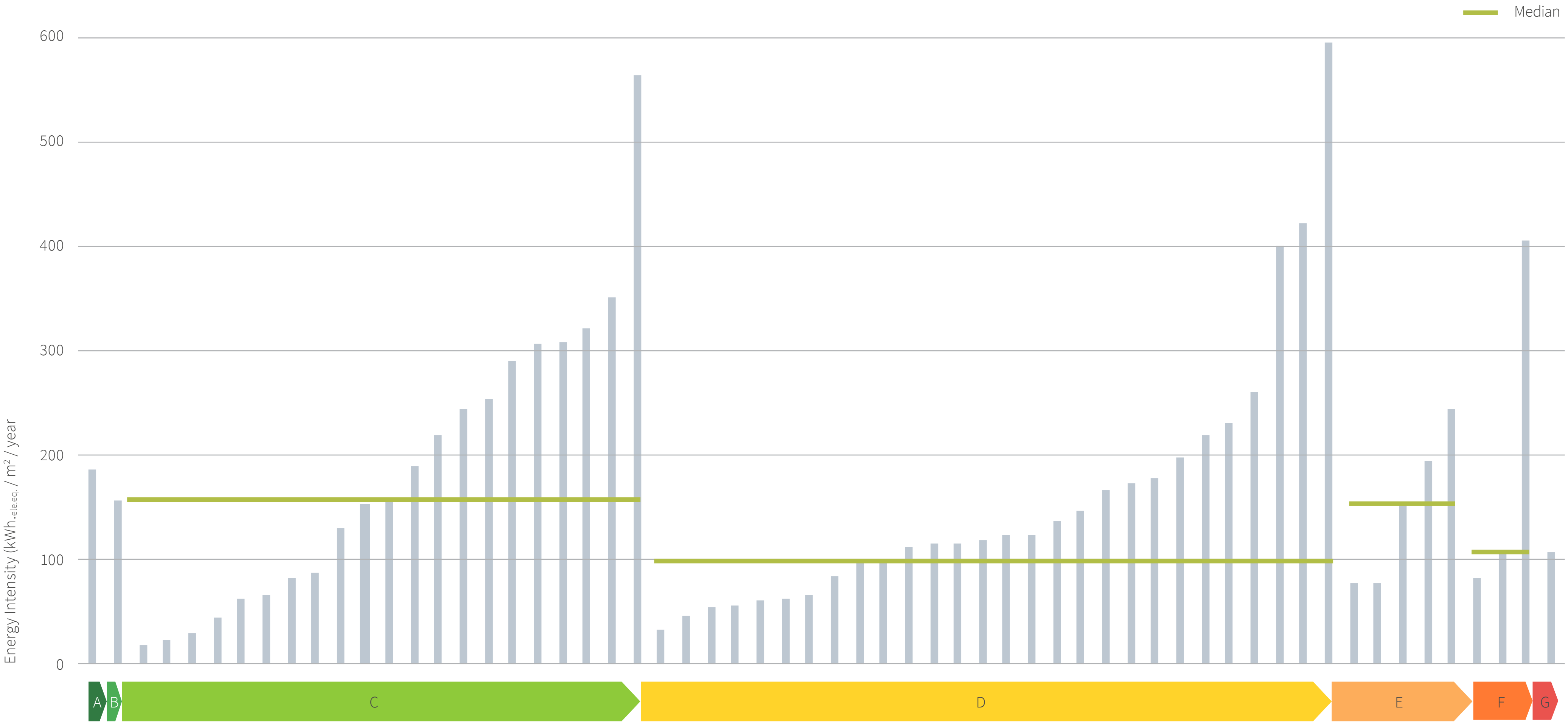

Chart 10 shows the same analysis for enclosed shopping centres as Chart 9, with a much smaller sample size. Similar to chart 9, there is no clear correlation between the operational energy performance and the EPC rating, as properties with better EPC ratings show higher energy intensity than those with lower EPC ratings.

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Chart 11: Number of Office EPC Submitted Over Time

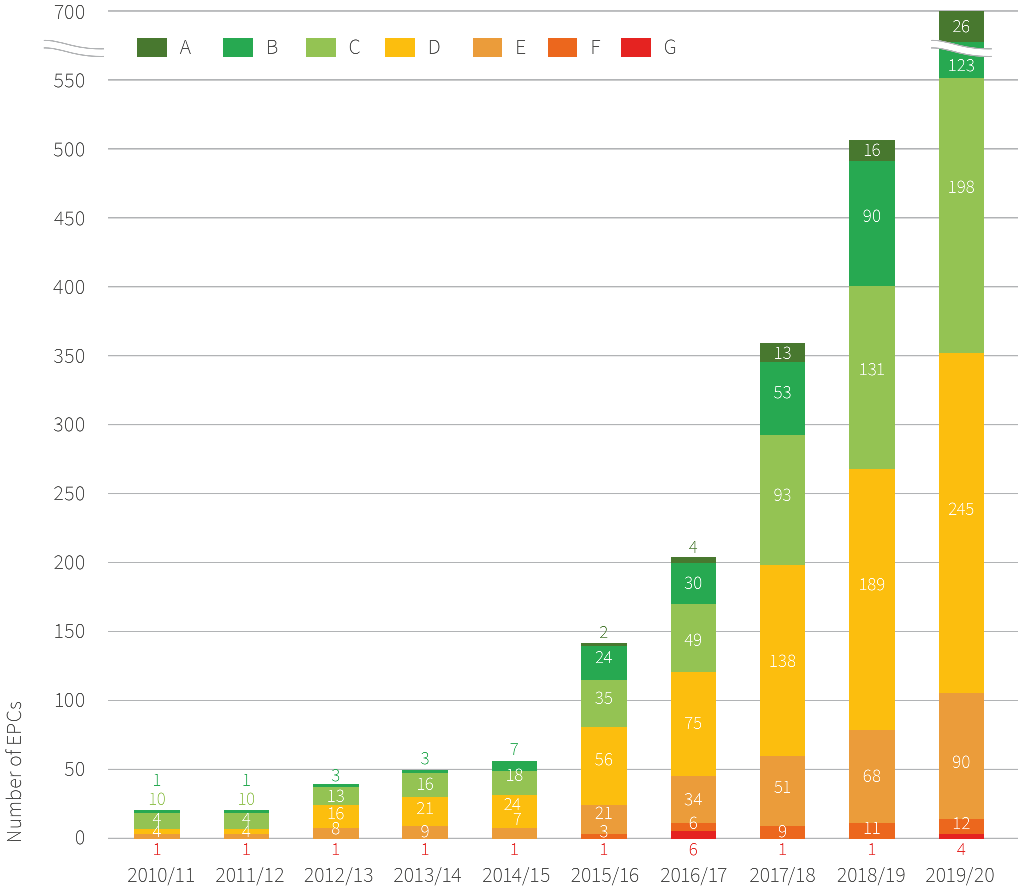


Chart 12: Distribution of Office EPC Over Time

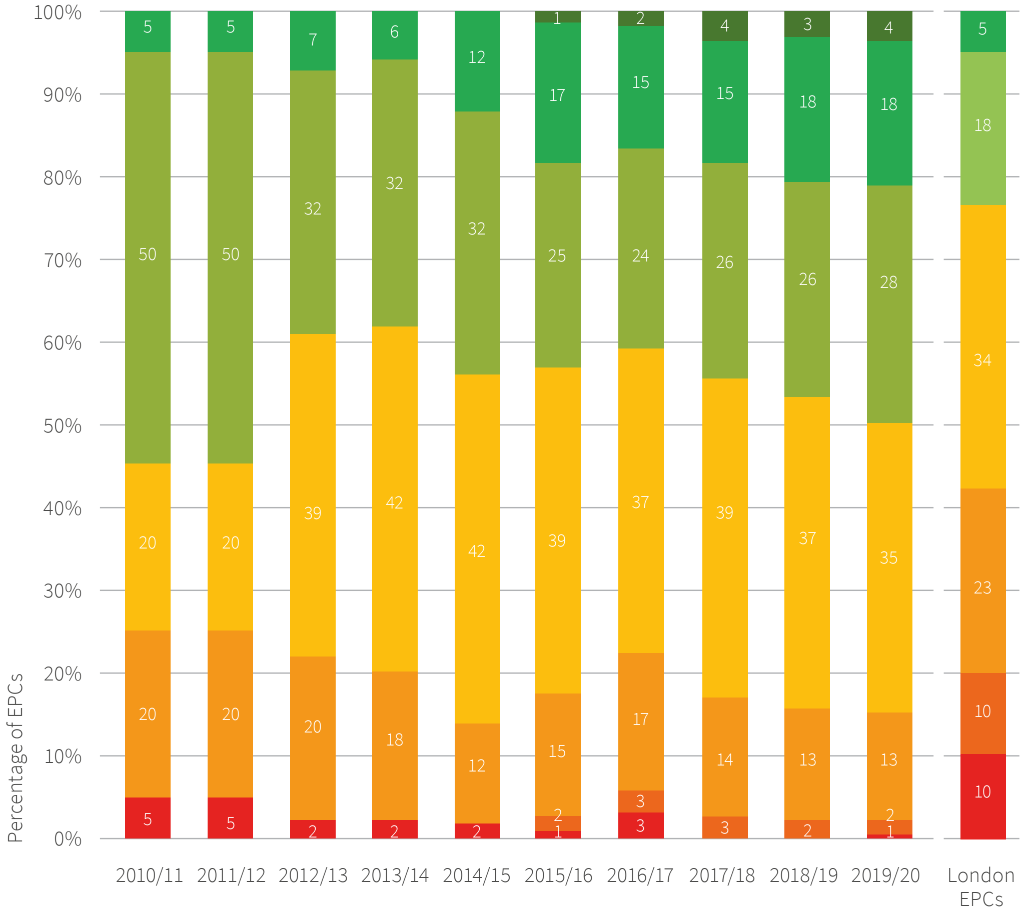
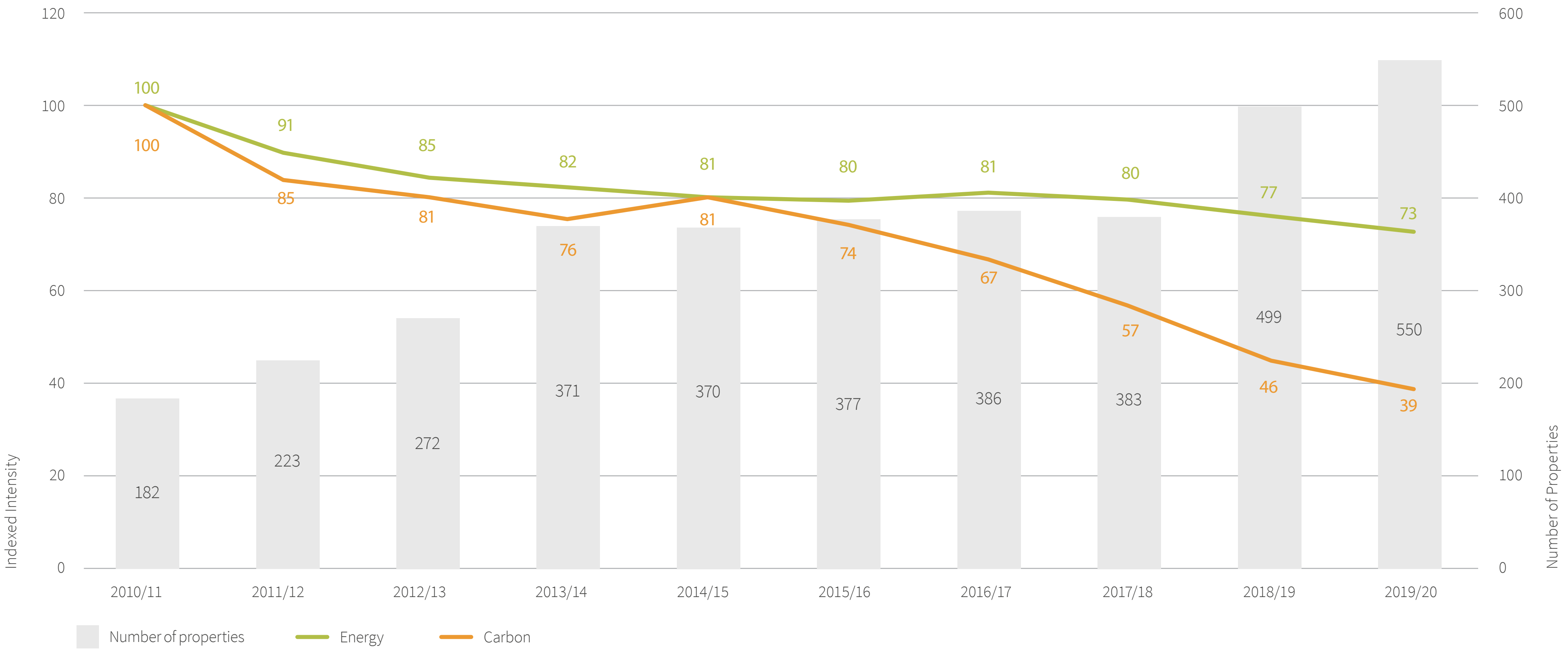


Chart 11 shows the number of offices that submitted an EPC into the REEB database over time. This has steadily increased and in 2019/20 the REEB database contained EPCs from 698 of the 765 offices.

Chart 12 shows how the distribution of office EPC ratings has changed over time. Each column stack represents the proportion of EPCs belonging to its respective band in the given year. The distribution of office EPC ratings shows an improvement of performance over time, with the G rated properties reducing from 5% to 1% and E rated properties reducing from 20% to 13%. More A rated properties have entered the REEB database in recent years which could be the result of either BBP members acquiring or developing A rated properties or improving their existing stock through refurbishments. It is important to note that the UK Government (BEIS) has set-out a long term EPC trajectory under the Minimum Energy Efficiency Standard (MEES) Regulations of an EPC B by 2030. In 2019/20 22% of the offices in the REEB data set had EPC A or B ratings, indicating that 78% of these properties will need to improve their ratings by 2030 in order to comply.

Chart 12 also compares the REEB EPC to the London office EPCs, highlighting that the REEB office portfolio is comparatively of a much higher rating than the London average.

Chart 13: Impact of Grid Decarbonisation

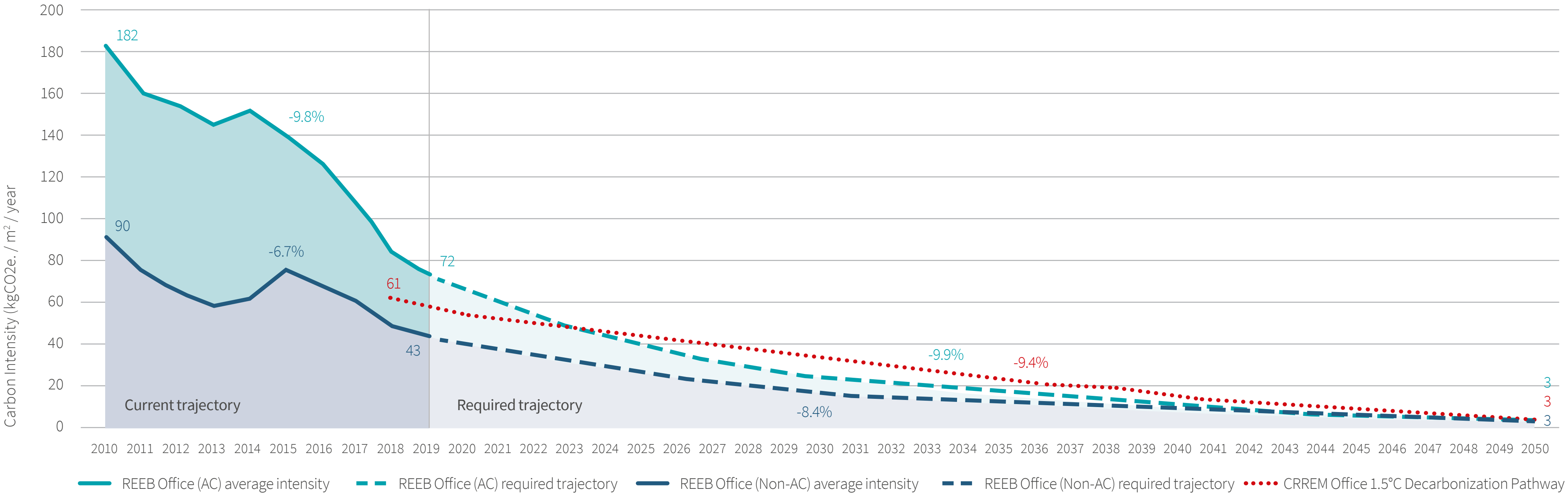


The previous sections of this report have focused on the operational energy performance of buildings within the REEB data set, however, understanding the carbon impact is also important in reviewing how the sector is progressing towards a low-carbon economy.

Chart 13 takes the same indexed energy intensity trend provided in Chart 8 and compares it to the carbon intensity of the same properties. The rate of reduction is significantly greater for carbon intensity, with a 61% reduction in 10 years, in comparison to energy intensity, which has reduced by 27% over the same period. This is down to the decarbonisation of the National Grid and the way electricity is generated and delivered to a building. It should be noted that this does not include renewable energy tariffs or carbon offsets purchased by our members.

With over half of the reduction associated with the lowering of the carbon intensity of the National Grid, the chart illustrates the important role that electricity generation plays in delivering a net zero carbon future. This raises an interesting question concerning the responsibility for delivering carbon reductions going forward i.e. what proportion of carbon reductions achieved should be through improved energy efficiency of buildings as compared to the reductions achieved as a result of decarbonising the grid? This is explored in the forthcoming charts.

Chart 14: REEB Office Trajectory against CRREM Carbon Targets for Offices



When assessing whether a building is "net zero carbon", the definitions of a net zero carbon building and their associated specifications are still the subject of discussion and debate within the industry. However, an accepted principle is that any building claiming to be net zero carbon needs to demonstrate a level of operational efficiency. To assess this, a number of industry initiatives have developed targets, focused on individual property types, to establish where buildings sit on the pathway to zero carbon in terms of their operational performance. One of those initiatives is the Carbon Risk Real Estate Monitor (CRREM). The CRREM initiative has published carbon and energy pathways for a range of property types in different countries across the globe from 2018 through to 2050. Using the REEB data, we can map progress of participant buildings against those CRREM pathways. The chart above specifically compares UK offices against the 1.5°C CRREM carbon pathway shown here by the red dotted line.

The chart shows the historical average carbon intensities of air-conditioned and non-airconditioned offices within the REEB data set and their annualised rates of reduction, and then forecasts the rates of reduction required to meet the 2050 CRREM targets.

Using the REEB data up to 2020, the chart demonstrates that:

- The non-airconditioned office group has been reducing their carbon intensity by 6.7% per annum and whilst in a good position now, according to the requirements set by the CRREM pathway, this will need to increase to 8.4% per annum to get to the 2050 target.
- The REEB air-conditioned office group has been reducing their carbon intensity by 9.8% per year and will need to continue at 9.9% per annum to achieve the CRREM 2050 target.

Offices seeking to meet these CRREM pathway targets, while dependent on the decarbonisation of the National Grid, will also need to deliver changes through operational efficiencies at the building level. These targets will, therefore, need to be accompanied by energy use intensity targets that reflect the level of operational efficiency necessary to comply with the CRREM pathway(see Chart 16).

The following points should be noted relating to this analysis:

- A key point of difference between CRREM and the REEB methodology that impacts this analysis is that CRREM uses Gross Internal Area (GIA) as the denominator for intensity analysis, while REEB uses Net Lettable Area (NLA).
- The carbon emission trajectories in the analysis are based on a standard grid mix of fuels.
- The analysis is based on an average across the REEB data set. There are therefore, likely to be differences in how individual offices perform in relation to this pathway, with some requiring significant intervention to meet the required CRREM pathway targets.

Chart 15: REEB Office Trajectory against CRREM Energy Targets for Offices

Chart 15 maps the progress of the REEB office portfolio against the CRREM office 1.5°C energy pathway. The chart shows the historical average energy intensities of air-conditioned and non-airconditioned offices within the REEB data set and their annualised rates of reduction. It forecasts the rates of reduction required to meet the 2050 CRREM energy target.

Using the REEB data up to 2020, the chart demonstrates that:

- The non-airconditioned office group has a lower energy intensity in 2020 than necessary according to the CREEM energy pathway. Whilst in a better position now, non-airconditioned offices will need to increase the rate of reduction from 3.8% to 6.3% per year to meet the 2050 CRREM target.
- Air-conditioned offices are above the CRREM pathway target required in 2020. Furthermore, when forecasting the rates of reduction required by 2050, air-conditioned offices will need to accelerate their rate of reduction from 3.9% per annum to 7.8% per annum leading up to 2050.

Once again it should be noted that a key point of difference between the CRREM and REEB methodology is the denominator that is used for the intensity analysis. CRREM uses Gross Internal Area (GIA) while REEB uses Net Lettable Area (NLA). Separately, the analysis is based on an average across the REEB data set. There are therefore, likely to be differences in how individual offices perform in relation to this pathway, with some requiring significant intervention to meet the required CRREM pathway targets.

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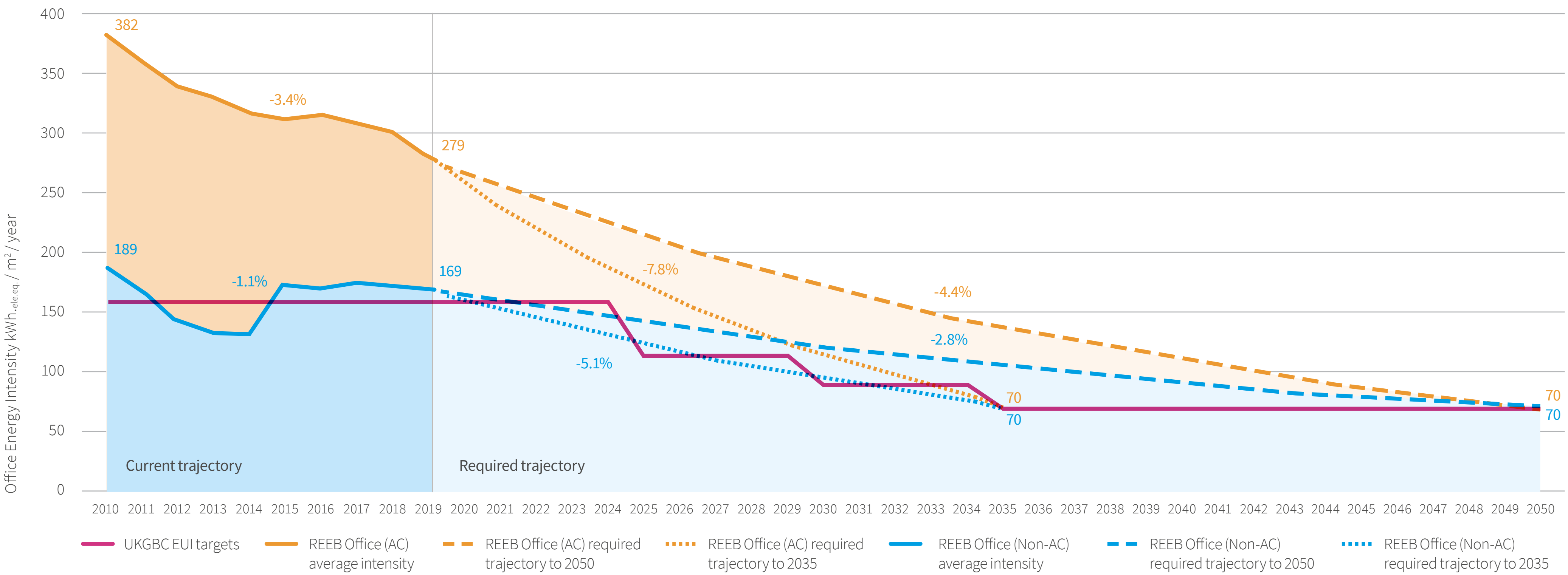
Chart 16: REEB Office Trajectory against UKGBC Energy Targets for Offices



The UK Green Building Council has led the development of a Net Zero Carbon building definition for the UK. Part of that definition is an indicator of energy efficiency, articulated as Energy Use Intensity (EUI). The principle being, a building claiming to be net zero carbon must demonstrate a level of energy efficiency before utilising other strategies to reach net zero (e.g. renewables procurement or offsetting). They indicate that this could be demonstrated through the use of Display Energy Certificates, NABERS UK Rating or compliance with their EUI target as outlined in UKGBC Technical Report: Energy performance Targets for Offices.

Chart 16 highlights the change in average energy intensity for the REEB air-conditioned and non-airconditioned offices from 2010 to 2020 and provides their respective annualised rate of change. It also provides the rate of change that will be required to meet the UKGBC office EUI target by 2035 and 2050. This analysis indicates that:

- Air-conditioned offices currently have a significantly higher average energy intensity than the UKGBC targets. If the annualised rates of reduction increase from 3.4% to 4.4.%, they will reach the UKGBC target of 70 kWh per m² by 2050, but it will be more difficult to meet the 2035 target, which would require an average annual reduction rate of 7.8%.
- The REEB Non-airconditioned office group comparatively requires a lower rate of reduction. To meet the UKGBC 2050 EUI target, they will have to reduce at the rate of 2.8% every year, while meeting the EUI target in 2035 will require a reduction rate of 5.1%. However the REEB analysis indicates that the average rate of reduction over the past 10 years has been 1.1% per annum, the properties will thus need to accelerate efficiency measure to meet the UKGBC EUI targets.

It is to be noted that CRREM energy targets are expressed as kWh/m²/year, while UKGBC EUI targets are expressed in kWh.$_{elec.eq.}$/m²/year. This explains the difference in the starting point for the REEB Office energy trajectories. The CRREM and UKGBC targets also differ in the methodologies used to arrive at their targets.

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Chart 17: REEB Office Energy Intensities against UKGBC Targets

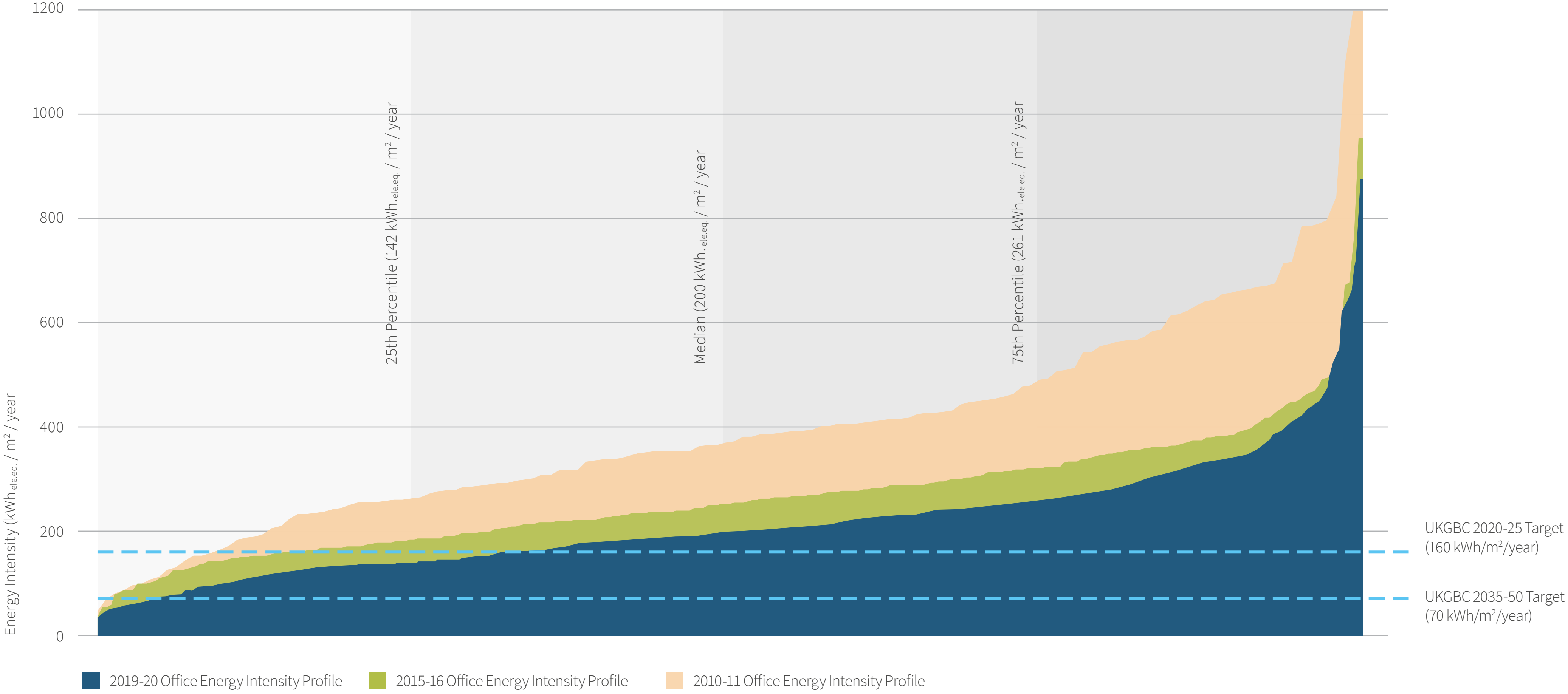

Chart 17 provides a deeper dive into the trends highlighted in chart 16 by providing the profile of all the office intensities, ranked from least energy intensive to most energy intensive for three different years: 2010-11, 2015-16 and 2019-20. The chart illustrates the shift in intensity profiles over time and compares that to the UKGBC net zero carbon office energy use intensities (EUIs). This demonstrates that whilst the profile has shifted significantly since 2010-11, currently over 97% of the REEB Offices would fall short of the UKGBC 2035 – 2050 target and 68% fall short of the 2020-25 target.

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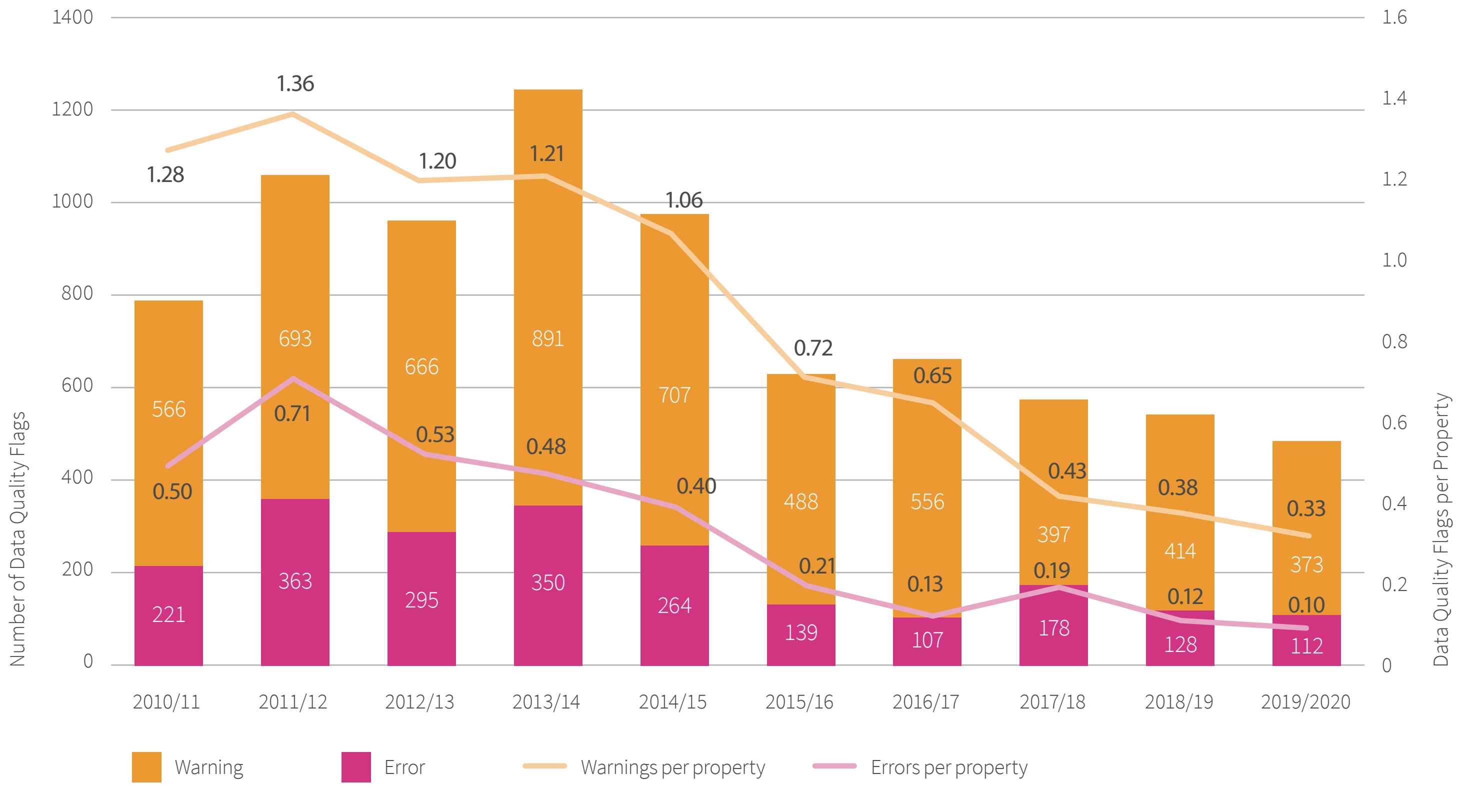
Data Quality

Chart 18: Data quality over time



TOP 5 ERRORS	
Blank Occupancy Level	28
Energy Intensity Threshold Breach	20
Significant like for like consumption change	18
Blank Landlord Procured Electricity	10
Blank Area	9

TOP 5 WARNINGS	
Blank EPC Rating	97
Blank Multi-Storey car Park Electricity	41
Occupancy change greater than 25%	29
Blank Operating Hours	26
Blank Open-air Surface Level car Park Electricity	18

On comparing the results from this report to previous years, readers may note changes within some historic figures. There are a number of reasons why this occurs:

- New properties that entered the data set in 2019/20 provided multiple years of data, impacting historic performance
- Participants identifying data inaccuracies in historic data and correcting these where relevant.

It should be noted that the total number of errors and warnings does not directly correlate to the number of properties excluded from the REEB benchmarks and analyses, as individual properties may have multiple errors and warnings. However, the average error and warnings triggered per property has decreased over time as data quality improves.

Data integrity and transparency are important aspects of any benchmarking and data analysis process. For each REEB data 'snapshot' report, efforts are made to ensure that information is presented in a clear, concise and transparent way. Chart 18 shows how the data quality of the REEB data set has improved over time. The pink bar shows the number of errors, that highlight critical data quality issues that result in a property being excluded from the benchmarks and the REEB data snapshot. The orange bar highlights the number of warnings i.e. less critical items that do not exclude the site from benchmarks. The number of errors has been consistently reducing over time and is down to 0.1 error per property this year. This is due to members reviewing and correcting data quality issues flagged through REEB and providing additional information to corroborate figures.

Methodology Notes

Data Quality

Properties included within the REEB analysis must meet strict data quality controls. The criteria for excluding properties are:

- Properties with missing data that is vital to the analysis.
- Properties that show abnormal changes between years and data anomalies that cannot be explained or confirmed by the data provider.
- Energy intensity thresholds are used to identify properties where data may be have been submitted incorrectly. The thresholds are set out in the table 1 below. Properties that trigger threshold flags, and remain unexplained, are removed from all energy intensity analyses

Table 1 REEB data quality energy intensity thresholds

Property Type	**Lower Threshold** (kWh.$_{ele.eq.}$/m^2/year)	**Higher Threshold** (kWh.$_{ele.eq.}$/m^2/year)
Office (Non-airconditioned)	30	600
Office (Air-conditioned)	50	1000
Enclosed Shopping Centre (Non-Airconditioned)	30	600
Enclosed Shopping Centre (Air-conditioned)	30	600
Unenclosed Shopping Centre	0.4	400
Shopping Village	-	150
Retail, Leisure and Industrial Park	-	50

Property Type Definitions and Scope of Data Collection

Offices

Definition: A property with a single tenant or multiple tenants used to conduct commercial business activities.

Floor Area: Net Lettable Area (NLA), all lettable or rentable office space (excluding car parks) in the property. This should also include vacant space.

Scope of Data Collection: Energy consumption relates to whole building but excludes any mixed-use elements such as retail spaces and gyms. It is recognised that whole building energy intensity using NLA as the denominator is, to an extent, a mismatch between numerator and denominator (using Net Lettable Area as opposed to Gross Internal Area) but this is the most consistently available and accurate denominator from participants.

Additionally, the following rules are applied:

- **Absolute Consumption and Like for Like Analysis (charts 5,7 and 8):** Only properties that remain consistent in their energy scope, and where occupancy rates do not change by 25% or more, are included.
- **Energy Intensity Analysis (charts 9 to 11 and 13 to 17):** Only Offices where whole building energy performance data is provided, and where occupancy rates are at least 75%, are included. Where offices include dealing floors and data centres, energy consumption relating to these uses are removed from the analysis where sub-metered data and floor area is provided.

Enclosed Shopping Centres

Definition: An enclosed retail property that includes a central common mall area and adjoining retail units. The retail units typically do not have any independent access and are accessed through the common mall area. Such properties are typically not accessible to the public after closing hours.

Floor Area: Common Parts Area (CPA), the area within a retail destination that is typically referred to as the 'mall' area. It is the area controlled by the landlord and includes the mall area, circulation areas, staircase, escalators, lifts fully enclosed service areas and storage areas.

Scope of Data Collection: Energy consumption relates to common parts area. It excludes all retail units and car park energy consumption.

Unenclosed Shopping Centres

Definition: A partially open retail property that includes a central common mall area. The common mall area is not fully sealed, e.g. there is a roof but open entrances, and therefore accessible to the public after store closing hours.

Floor Area: Common Parts Area (CPA), area within a retail destination that is typically referred to as the 'mall' area. It is the area controlled by the landlord and includes the mall area, circulation areas including external walkways, staircases, escalators, lifts, enclosed service and storage areas and courts that may be semi-covered or open.

Scope of Data Collection: Energy consumption relates to the common parts area and excludes all retail units and car parks. Energy consumption constitutes artificial lighting associated with common parts and may or may not have no centralised heating or ventilation.

Shopping Village

Definition: A shopping destination characterised by rows of shops/retail units that are accessed via open pedestrianised streets and are located within well landscaped areas. The car park, where present, is generally located on an adjoining site, but a small amount of car parking may exist around the shops as well.

Floor Area: Includes the Common Parts Area and the Open-Air Car Park. The common part constitutes the external landscaped areas, pedestrianised streets and service yards that fall within the site boundary. The Open-Air Car Park Spaces are calculated using the car park numbers multiplied by 25m^2 (based on REVO Guidance Note 76 – Construction Costs of Shopping Centre Car Parks).

Scope of Data Collection: Energy consumption is mainly associated with the lighting of external areas, service yards, open-air car parks external landscaped area and walkways. Multi-storey car parks are not included.

Retail and Leisure Park

Retail Park Definition: An out-of-town, open-air retail facility that comprises mainly medium and large-scale specialist retailers. It is characterised by mostly free-standing properties, with ample onsite parking located in front of the stores and/or around the site at ground level.

Leisure Park Definition: An out of town, open-air leisure facility, that may also include some retail units. Similar in nature to a Retail Park, but includes facilities such as bowling, cinemas etc. It is characterised by mostly freestanding, with ample on-site parking located in front of the stores and/or around the site at ground level.

Floor Area: The denominator used is the number of car park spaces, which is then converted into area. Each car park space represents 25m^2 (based on REVO Guidance Note 76 – Construction Costs of Shopping Centre Car Parks). It is recognised that car parking spaces may not be the most accurate denominator. However, in the absence of a more suitable denominator that is consistently available and accurately recorded by participants, this is seen as the best option.

Scope of Data Collection: Energy consumption is mainly associated with the lighting of an open-air car park, service yard and any external landscaped areas. Multi-storey car parks are not included.

Industrial Park

Definition: A site that contains multiple, freestanding office or logistics buildings grouped together. On-site parking is typically located in front of each building and/or around the site. Landscaped areas may also exist within the site.

Floor Area: External area, given as Gross Plot Area minus Building Footprint.

Scope of Data Collection: Energy consumption is mainly associated with the lighting of an open-air car park, service yard and any external landscaped areas. Multi-storey car parks are not included.

Adjustments

Electricity equivalent (kWh.$_{ele.eq.}$) = kWh of electricity equivalent. Electricity 'equivalence' is calculated using the ratio of primary energy of each fuel compared to electricity. It combines into kWh of electricity equivalent, measuring the amount of electricity used and adding an equivalent amount to account for any other fuels used. Electricity equivalent adjustments are only applied to the Intensity analyses in chart 9, 10, 11, 13, 16 and 17. The table below provides the co-efficient factors used to convert the fuel types.

Fuels and thermal energy consumption for heating is not adjusted for weather or operating hours.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gas / LPG	0.45	0.47	0.46	0.47	0.49	0.53	0.56	0.59	0.66	0.70	0.72
Fuel oil	0.47	0.49	0.48	0.49	0.52	0.56	0.59	0.61	0.69	0.73	0.75
Wood pellets	0.54	0.56	0.55	0.57	0.59	0.64	0.67	0.70	0.79	0.84	0.86
District heating	0.55	0.56	0.55	0.57	0.59	0.64	0.67	0.71	0.79	0.84	0.86
District cooling	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40

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- Blackstone
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- British Land
- bruntwood
- Canary Wharf Group PLC
- CBRE
- CLS Holdings plc
- Derwent London
- DWS
- Frasers Property
- Great Portland Estates
- Grosvenor
- Hammerson
- Federated Hermes
- intu
- JLL
- Lambert Smith Hampton
- Landsec
- LaSalle Investment Management
- Legal & General Investment Management
- lendlease
- Low Carbon Workplace Partnership
- M&G Real Estate
- MAPP
- Norges Bank Investment Management
- Schroders
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