Department for
Business, Energy
& Industrial Strategy

Introducing a Performance-Based Policy Framework in large Commercial and Industrial Buildings in England and Wales

Closing date: 9 June 2021

March 2021

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Any enquiries regarding this publication should be sent to us at:
businessenergyuse@beis.gov.uk

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General information

Why we are consulting

In October 2019, the Government told the Climate Change Committee that it would consult on introducing a new scheme that would rate commercial and industrial buildings based on their actual energy consumption and carbon emissions.

This consultation delivers on that commitment. It seeks views on the Government's proposal to introduce a national performance-based framework for assessing energy use and carbon emissions in commercial and industrial buildings above 1,000m² in England and Wales.

Consultation details

Issued: 17 March 2021

Respond by: 9 June 2021

Please do not send responses by post to the department during the coronavirus pandemic (COVID-19), as we will not be able to access them.

Enquiries to:

Tel: 020 7215 5000
Email: businessenergyuse@beis.gov.uk

Consultation reference: Introducing a Performance-Based Policy Framework in large Commercial and Industrial Buildings in England and Wales

Audience:

Building owners, tenants, landlords, real estate investors, asset management/consultancies, from both large and small organisations as well as the wider energy efficiency supply chain that will be required to deliver building energy efficiency and management measures. Stakeholders in the office sector will also be a key audience for this consultation as the proposals set out here are particularly relevant to this sector.

Territorial extent:

England and Wales only.

How to respond

The use of Citizen Space would be the preferred response method. Please do not send responses by post to the department during the coronavirus pandemic (COVID-19), as we will not be able to access them.

Respond online at: https://beisgovuk.citizenspace.com/energy-efficiency/introducing-a-performance-based-policy-framework

or

Email to: businessenergyuse@beis.gov.uk

A response form is available on the GOV.UK consultation page: https://www.gov.uk/government/consultations/introducing-a-performance-based-policy-framework-in-large-commercial-and-industrial-buildings

When responding, please state whether you are responding as an individual or representing the views of an organisation.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our privacy policy.

We will summarise all responses and publish this summary on GOV.UK. The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the Government's consultation principles.

If you have any complaints about the way this consultation has been conducted, please email: beis.bru@beis.gov.uk.

Consultation Questions

1. **Do you have any evidence which supports, disputes, or could add to, the evidence presented by the Government in this chapter? In terms of the evidence presented in this chapter, do you support the Government's analysis?**

2. **Do you support the rationale set out in this chapter? If so, are there any changes you would make or considerations you would add to the rationale the Government has set out? If not, could you please explain why, providing evidence where possible.**

3. **Do you support the Government's proposal to underpin a performance-based policy framework with a rating that looks to modernise the DEC, in the ways set out above? If so, are there any changes you would make or considerations you would add to the proposal? If not, could you please explain why, providing evidence where possible.**

4. **The Government proposes that, as a first step, building owners and single tenants should be required to obtain an annual performance-based rating, and disclose that rating online. Do you support this proposition? If so, are there any changes or amendments you would make to the proposal? If not, could you please explain why, providing evidence where possible.**

5. **What is the best way to support Small and Medium Enterprises in obtaining annual performance-based ratings, where the owner of the building or the single tenant is an SME?**

6. **Should the Government:**

- **Allow owners of buildings above 1,000m² to use their annual performance-based rating to satisfy their existing regulatory obligation to present a valid EPC before a building is sold or let. As set out above, under this option the Government would continue to collect data about fabric and service improvements. Where prospective buyers or tenants want information about the building fabric and services, EPCs can be obtained on a voluntary basis.**
- **Continue to require owners of buildings above 1,000m² to present a valid EPC where the building is sold or let, recognising that the EPC and a performance-based rating assess different things, and can collectively provide a better level of information about the building than either rating would in isolation.**

Please outline your preferred option and your reasoning, providing evidence where possible. Please set out any changes or amendments you would make to the options, or if you would favour a different option. An appraisal of the benefits and risks of both options, providing evidence where possible, would help inform the Government's decision making.

7. **Recognising that the Government has committed to review the threshold for each sector, do you consider 1,000m² to be a sensible starting position for determining which buildings should be required to obtain annual performance-based ratings?**

8. **Should the Government consider expanding the performance-based rating to cover factors such as water, waste and indoor air quality? What do you consider would be the benefits of this approach? Would there be any drawbacks?**

9. **Has the Government identified what you consider to be the right objectives for a successful delivery model?**

10. **Do you support the Government's proposal that the annual rating should not be accompanied by recommendations for improving the rating? If so, are there any changes you would make or considerations you would add to the proposal? If not, could you please explain why, providing evidence where possible.**

11. **Do you support the Government's proposal that exemptions should be limited to a relatively few buildings? Are there any grounds for an exemption that you feel are appropriate, which the Government has not considered? Ahead of the findings from the Government's research project we also welcome views on how the requirement to obtain and disclose an annual rating could be enforced most effectively.**

12. **Are there any considerations you would like to add to the Government's analysis of the factors that are likely to drive improvements in ratings? Do you support the Government's proposals to improve ratings from day one?**

13. **Do you consider that linking a clear financial incentive, or disincentive, to annual performance-based ratings would be an effective way to drive improvements in those ratings?**

14. **What do you consider would be the impact of the incentives and interventions that have been suggested? Are there ways you think those incentives or interventions could be made more effective? Are there other incentives or interventions that the Government has not considered here, which you believe would be more effective at ensuring ratings improve over time?**

15. **Do you agree with the Government's assessment and preferred approach? Please provide evidence or case studies, where possible, in your response.**

16. **Do you agree that flexible energy use should be a core component of the rating? What is the best way, technically, to reflect flexible energy use in the rating structure?**

17. **Do you agree with the Government's preferred option to use a star rating format? Are there any formats which the Government has not considered that you believe could be more effective?**

18. **The Government welcomes feedback on the considerations outlined above. What are the key factors that the Government should consider in determining fair and effective rating benchmarks and a fair and effective rating scale? Where possible, please provide evidence, or case studies, to support your feedback.**

19. **Subject to the outcome of this consultation, the government will work with the ratings administrator, and with industry experts, to tailor the framework appropriately to each sector. At this stage, the Government welcomes any additional feedback on the high-level technical considerations outlined in this chapter, especially where there may be key considerations that we may have not addressed, or not been able to cover.**
    Where possible, it would be helpful if you could provide evidence and case studies to support your response.

Executive Summary

The world has undergone a year unlike any other. In April and May 2020, national restrictions were put in place across the globe to control the spread of COVID-19. During a time that was challenging and painful for people up and down the country, pictures of strikingly clear skies over the UK's major cities was one small source of inspiration for what a cleaner future will bring. As the UK redoubles its efforts to tackle the COVID-19 pandemic, it is important that clear and ambitious policies are put in place to make sure the UK builds back greener, unlocking thousands of skilled and resilient jobs.

As the first major economy to pledge to achieve net-zero greenhouse gas emissions by 2050, and in hosting the crucial COP26 summit later this year, the UK will continue to lead the way globally. Delivering our commitments requires decisive action now, and building an economy that will thrive in the future can only be achieved by building an economy that is not reliant on fossil fuels.

One of the most difficult challenges the UK faces on its decarbonisation pathway is the built environment, and Commercial and industrial buildings, in particular, pose a significant challenge. These 1.66 million buildings are the heartbeat of the UK economy.[1] They range from warehouses and shops, to offices and hospitality. They are home to start-ups and major organisations alike. There are far fewer commercial and industrial buildings compared to the 26 million homes across England and Wales, but they vary significantly in type, size, and function, and they account for a third of UK emissions from buildings.[2][3]

When thinking about how these buildings contribute to UK's efforts to meet net zero, the most important characteristic is that commercial and industrial buildings use very different amounts of energy, usually depending on the size of the building. In England and Wales, only 7% of commercial and industrial buildings are larger than 1,000m². Yet these buildings use over 53% of all the energy used by commercial and industrial buildings, and the associated carbon emitted from these buildings[4]

The Government has predominantly used the Energy Performance Certificate (EPC) to assess energy performance and carbon emissions in buildings. Through theoretical modelling, the EPC evaluates the standard of the building's fabric and services. If a building owner invests in improving their building's fabric or services, their EPC score should improve. Used in this way,

[1] ND-NEED 2020, Accompanying data tables, Table 1, Coverage: England and Wales. https://www.gov.uk/government/statistics/non-domestic-national-energy-efficiency-data-framework-nd-need-2020
[2] Valuation Office Agency data: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/920362/Table_CTSOP1.0_2020.xlsx
[3] Final UK greenhouse gas emissions national statistics: 1990 to 2018. Table 19 (split by end-user category), 2018: https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics
[4] Internal BEIS analysis of ND-NEED 2020. England and Wales only

the EPC has helped drive improvements in buildings over the last decade, and has contributed to carbon emissions in buildings falling 14% in the period 2008 to 2018.[5]

However, the EPC does not measure metered energy consumption and associated carbon emissions. That will depend on how well the building is being maintained and how effectively regulated and unregulated energy is used in the building in reality. Therefore a high EPC score is no guarantee that a building will use less energy and emit less carbon as a result.

In large and complex buildings in particular, the evidence is showing that there is almost no correlation between a building's EPC score and its actual energy and carbon performance in practice. In October 2019, the Government told the Climate Change Committee that it would address this issue by putting in place a policy framework that can measure and assess building performance. This consultation delivers on that commitment. It sets out the Government's plans to introduce a national performance-based policy framework for assessing energy use and carbon emissions in commercial and industrial buildings above 1,000m² in England and Wales, with annual ratings and mandatory disclosure as the first step.

The Government intends for the annual ratings to provide key information to building owners, occupiers and investors, and for the annual ratings to underpin future policies. As the rating will be performance-based, it will only reward a building with a higher score if the building actually reduces their measured energy use and carbon emissions.

To ensure the rating is easy to understand and meaningful, the Government proposes that the energy use and carbon emissions from a building will be benchmarked against similar building types. This will then produce a simple rating, for example between 1-6 stars, where 6 stars could represent the best and 1 the worst.

The proposals in this consultation go beyond just introducing a new metric. To meet the UK's climate targets, these ratings must improve over time. This will require clear incentives, and potentially regulation in the future.

As a first step, the Government proposes that owners and single tenants of buildings above 1,000m² will be required to obtain a rating for their building on an annual basis, and have that rating disclosed publicly online. This will ensure that large businesses and building owners will be aware of, and accountable for, how effectively they are using energy. It sends a clear signal to businesses and buildings owners that, having legislated for net-zero by 2050, the Government is ready to recognise businesses and landlords who have a low annual carbon footprint, and drive those who consistently emit more carbon than their peers to improve.

These proposals have been developed with industry experts and are based on international best practice, building on the approach that has made the National Australian Built Environment Rating Scheme (NABERS) in Australia world leading. This consultation sets out how we intend to deliver improvements in the UK market, and to ultimately go further than

[5]The Climate Change Committee report: https://www.theccc.org.uk/publication/reducing-uk-emissions-2020-progress-report-to-parliament/(p.77)

NABERS by driving a higher level of long-term ambition to net zero across the commercial and industrial building stock.

The Government believes that this policy will have a transformative effect: both on the buildings in scope of the framework and on the wider market. The policy framework will aim to deliver up to 8MtCo2e in non-traded carbon emissions over CB5 and reduce bills by £1bn in 2030. In addition, these performance-based ratings will provide critical, reliable, and trusted information so that building owners, businesses, investors, shareholders, insurers, lenders, energy consultants (and others) will clearly understand what the rating means and be able to translate that score into value – whether that is lower energy bills, increased asset or rental value for high performing buildings, lower insurance premiums, or performance-driven financing packages. The framework will also support action to decarbonise heating systems in buildings by positively recognising low carbon technologies in the rating.

Strategically, the proposals in this consultation complement the future target for the Non-Domestic Private Rented Sector Minimum Energy Efficiency Standards (ND PRS MEES) of EPC B by 2030. A consultation on improving the implementation and enforcement of the ND PRS MEES regulations has also been published alongside this consultation. Together, the proposals in this consultation and the ND PRS MEES future target could deliver up to approximately 12MtCo2e over CB5, covering 80% of energy use in commercial and industrial buildings. This demonstrates world-leading ambition in the non-domestic sector.

The Government plans to introduce the rating in three phases over the 2020s. Alongside this consultation the Government has published a shorter and more targeted consultation on how the framework could be implemented in the office sector, which will be phase one. The Phase one: Office Sector paper has a corresponding impact assessment. Applying to an estimated 10,000 offices in England and Wales, the Government's aim is for phase one of the framework to deliver up to 1MtCo2e over CB5 and reduce annual business bills by £116m by 2030.[6] Phase two and phase three of the rating's introduction will address the remaining sectors.

[6] Internal BEIS analysis of ND-NEED 2020, Coverage: England and Wales.

Introduction

In November 2020, the Prime Minister set out a bold vision in his ten-point plan for how the UK can show world-leading climate ambition ahead of the COP26 summit. This involves recognising and implementing best practice where it has been proven to deliver results. The National Australian Built Environment Rating System (NABERS) is the most well-known example of a national rating scheme delivering energy reductions in large commercial buildings. Over the last decade the scheme has focused on building performance and delivered average energy reductions of 34%.[7] These results are world leading. Where this approach has been applied on a voluntary basis in the UK, for example through the Real Estate Environmental Benchmark (REEB), the results have been comparable.

This has led to growing calls from industry for the Government to consider a more performance-led approach to addressing the challenge of improving energy use in business buildings. The sector has taken the initiative in showing how this can be done. The Better Buildings Partnership recently launched NABERS UK, in conjunction with the BRE and Australian NABERS scheme. NABERS UK has emerged from the widely supported Design for Performance scheme and will allow commercial offices to understand their in-use energy performance.[8] [9] [10]

From the Government's perspective, the work being currently undertaken by the industry is happening at an exciting time. This consultation looks at how the Government can introduce, at a national level, the kind of performance-based approach that NABERS UK is pioneering at a voluntary level.

The proposals set out in this paper are expected to be broadly applied to all commercial and industrial buildings. The Government will work with each sector before the framework is applied to make sure it can meet the needs of the sector.

To maximise the benefits of the phased approach, the Government would encourage businesses and buildings owners that operate outside of the office sector to use this strategy paper and consider where they can take action to ready their buildings for the introduction of the framework. The Government will aim to publish a short guide on the steps that building owners and businesses can take to prepare.

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[7] NABERS program statistics: https://nabers.info/annual-report/2016-2017/nabers-energy-for-offices.html & https://nabers.info/annual-report/2019-2020/office-energy/

[8] The Better Buildings Partnership is a membership body of leading UK commercial property owners looking to improve the sustainability of existing commercial building stock: https://www.betterbuildingspartnership.co.uk/

[9] The NABERS UK scheme was developed by the Better Buildings Partnership and NABERS, with the support of BRE and other key industry stakeholders, and was launched in November 2020: https://www.betterbuildingspartnership.co.uk/design-performance-initiative-presents-launch-nabers-uk

[10] The Better Buildings Partnership studied the successful NABERS scheme and engaged with industry to set up the voluntary Design for Performance scheme. The scheme aimed to address the performance gap – the difference between how a new building is designed and how it performs in reality - in new non-domestic buildings. Design for Performance encourages developers to build to a performance-based standard which can be measured once the building is completed.

The Government is grateful for the support it received from the industry, through an informal advisory group, in developing proposals for phase one of the framework. Subject to the outcome of this consultation, the Government will look to replicate that approach and form advisory groups with key representatives from the sectors under consideration in developing phases 2 and 3. This will ensure that the framework can work for the industry, and for the needs of each unique non-domestic sector.

This consultation sets out the rationale behind introducing an outcome-based policy framework, the objectives that framework aims to achieve, and how the Government intends to structure the annual ratings so that it can deliver those objectives.

Whilst the proposals in this consultation apply to England and Wales, the ratings methodology is being developed to enable its application in the assessment of buildings across the UK, should that be desirable. The Scottish Government is participating in aspects of the development of the framework to support such an outcome and will be informed by the outcome of this consultation. It should be noted that any decision to implement the methodology in Scotland would be the subject of a separate consultation by The Scottish Government.

Chapter 1 of the consultation will look at where performance-based schemes have been successful, both internationally and in the UK, and will also assess the current policy and regulatory framework applied to commercial and industrial buildings above 1,000m² in the UK.

Chapter 2 sets out the rationale behind moving to a performance-based approach in large commercial and industrial buildings in England and Wales.

Chapter 3 looks at the Government's specific proposals for how that performance-based approach should be introduced and implemented in the UK.

Chapters 4 and 5 will discuss the Government's proposed delivery model for implementing the performance-based ratings, and how the Government can ensure that ratings improve over time, in line with the UK's ambitious climate targets.

Chapter 6 looks at how the technical aspects of creating a performance-based rating. It will discuss what the rating will actually be measuring, how the rating will be structured, and assess the technical options for ensuring that ratings are both **fair** and can drive the **right behaviours and outcomes**.

Chapter 7 finally, will set out a high-level implementation timetable for phases 1, 2 and 3 of the framework.

Chapter 1- Background: UK Context and Examining Successful Performance-Based Rating Schemes

This chapter is split into two sections. After a brief definition of what 'performance-based scheme' means, the first section will provide an overview of the UK commercial and industrial building stock and will examine the current policy and regulatory framework that is being applied in large commercial and industrial buildings to deliver net-zero by 2050.

The second half of the chapter will then look at where these have succeeded, internationally and in the UK, and the key lessons that can be learned from those successes. This will provide important context ahead of exploring the Government's proposals, which will be set out from chapter 3 onwards.

Defining a 'Performance-Based Rating Scheme'

There are a number of different ways to assess how energy efficient buildings are. One method is to examine the quality of the building's fabric and services (such as its heat source, levels of insulation, etc.) and model how the building might perform based on the behaviour of a 'typical occupant'. The reason for assessing performance on this basis is so that the assessment reflects the building itself, rather than how any given occupant is using the building. This means that where there is a very good building, being used very inefficiently, the building will still score highly. This method allows occupiers, or prospective buyers or tenants, to gain an understanding of how a building **should** perform, based on the activity of typical tenant.

This is the methodology which underpins the Energy Performance Certificate (EPC), used in the UK and throughout Europe. In order to improve an EPC score, or any rating calculated on this basis, the building owner or tenant must invest in improving the building's fabric and services.

Schemes, or ratings, which are 'performance-based' take a different approach. These schemes **measure** how much energy a building is using, in reality, by analysing its meter readings. Instead of standardising or removing the behaviour of the occupant, performance-based schemes place the occupant at the centre of the equation. In order to reach a fair assessment, performance-based schemes will typically look at a building's energy intensity on a m² basis (in order to standardise for size) and factor in the building's operating hours and number of people using it. The results for the building will then usually be compared to how similar buildings are performing through a process known as benchmarking, with a high rating indicating that a building is more efficient than its peers, and a low rating indicating it is more inefficient.

In the UK, the Display Energy Certificate (DEC) takes this approach. Applying to public sector buildings over a total floor area of 250m², the DEC provides an energy performance operational rating of the building from A to G. In contrast to the EPC, a higher rating can only be achieved by the building improving its energy performance and emitting less carbon.

The Non-Domestic Building Stock in the UK

The non-domestic building stock in the UK is extremely diverse. Whether it is a hairdressing salon, a supermarket, a warehouse, a department store or a pub, each is furnished and used according to its needs.

In terms of energy use and carbon emissions, the result of this diversity is that it creates a very uneven profile of energy use across the stock. This is shown in Figure 1:

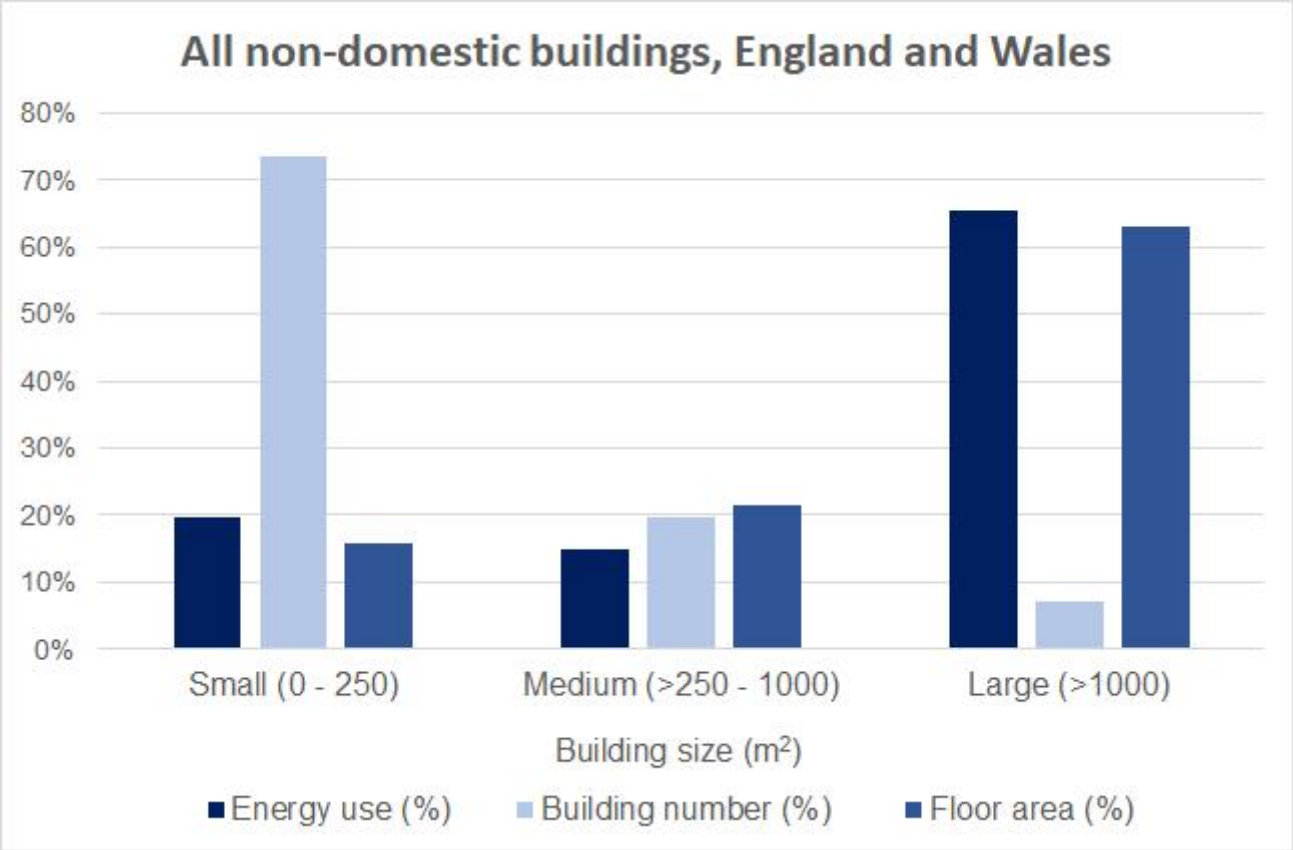

Figure 1: All Non-Domestic Buildings: England and Wales

Only 7% of non-domestic buildings are above 1,000m² in England and Wales. These buildings account for approximately 50% of the total floorspace, and we estimate these buildings use over 53% of the total energy used in non-domestic buildings.[11] In other words, the graph

[11]Internal BEIS analysis of ND-NEED 2020, Coverage: England and Wales.

demonstrates that there are a relatively small number of large buildings in England and Wales which use a lot of energy and emit a lot of carbon.

The Energy Performance Certificate (EPC) in large buildings

The Government has used the EPC as the primary metric for assessing energy performance and carbon emissions in homes, as well as in commercial and industrial buildings. As described earlier in the chapter, the EPC assesses carbon and energy performance through theoretical modelling and by evaluating the standard of the building's fabric and services. The EPC has driven improvements to the quality of the UK buildings stock since its introduction. It continues to help prospective tenants and buyers in homes and non-domestic buildings understand the quality of the building they might rent or purchase.

Currently business premises are required to have an EPC if a building which is under construction is finished, or it is rented or sold, or there are changes to the number of parts used for separate occupation and these changes involve providing or extending fixed heating, air conditioning or mechanical ventilation systems. An EPC must be displayed if the total useful floor area is over 500m², the building is frequently visited by the public and an EPC has already been produced for the building's construction, sale or rental.

It is important that consumers do not take this to be a prediction of the energy the building will use, and the carbon the building will emit, as that will depend on occupant behaviour, and energy uses which are not assessed in the EPC rating, like small power, server rooms and catering kitchens.

In short, an EPC rating will always provide meaningful information about the quality of a building's fabric and services. However, for the reasons outlined above, the evidence is showing that, in buildings above 1,000m² (which tend to be more complex), the EPC rating does not translate to the energy performance of the building in practice, as defined by its energy and carbon intensity. This is shown in Figure 2 below, courtesy of analysis undertaken by the Better Buildings Partnership.

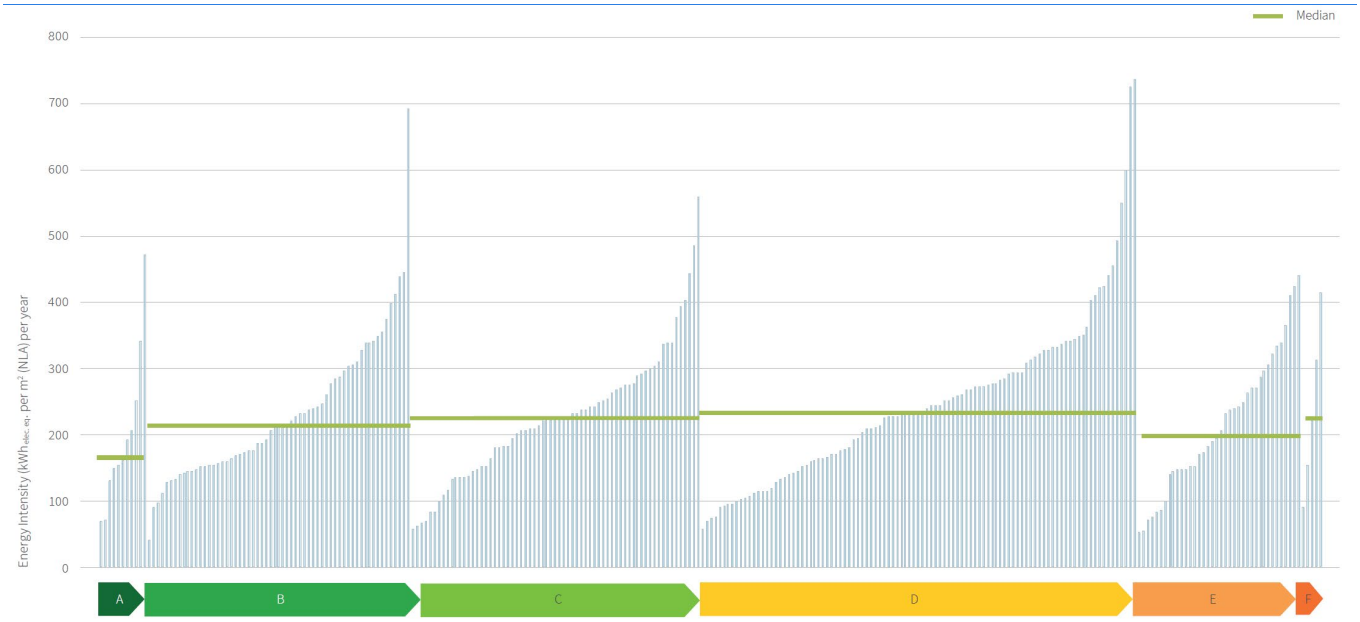

Figure 2: Office Energy Intensity per m² by EPC Rating

Figure 2 is taken from the Real Estate Energy Benchmark (REEB) 2019 energy snapshot.[12] Further detail will be provided on REEB later in the chapter, but the key conclusion is that, across a sample of 400 large offices, there is a weak correlation between EPC scores and actual energy performance (as defined by energy intensity). When EPC scores were compared against actual associated carbon emissions in the same buildings, this correlation was replicated.

In some ways, that the evidence demonstrates that EPC scores do not line up neatly with energy intensity is not unexpected. The EPC is a metric which, by design, does not measure occupant behaviour or account for all end-uses of energy. What is of greater concern is the extent to which the evidence is showing that, in the UK's largest buildings, investing in improving a building's fabric and services does not guarantee a better performing building in reality.

The performance of commercial buildings in the UK (2010-2019)

The UK has the strongest record of emissions reduction in the G20 over the last decade, and over a longer period back to 1990.[13] However, in commercial and industrial buildings there is a lot of remaining potential. The EEP, set out in Figure 3 below, shows a moderate reduction in energy consumption in commercial services with an average of 4% reduction on 2010 levels

[12] The Real Estate Environmental Benchmark: 2019 Energy snapshot, March 2020: https://www.betterbuildingspartnership.co.uk/real-estate-environmental-benchmark-2019-energy-snapshot
[13]The Clean Growth Strategy: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf p.22

over the period of 2010-2019. Commercial services energy consumption can approximately be equated to energy consumption by commercial buildings.[14]

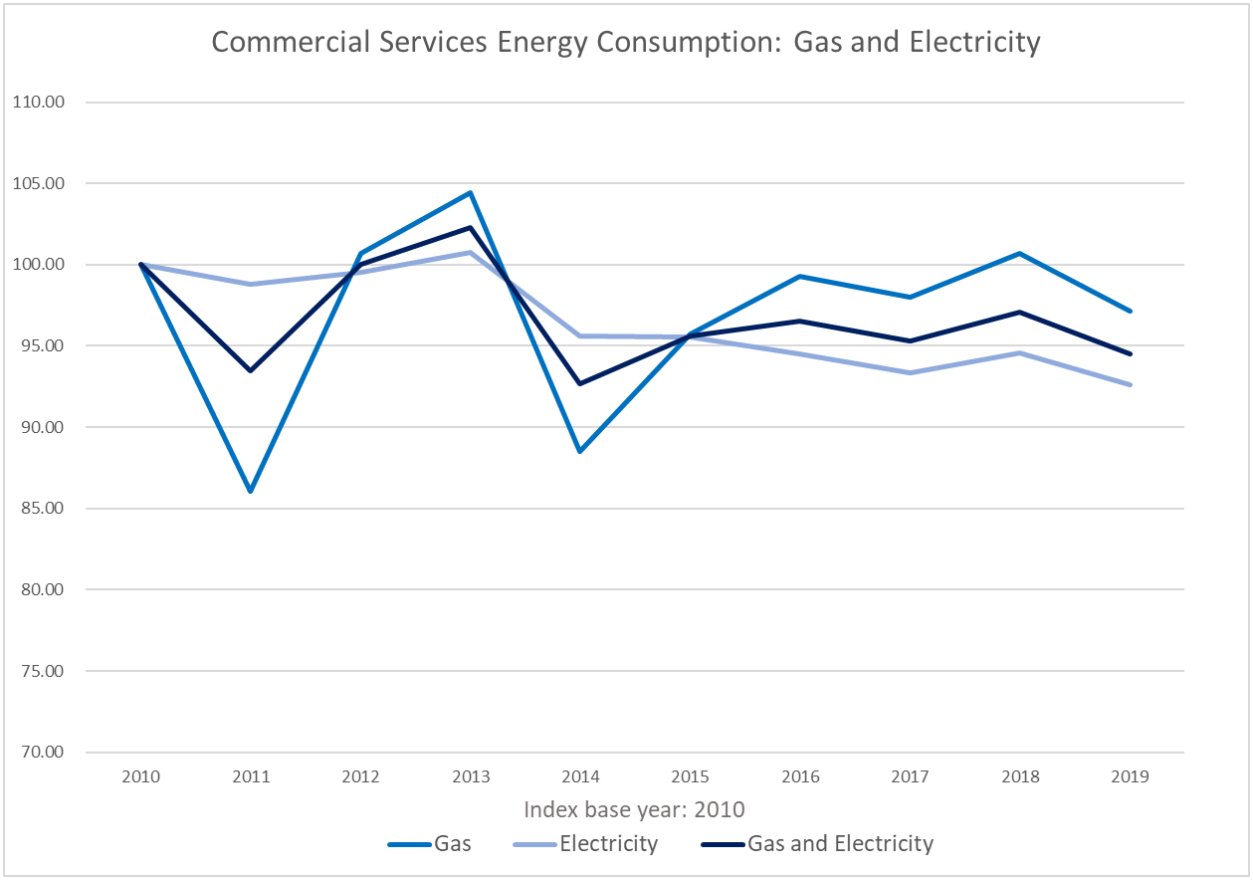

Figure 3: Commercial Services Energy Consumption

It must be recognised that this graph reflects total energy consumption, not energy intensity, and there are limits to comparing total energy consumption to energy intensity. Taking that fact into consideration, the evidence is still clear that energy performance is not improving at the rate required across the stock, and certainly not improving at the kind of rate seen by buildings within scope of NABERS scheme and the REEB scheme, which will be discussed below.

Performance-based rating schemes that have delivered results.

NABERS

The National Australian Built Environment Rating System (NABERS) is an Australian performance-based rating system. It is perhaps the best-known performance-based scheme and is considered to represent best practice internationally.

[14]The Energy and Emission Projection: https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2019 (Note this does not cover energy consumption for Industrial buildings).

NABERS is the main element of the wider Australian Commercial Building Disclosure (CBD) Programme.[15] The rating scheme applies to the office sector, and was introduced in 1998, with the first significant uptake beginning in 2004. The scheme assesses the energy performance of the offices in scope and provides a rating from 1-6 stars based on metered energy use.[16]

In 2010, the CBD programme placed a mandatory requirement on all offices over 2,000m² to have a valid NABERS rating when looking to sell or let the office, or a space within the office. In 2018, the threshold was lowered to 1,000m². NABERS ratings are only valid for 12 months.[17]

Throughout this period, the CBD programme has required building owners to obtain and disclose a NABERS Energy rating. There has been no regulatory requirement for building owners and businesses to improve their energy efficiency, their NABERS ratings, or lower their carbon emissions.

Mandatory disclosure has been the only firm regulatory intervention under the CBD programme, but the public sector has also played an important role. From the beginning of the scheme in 2004, New South Wales set their own procurement standard based on NABERS ratings. They did not allow government tenants to occupy buildings that had a NABERS rating of below three stars. In 2006 the other Australian states implemented a similar approach, and they have pushed that minimum standard up over time. For landlords to be able to offer their office space to the whole market, they needed to hit the minimum standard.[18]

What have the results been from the NABERS scheme?

NABERS is considered to represent international best practice because its results are world leading. Since the beginning of the scheme, office buildings have seen their energy use per square meter reduce by 38%, including a 34% reduction over the last decade.[19]

[15] The Commercial Building Disclosure (CBD) programme requires energy efficiency information to be provided in the majority of occasions when commercial office space of 1,000m2 or more is put up for sale or lease https://www.cbd.gov.au/

[16] The NABERS scheme provides a rating of 1-6 stars (with 1 being the minimum) for energy, water, waste and an indoor environment rating that measures the indoor air quality, lighting quality, temperature, thermal comfort and acoustic quality of a building. It is possible to be awarded half stars from 1.5 to 5.5 stars.

[17] The NABERS rating is valid for 12 months with an annual review to ensure that they accurately reflect the up-to-date operational performance of the building.

[18] Both federal and state government in Australia has played an important role in only leasing buildings with a minimum energy rating for new government buildings and leases. Between 2002-2009 all states (except Tasmania) and federal government set a 4.5 star target for new and existing leases. It is worth noting that government is a major office tenant in Australia which helped increase the impact of this new requirement. Source: Bannister, Paul, *NABERS: Lessons from 12 Years of Performance Based Ratings in Australia*

[19] Based on office buildings with 13 consecutive NABERS (whole and base building) ratings. Source: Peter Mallaburn et al, 2020, *A new energy efficiency policy for UK commercial buildings: an Australian case study* (submitted for publication in Buildings and Cities journal). & NABERS program statistics: https://nabers.info/annual-report/2016-2017/nabers-energy-for-offices.html & https://nabers.info/annual-report/2019-2020/office-energy/

In terms of overall impacts, the following graph shows the change in energy use and average star ratings that have been observed since 2010 through the NABERS scheme for Offices.

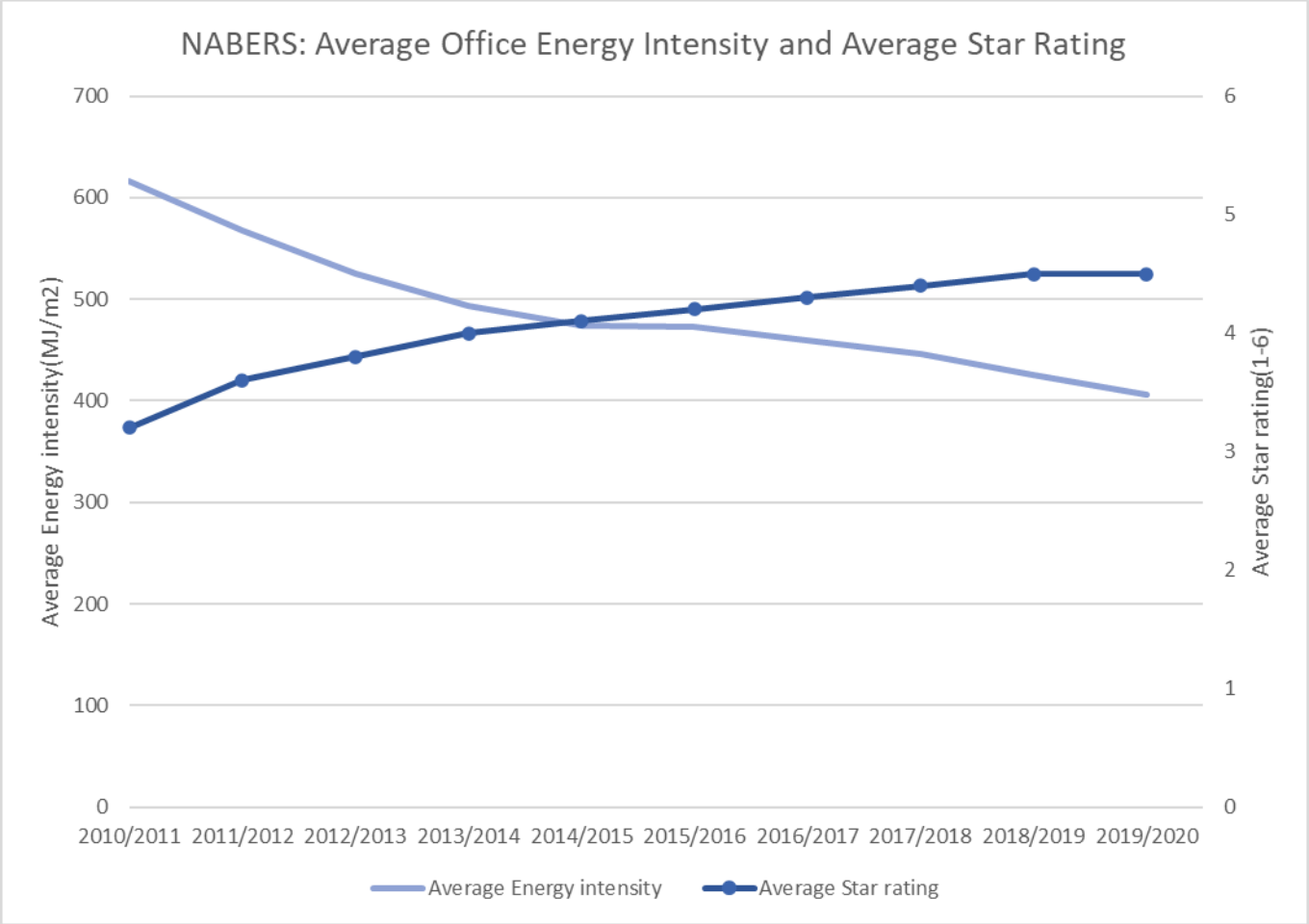

Figure 4: Average Energy Intensity and Average Star Rating

The following graph shows how the distribution of star ratings have changed since 2010/2011.

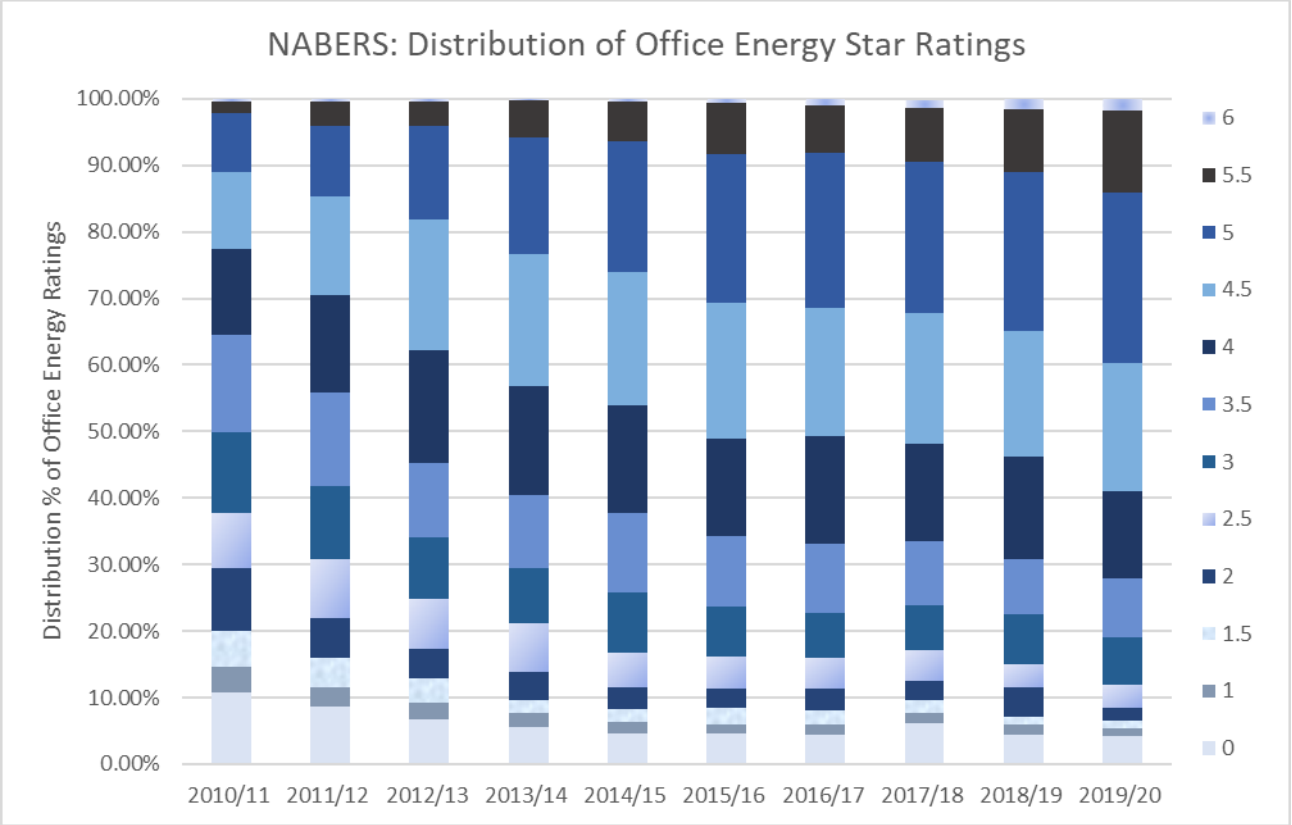

Figure 5: Share of NABERS Office Energy Achieving Different Star Ratings

The sample sizes in Figure 4 and Figure 5 are not constant, i.e. new buildings are being added to the sample each year.[20] However, there are clear conclusions from the data. The first is that the energy use (MJ/m²) trend has been consistently downwards, and star ratings upwards. Figure 4 shows that average energy intensity has reduced from 616 MJ/m² to 406 MJ/m² since disclosure was made mandatory in 2010.[21] In the same period, the average star rating has increased by almost one star. Analysing the two graphs together reveals that roughly half of the buildings in the NABERS scheme are driving the improvements, with the other half seeing their energy performance remain level or in decline. It is worth noting that there is a significant variance in how frequently these buildings have been rated over the period. Some have only been rated twice, whilst other offices (where space is frequently sold or rented) have been rated every year. The evidence suggests that offices which have been rated every year have improved the most.[22]

It is difficult to quantify the extent to which these reductions were driven by the NABERS scheme, or whether the scheme has measured and reflected improvements that would have taken place anyway (this could be due to other policy measures, increasing energy costs, and improving standards of product efficiency, for example). The 2019 independent review of the

[20] Independent review of the Commercial Buildings Disclosure program: https://www.cbd.gov.au/cbd-2019-program-review
[21] NABERS program statistics: https://nabers.info/annual-report/2016-2017/nabers-energy-for-offices.html & https://nabers.info/annual-report/2019-2020/office-energy/
[22] The CIE *Independent review of the Commercial Building Disclosure Program* (draft report) September 2019

CBD programme attempted to answer this question. Even in a conservative scenario, they estimated that half of the improvements measured in the decade from 2010 to 2019 can be attributed to the NABERS scheme.[23] This question is explored more fully in the Impact Assessment accompanying this consultation package.

What are the principles underpinning the NABERS scheme?

Through analysing a range of independent reviews and academic papers, and through correspondence with representatives of the scheme, the Government has identified the following features as having a major contribution to the success of NABERS:[24]

- NABERS measures actual impact, rather than intent: the ratings are based on actual energy consumption and associated greenhouse gas emissions,
- NABERS ratings are clear, accurate, up-to-date, and reliable,
- NABERS allows like-for-like comparisons between buildings,
- NABERS ratings are aligned with responsibilities within the building,
- NABERS was designed to support how the industry operated.

The scheme was built on the understanding that measuring metered energy performance would produce an accurate and reliable assessment of the building's efficiency and greenhouse gas emissions. It was also founded on the idea that the **metric** should align with **the results the New South Wales Government wanted to achieve**. In other words, to improve energy performance and reduce carbon emissions the scheme measured energy use and carbon emissions, rather than assessing the quality of the fabric and services which would not take into account how the building was used.

The ratings had to not just be accurate and reliable, they also needed to be fair. That is why, through its history, the NABERS scheme has primarily assessed landlords using 'base' building ratings, with the option of providing 'whole building' ratings. The 'base' building rating only covers the performance of central building services, ensuring that the rating was aligned to responsibilities within the building. The 'whole building' rating measures all the energy use in the building and could be applied reasonably to owner occupiers or single tenants so that landlords and businesses were only assessed on what they could control.[25]

[23] Independent review of the Commercial Buildings Disclosure program: https://www.cbd.gov.au/cbd-2019-program-review
[24] The Government has researched the NABERS scheme and engaged closely with the NABERS programme team in New South Wales Government to understand the scheme further.
[25] https://www.nabers.gov.au/ratings/our-ratings/nabers-energy

The ratings also needed to have a tangible meaning to businesses and landlords. The scheme ensured that, through a simple star rating structure, there could be clear comparison across different buildings in a way that was easily understood for a non-technical audience.[26]

These principles laid the foundation for a rating that was trusted and supported by the industry. It allowed for the key development in the scheme to date, which was the Australian Government mandating that ratings be attained and disclosed publicly. Businesses and landlords reacted positively. As the results above show, the reputational benefits of improving performance – or the reputational risk of poor performance – drove landlords and businesses to improve significantly from 2010 to 2019.

Throughout, the scheme was developed in close collaboration with, and the support of, the wider industry. There was a genuine commitment to support how the industry operated, rather than impose regulation on the industry.

The Real Estate Environmental Benchmark (REEB)

NABERS may be the most publicised and well-known example of a successful performance-based scheme, but it is not the only example. In the UK, the Real Estate Environmental Benchmark (REEB) has been run by the Better Buildings Partnership over the last decade. REEB is a platform that the Better Buildings Partnership offer to their members to measure and benchmark the energy performance of their buildings. These are typically larger commercial buildings, with offices and retail making up 94% of the database.[27]

Similar to NABERS, buildings have been added to REEB over the last decade (going from approx. 500 to approx. 1100 buildings). The BBP have summarised the results, since 2010:

"The energy intensity of Offices has…improved by 23% since 2010/11. The energy intensity of Shopping Centres has improved by 6% in the past year and 33% in the last 9 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 1% improvement in the last year and a 25% improvement over the last 9 years."[28]

REEB is very different to NABERS. It is an industry led, voluntary, scheme rather than a national programme. There is no regulatory obligation to acquire or disclose any data or any benchmarked rating, although the benchmark is used by both property owners when disclosing their performance and by industry bodies to help inform industry standards. On one hand, the REEB results may be better than the savings that might be expected from a national performance-based framework across the wider non-domestic stock. This is because, as a

[26] *NABERS: Lessons from 12 Years of Performance Based Ratings in Australia*, P. Bannister
[27] The number of offices and retail making up the REEB database was 90% by floor area in 2019/20.
[28] The Real Estate Environmental Benchmark: 2019 Energy snapshot, March 2020: https://www.betterbuildingspartnership.co.uk/real-estate-environmental-benchmark-2019-energy-snapshot

voluntary standard, it will overrepresent those with higher pre-existing engagement on building performance issues.

On the other hand, the REEB results may underestimate the potential gains from a stock-wide metric, as REEB does not fully capitalise on the reputational drivers of benchmarking and disclosure, as it does not publicly disclose building-level comparisons and ratings. REEB may also underestimate the potential gains as it may be that in less engaged buildings there might be more 'low hanging fruit', i.e. low-cost optimisations or behavioural adjustments that could improve performance.

In either case, the evidence shows that where these performance-based schemes have been implemented they have delivered impressive results.[29]

Question 1: Do you have any evidence which supports, disputes, or could add to, the evidence presented by the Government in this chapter?

In terms of the evidence presented in this chapter, do you support the Government's analysis?

[29] In addition to NABERS and REEB there are other performance-based schemes such as Energy Star and BREEAM. Energy Star is a government programme in the USA run by the US Environmental Protection Agency for rating the energy performance of commercial and industrial buildings. BREEAM is a sustainability assessment tool delivered by the BRE which aims to recognise the value of higher performing assets. BREEAM In-use allows owners, occupiers and investors to make improvements to the operational performance of their building. https://www.breeam.com/discover/technical-standards/breeam-in-use/

Chapter 2 – Rationale: Moving to a Performance-Based Approach in Large Commercial & Industrial Buildings in England and Wales

The previous chapter demonstrated that in private non-domestic buildings above 1,000m² in England and Wales:

- there are relatively few buildings, but these buildings use approximately 53% of total energy consumed by the private non-domestic building stock[30]
- it is challenging to model in-use energy performance accurately in these buildings through the EPC, as this is not its purpose.
- there is a body of domestic and international evidence which suggests that performance-based schemes are effective at reducing energy use and carbon emissions when applied in these building types
- the energy improvements seen in these buildings over the last decade are not on a trajectory where we will meet our carbon budgets and net-zero

Though the UK has made great strides, delivering net-zero by 2050 will mean going further and faster to reduce carbon emissions.

This chapter will set out why the Government considers introducing a performance-based policy framework to be the most effective way to the address the points above, and improve the energy and carbon performance of the largest buildings in England and Wales. The following chapters will then provide the Government's detailed proposals.

What does the Government need a 'policy-framework' to achieve in buildings above 1,000m²?

The phrase 'policy framework' refers to the steps and metrics used by the Government to deliver specific outcomes. In other words, once the outcome has been defined, the policy framework determines how that outcome will be measured, evaluated and achieved.

The largest 7% of commercial and industrial buildings will be vital if the UK is to meet its ambitious carbon reduction targets and deliver net-zero by 2050. The landlords and businesses that own and occupy these buildings have a unique opportunity to help the UK take huge strides forward on the journey to a carbon neutral future.

[30] Internal BEIS analysis of ND-NEED 2020, Coverage: England and Wales.

In commercial and industrial buildings above 1,000m², some of the major high-level outcomes the Government wants a policy framework to achieve are:

- Sharp improvements in actual energy use and reductions in carbon emissions over the 2020s, putting the UK on track to:
    - Deliver Carbon Budgets 4,5 and 6
    - Deliver net-zero carbon emissions by 2050
    - Support the UK's national grid through the transition to a clean economy
- Ensuring building owners and occupiers take steps to prepare their building for the installation of clean heat, and where viable and appropriate, begin to adopt clean heat, over the 2020s and beyond.
- To ensure both points above are delivered in a way that enables the UK to build back greener from the COVID-19 pandemic, including:
    - Support for building owners and businesses through this transition, giving clear sight of any future regulatory requirements
    - Ensuring that building owners and occupiers obtain clear, relevant and accurate information about the performance of their buildings
    - Supporting markets to deliver long-term growth in the green economy

In terms of reducing energy consumption and carbon emissions, the Government estimates that, **as an average across each sector,** private non-domestic buildings over 1,000m² will need to be using **approximately 30% less energy in 2030 than they were in 2015.** That level of reduction, as an average, is consistent with the Government's Carbon Budgets (CB), which will need to be met if the country is to remain on track to deliver net-zero by 2050.

The 30% objective represents a high-level average of what might be required across all large buildings. In reality, the abatement potential will vary based on sector, building type, and building size. There will also be different levels of action required based on the level of carbon emissions associated with operating the building. This is often down to the building's heating system: buildings with heating systems which emit high levels of carbon will need to find clean solutions over the coming years, as well as making the necessary energy efficiency improvements. Therefore, some sectors or building types may be able to deliver for example 40% reductions, and others can only practically deliver 20%, in order to reach the overall target.

In terms of carbon savings, the Government estimates that the extra action required to achieve an average 30% reduction, would save approximately 8MtCo2e in carbon emissions over CB5 (2028-2032).

The Rationale for Introducing a Performance-Based Policy Framework to Achieve these Objectives

Delivering Sharp Improvements in Energy Use, and Reductions in Carbon Emissions, over the 2020s and beyond

The most powerful argument for introducing performance-based ratings in commercial and industrial buildings above 1,000m² is simply the quantity of energy used in these buildings due to their size, and the level of associated carbon emissions.

International best practice has shown that the most effective way to deliver improvements in actual energy use, and reductions in carbon emissions, is to base a rating framework on verified meter readings, set against high quality benchmarks. This is absolutely logical: it is difficult to ensure that real building performance is improving unless real building performance is measured and benchmarked, and then clear targets or incentives to improve can be set.

The evidence presented in the previous chapter demonstrated the risks of using just the EPC to assess the energy performance in large commercial and industrial buildings. Actual occupant behaviour does not influence the EPC the rating by design, but actual occupant behaviour and operational efficiency is clearly having huge effects on the energy and carbon intensity of large buildings. There are also a number of energy uses which are not assessed in the EPC rating, like small power, server rooms and catering kitchens.

This can create a discrepancy between how energy performance is modelled in these buildings, and how much energy is actually used. This discrepancy, if realised, creates risks and can drive negative outcomes; if a building has a high EPC score, but the building is actually using more energy than it needs to, then the building owner or occupier may not recognise there is an issue and may not be incentivised to improve. This means that a lot of carbon will be emitted using energy that is not strictly needed. It means that landlords and tenants will pay a lot more for energy than they need to, making them less productive.

Where there are 7% of buildings above 1,000m², using 53% of all energy consumed by commercial and industrial buildings, the risk associated with any discrepancy or systemic 'performance gap' becomes a structural risk to delivering the Government's climate targets.[31] A performance-based rating, such as NABERS, removes this discrepancy because it just assesses the energy which has been actually used. A higher rating is not awarded for investment, or intent – only for using energy more efficiently, or reducing carbon emissions.

EPCs can still have a role to play: where a building has a low EPC score, the building owner or single tenant can commission an EPC to help to identify improvements that can be made to the fabric and services in the building. Provided energy use in the building is optimised, this should drive down energy use and carbon emissions even further.

[31] Internal BEIS analysis of ND-NEED 2020, Coverage: England and Wales.

Ensuring building owners and occupiers take steps to prepare their building for the installation of clean heat, and where appropriate and viable begin to adopt clean heat, over the 2020s and beyond

Input-based policy frameworks such as the EPC – those that assess the physical state of the building and model outcomes –are highly effective tools for driving investment in improving building fabric and services. That is one major reason why the Government has regulated that landlords of rented commercial and industrial buildings continue to invest in improving EPC ratings in smaller buildings through the 2020s.

However, performance-based ratings should still drive improvements in fabric and services. The difference is that, where the EPC prioritises upgrades to building fabric and services, performance-based ratings do not prioritise them over any of the other factors that influence building performance. Some of these key factors are illustrated below:

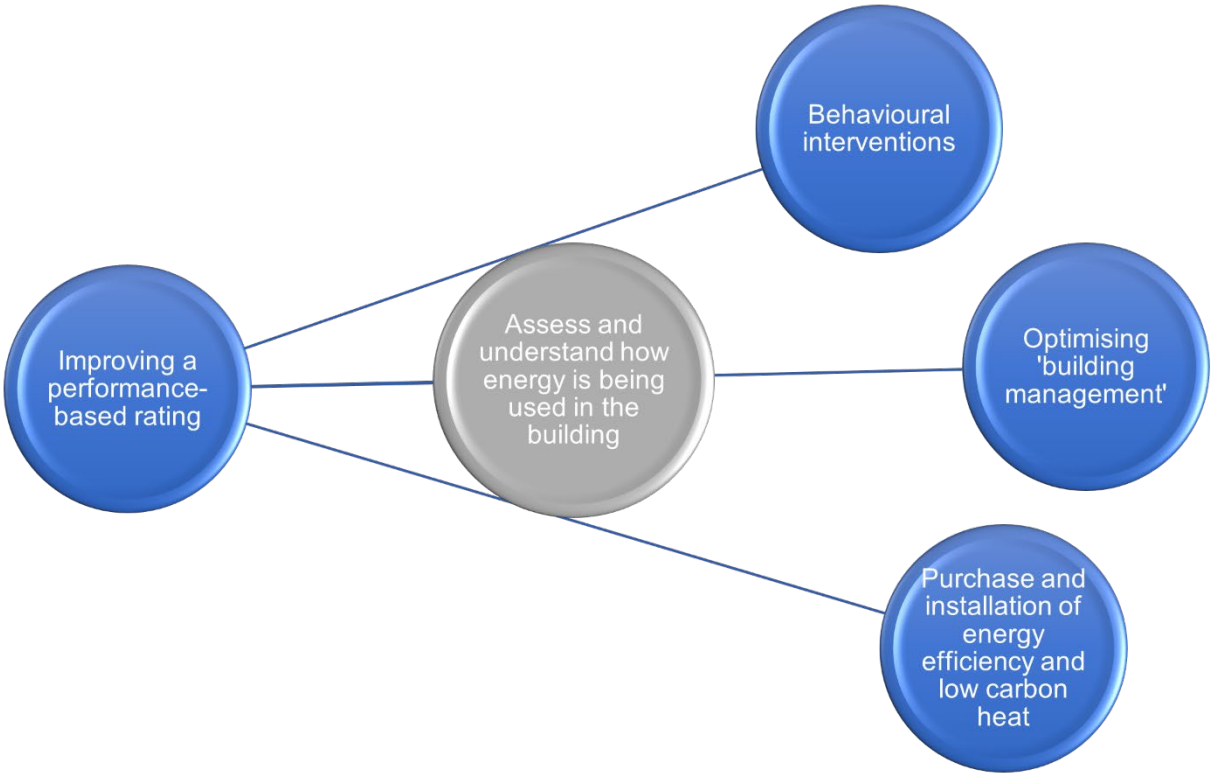

Figure 6: Ways to improve a performance-based rating in a large commercial and industrial building.

For building owners and businesses to improve a performance-based rating, they must understand how their building is using energy and how that energy use can be reduced – be that through optimising the existing services and systems, behavioural changes or through installing new equipment.

A building's performance will be significantly impacted by the heating system operating in the building. These heating systems are responsible for a large portion of carbon emissions and we will need to decarbonise them to achieve our Net-Zero commitment.

A range of policy measures are looking to grow the market for low carbon heating systems and we expect to see a role for a mix of technologies, reflecting the diverse nature of buildings and their demand for heat and hot water. The most likely option is electrification using heat pumps, and potentially replacing the natural gas in the grid with hydrogen. Heat networks will also have an important role to play, especially in areas of high-density demand and where there are large low-carbon heat sources.

A Performance-based rating that assess building carbon emissions, as well as energy consumption, will positively recognise those who transition voluntarily, because the rating for the building will likely increase (potentially significantly).

Building on Industry Leadership

The November 2020 launch of NABERS UK is the most recent demonstration of the current momentum for performance-based schemes in the industry. The NABERS UK scheme, led by the Better Buildings Partnership and the BRE, has evolved from the Better Buildings Partnership's earlier Design for Performance project.[32] It has been supported by 13 'pioneers', who have funded the project and implemented the performance-based approach on at least one major office development in their pipeline, and backed by 21 'delivery partners' in the industry. The scheme shows the industry's appetite to come together and find a better way forward.

This collaboration is exciting and timely. The Government supports NABERS UK. It is implementing – at a voluntary level – exactly the kind of performance-based approach that the Government is looking to mandate at a national level, and will set out in the next chapter.

Question 2: Do you support the rationale set out in this chapter? If so, are there any changes you would make or considerations you would add to the rationale the Government has set out? If not, could you please explain why, providing evidence where possible.

[32] Better Buildings Partnership: https://www.betterbuildingspartnership.co.uk/node/360

Chapter 3 – Proposal: What a Performance-Based Policy Framework Should Look Like in England and Wales

The previous chapter discussed the rationale behind introducing a performance based-policy framework for commercial buildings above 1,000m² in England and Wales. The following chapters will set out the Government's specific proposals for how that rating framework should be introduced and implemented. This chapter will explore the ways in which, and why, the Government considers that the rating framework should modernise and go beyond the Display Energy Certificate. It will also set out exactly what the Government proposes building owners and single tenants will be initially required to do under the policy framework.

Modernising the Display Energy Certificate

Given the evidence and arguments set out in Chapters 1 and 2, **the Government proposes to introduce a national performance-based policy framework for rating the energy and carbon performance of commercial and industrial buildings above 1,000m² in England and Wales, with annual ratings and mandatory disclosure as the first step.**

The Government considers that the rating framework itself should look to build on and modernise the Display Energy Certificate. The DEC is a performance-based rating which currently applies to public sector buildings over 250m². It measures the entire energy consumption of a building and benchmarks that performance against similar buildings.

The DEC is very a useful tool but would require major structural changes to deliver the kind of success in business buildings in the England and Wales that NABERS has seen in Australia. Ultimately, the Government sees this as an opportunity to ensure that a lasting framework is put in place which has all the ingredients to drive and support the decarbonisation of the country's largest buildings from the early 2020s out until 2050.

Whist the fundamental principle of measuring performance will remain the same, the Government proposes to introduce a rating which modernises and goes beyond the DEC. The Government considers that the rating framework should look to level up the DEC in the following ways:

- **it should measure energy performance at a more granular and accurate level**, properly accounting for operating hours, location, and occupancy
- **It should be introduced on a sector by sector basis, with ratings tailored to the needs of each sector or specific building type**

- it should offer **base building and whole buildings ratings where appropriate**. This will ensure the ratings work for landlords and businesses, enabling them to make the improvements they are responsible for
- the **benchmarks** should be established in collaboration with the industry and updated and reviewed regularly
- there should be a **high level of quality assurance and enforcement:** the Government proposes that buildings in the framework will require site assessments by a chartered professional every four years to make sure the rating is being produced accurately and consistently
- it should **look to recognise and reward all positive uses of energy,** including flexible energy use and storage, heat networks and on-site renewables
- **buildings will also not just be benchmarked against their peers but also assessed in relation to a net-zero trajectory**
- **It should be ambitious.** In planning to roll the framework out across all non-domestic sectors in three phases, it goes well beyond the current scope of the DEC and even the NABERS scheme. The Government is eager to collaborate with the industry to try to ensure the rating can go further in the future, by accounting for important net-zero factors like embodied carbon.

The Government's intends to underpin the policy framework with a rating that, like NABERS, the market can trust to be fair, accurate and consistent, with high levels of quality assurance. In other words, the rating must be 'investment grade'.

This is vital to the success of this policy. If there is confidence in the ratings, then building performance is more likely to be reflected in things like the building's rental and asset value. It can also encourage lenders to provide innovative mortgage and lending offers which encourage and reward buildings for performing better. Crucially, if businesses and landlords can see that the rating and the market are rewarding the efforts that they are making to improve, they are far more likely to continue to make those improvements.

The Government considers this to be an opportunity to take a step back, and make sure there is a rating framework that has the sophistication to be able to deliver net-zero in our largest and most complex buildings. That means showing world-leading ambition and doing the maximum to enable buildings owners and businesses to improve their energy use. It also means incentivising energy storage and demand reductions, to ensure that energy improvements are made in a way that delivers positive results throughout the UK energy system.

Question 3: Do you support the Government's proposal to underpin a performance-based policy framework with a rating that looks to modernise the DEC, in the ways set out above? If so, are there any changes you would make or considerations you would add to the proposal? If not, could you please explain why, providing evidence where possible.

How the Government intends to use this rating

To meet the UK's climate targets, ratings must improve over time. This will require clear incentives, and potentially regulation in the future. As a first step, we propose that owners and single tenants of buildings above 1,000m² will be required to obtain a rating for their building on an annual basis, and have that rating disclosed publicly online. This requirement will be covered in further detail in the next section and through the consultation.

The Government is aiming to provide each sector with a clear understanding of the level of energy and carbon reductions that are consistent with our climate targets over the 2020s and beyond. As the rating framework is outcome based, the Government can track progress against those transparent targets, and introduce targeted regulation if the level of energy reductions and carbon savings needs to accelerate.

What landlords and businesses will specifically be required to do

Subject to the outcome of this consultation, the Government will set out exactly what building owners and businesses will be required to do in each sector in the consultations on phases one, two and three. The points listed below are the main features, and are expected to be consistent across every sector, in every phase.

Once the framework applies to large buildings within a sector, the Government proposes that owners and single tenants of private non-domestic buildings above 1,000m² in that sector will be required to:

- onboard their building onto the framework
- submit, every year, their metered energy use data (and other relevant information) to the ratings administrator
- receive a rating based on the building's annual energy and carbon performance.

The rating will then be:

- disclosed, publicly, both in the building and online

The Government proposes that rating could also be:

- used to satisfy some of the current 'trigger points' that exist under EPC regulations. For example, prospective tenants and buyers must be made aware of the rating before the building is let or sold.

Across all sectors, the Government proposes that once on the framework, building owners and single tenants will be required to obtain a rating annually, and from the second year of being on the framework there will be a regulatory obligation to have that rating disclosed online. Building owners and single tenants will be able to disclose their rating in the first year on a voluntary basis. This will provide a year to improve their rating and familiarise themselves with the framework before the rating is disclosed on a mandatory basis.

Similar to NABERS, from day one, the Government suggests the rating framework follow the NABERS approach insofar as there will initially be no regulatory obligation to improve ratings. This will allow the businesses, building owners and the wider market a chance to respond to the framework.

The Government welcomes feedback on the best way to support Small and Medium Enterprises (SMEs) in obtaining annual performance-based ratings, where the owner of the building or the single tenant is an SME.

Question 4: The Government proposes that, as a first step, building owners and single tenants should be required to obtain an annual performance-based rating, and disclose that rating online. Do you support this proposition? If so, are there any changes or amendments you would make to the proposal? If not, could you please explain why, providing evidence where possible.

We recommend reading the consultation in full before responding to this question, as the subsequent chapters will provide additional detail on the proposal.

Question 5: What is the best way to support Small and Medium Enterprises in obtaining annual performance-based ratings, where the owner of the building or the single tenant is an SME?

Interactions with the EPC, and Non-Domestic Private Rented Sector Minimum Energy Efficiency Standards (ND PRS MEES), and other regulatory obligations

The Government's is committed to ensuring that building owners do not have an unreasonable number of regulatory obligations, which impacts on their time that could be spent running their business.

As set out in the Government's response to the EPC Call for Evidence, EPCs are certificates the Government requires building owners to produce when a building is built, sold or rented out, which:

- Illustrate the energy and carbon emissions performance of a building;
- Allow consumers to compare the energy performance of different buildings; and
- Indicate how a building can be improved.

Under the proposals in this consultation, the Government will require building owners and single tenants to obtain and disclose an annual, up-to-date, performance-based rating.

A performance-based rating will show perspective buyers and tenants how the building is performing, in terms of climate impact, against similar building types. It will also provide a clear indication of the running costs they can expect if they use the building for the same purpose.

In other words, at a high-level, a performance-based rating will provide prospective buyers and tenants with a similar, and often more up-to-date, comparative basis on which to make a purchasing decision.

For that reason, the Government could allow building owners to use their annual performance-based rating to satisfy some of the current 'trigger points' that exist under EPC regulations, specifically where the building is sold or let. That would mean building owners will not have a regulatory obligation to get a different building rating, on top of the annual performance-based rating they will be required to provide annually.

However, the Government could also continue to require buildings above 1,000m² to present a valid EPC where the building is sold or let, as the two metrics could work together. If both ratings are accurate, an EPC and a performance-rating can come together to give a clear picture of why a building is performing the way it is, and where to target improvements. Where a building has a high EPC score and low performance-based rating, it would appear that a theoretically efficient building is being operated and run poorly. Where a building has a low EPC score and a low performance-based rating, it could be the case that the building is being run as efficiently as possible, but fabric and service upgrades are required.

For certain types of purchases or tenancies, for example where a prospective buyer or tenant were to use the building very differently to a previous occupant, the information provided by an EPC could be more useful than a performance-based rating.

Therefore it is important to emphasise that if the Government were to pursue the first option of allowing building owners to use their annual performance-based rating to satisfy their obligation to provide an EPC when the building is sold or let it would be to streamline regulatory obligations – not to stop large building owners and single tenants from commissioning an EPC. If that option was pursued the Government would strongly encourage building owners and single tenants to commission an EPC to help to identify improvements that can be made to the fabric and services in the building. The Government anticipates that prospective buyers or tenants would request the building owner commission an EPC, or building survey, if they were to use the building very differently to the previous occupant.

The Government has, in line with these proposals, outlined an alternative method for landlords of rented offices above 1,000m² to demonstrate compliance against Non-Domestic Private Rented Sector Minimum Energy Efficiency Standards (ND PRS MEES) in the *Phase one: Office Sector* paper, which will similarly streamline their regulatory requirements. Instead of needing to get EPCs alongside performance-based ratings to prove compliance, landlords will be able to agree the set of cost-effective measures that they need to install under ND PRS MEES with the scheme administrator when they are first required to get annual performance-based ratings. To demonstrate compliance with ND PRS MEES they then need to:

- get a performance-based framework rating, annually, and have it disclosed online
- provide proof of installation of the set of measures, agreed when the building is onboarded, by 2030

These proposals are outlined in more detail in the *Phase one: Office Sector* paper.

Some buildings above 1,000m² will be owned, or occupied, by organisations already required to undertake energy audits under the Energy Savings Opportunity Scheme (ESOS) or report their energy consumption under the Streamlined Energy and Carbon Reporting Framework (SECR). The proposals in this consultation are different to those schemes because the rating will be performance-based at an individual building level, and the rating will be benchmarked to similar building types.

The Government welcomes feedback on how an annual performance-based building rating can be introduced in a way that best manages different reporting requirements and minimises duplications. Some suggestions for synergies with ESOS are outlined in Chapter 4 of this consultation.

Finally, the data provided by the EPC is valuable to the Government to inform policy decisions. Therefore, the Government proposes suggests that when a commercial or industrial building above 1,000m² is first required to get an annual performance-based rating, or ‘onboarded’ onto the performance-based policy framework, the building owner or single tenant will need to present a valid EPC. The scheme administrator can then ask for improvements to the building’s fabric or services to be disclosed as part of the annual submission of energy data, helping the Government to understand the impact that fabric and service improvements are having on energy intensity.

Question 6: Should the Government:

- **Allow owners of buildings above 1,000m² to use their annual performance-based rating to satisfy their existing regulatory obligation to present a valid EPC before a building is sold or let. As set out above, under this option the Government would continue to collect data about fabric and service improvements. Where prospective buyers or tenants want information about the building fabric and services, EPCs can be obtained on a voluntary basis.**

- **Continue to require owners of buildings above 1,000m² to present a valid EPC where the building is sold or let, recognising that the EPC and a performance-based rating assess different things, and can collectively provide a better level of information about the building than either rating would in isolation.**

Please outline your preferred option and your reasoning, providing evidence where possible. Please set out any changes or amendments you would make to the options, or if you would favour a different option. An appraisal of the benefits and risks of both options, providing evidence where possible, would help inform the Government's decision making.

Different types of ratings

The Government considers that landlords and businesses should only be required to improve the performance of the features of the building that are in their control.

For example, in the office sector, the Government proposes that landlords of multi-tenanted buildings will only be responsible for getting a 'base building rating' for the building. A base-building rating will reflect the performance of central areas and central services, as those are the areas of the building that the landlord has the ability to improve.

Single tenants and owner occupiers, on the other hand, will typically have responsibility over all the energy used in the building. They will therefore be assigned a 'whole building rating', which will reflect the performance of the whole building.

Further detail will be provided on 'base building ratings' and 'whole building ratings' in Chapter 5. The Government recognises that this will be more difficult in some sectors than in others, and full details are set out on how this will apply to the office sector in the *Phase one: Office Sector* paper.

The 1,000m² threshold, and voluntary ratings for buildings below 1,000m²

For reasons already outlined, the Government considers that the most sensible place to introduce annual performance-based ratings is in buildings over 1,000m². It is worth being clear that the Government acknowledges there is no material difference between a building of 1,000m² and one of 999m². The threshold is driven more by the fact that, firstly, a threshold is

required, and secondly, 1,000m² is broadly the point above which commercial and industrial buildings start to become noticeably fewer in number, start to get more complex, and use a lot of energy. The threshold of 1,000m² has also been used before in the UK in the early stages of the Display Energy Certificate (DEC), so it is well understood.

The 1,000m² threshold will be reviewed in each phase for each sector. However, 1,000m² will act as the default threshold unless there is clear evidence that it should be lower or higher for a given sector.

The Government's aim is that buildings below 1,000m² will be able to acquire a performance-based rating on a voluntary basis, should they choose to do so. Should this option be progressed, the Government will work with the proposed ratings administrator to determine a sensible timeline for delivering this option.

Question 7: Recognising that the Government has committed to review the threshold for each sector, do you consider 1,000m² to be a sensible starting position for determining which buildings should be required to obtain annual performance-based ratings?

We recommend reading the consultation in full before responding to this question, as chapter 6 will provide additional detail on how the threshold will be implemented across a range of different scenarios, including in mixed-use buildings.

Additional Ratings

Over the course of the NABERS scheme's development in Australia, a number of additional operational ratings have been developed in addition to the central focus on energy efficiency and greenhouse gas emissions. NABERS now includes rating tools covering areas such as water, waste and indoor air quality. While not within scope of our initial proposals, the Government is keen to explore these wider sustainability factors and to gather views on whether the proposed framework could in the future be expanded to cover them.

Question 8: Should the Government consider expanding the performance-based rating to cover factors such as water, waste and indoor air quality? What do you consider would be the benefits of this approach? Would there be any drawbacks?

Chapter 4 – The Delivery Model

As set out in the previous chapter, the Government considers that there are two high-level objectives the performance-based rating framework must achieve to be successful: high-quality ratings must be delivered annually, and those ratings must improve over time.

This chapter will set out the Government's proposals for a delivery model that can meet these objectives. The focus of this chapter is therefore:

- **how** the framework can meet its practical and operational requirements
- **how** the framework can be designed so that it supports the wider strategic outcomes that the Government and the industry want to see.

The Government has set out a proposed prototype end-to-end 'delivery model' in this chapter. This describes, in 1-6 stages, what needs to happen to go from a set of meter readings to a performance-based rating which is reliable and trusted. The basic approach set out in this chapter is expected to apply across each sector. If an adapted approach is required, the Government will set that out in the consultation papers for phases 2 and 3.

This chapter should not be interpreted as the Government attempting to prescribe exactly how the framework should be run. Should the Government decide to progress with the framework following this consultation, a ratings administrator will be appointed. The ratings administrator will be expected to run and administer the rating. **The Government's lead option is not to impose or develop a framework from scratch** and would like the industry to submit proposals that show a pragmatic and collaborative approach and build on the work that has already been undertaken. The Government's aim is to foster a competitive marketplace to improve buildings, not necessarily a competitive marketplace for ratings themselves.

As the Government intends for a ratings administrator to run and administer the framework, the purpose of this chapter is to set out, and invite feedback on, the Government's view of what an appropriate and effective delivery model should look like. This will allow the Government to receive considered views from across the industry in advance of procuring a ratings administrator, should the policy progress.

The Proposed 1-6 Stage Delivery Model

The delivery model needs to ensure that the framework can deliver its operational requirements and support wider strategic outcomes. That is why the Government has designed a delivery model below that aims to:

- provide an annual rating to buildings in scope of the framework, and can do so accurately and consistently, with appropriate levels of quality assurance in place

- accommodate an increasing number of buildings, as more sectors are onboarded in phases two and three of the framework
- limit Government involvement to where it is essential to encourage key markets to develop. **Where the market can lead, and is best placed to lead, it should lead**
- provide building owners/occupiers access to **high quality recommendations, analytics, and advice to improve their rating**

Question 9: Has the Government identified what you consider to be the right objectives for a successful delivery model?

The 1-6 stage delivery model is set out in detail below. It follows the chronological perspective of the user, from providing metered data through to receiving and disclosing the rating.

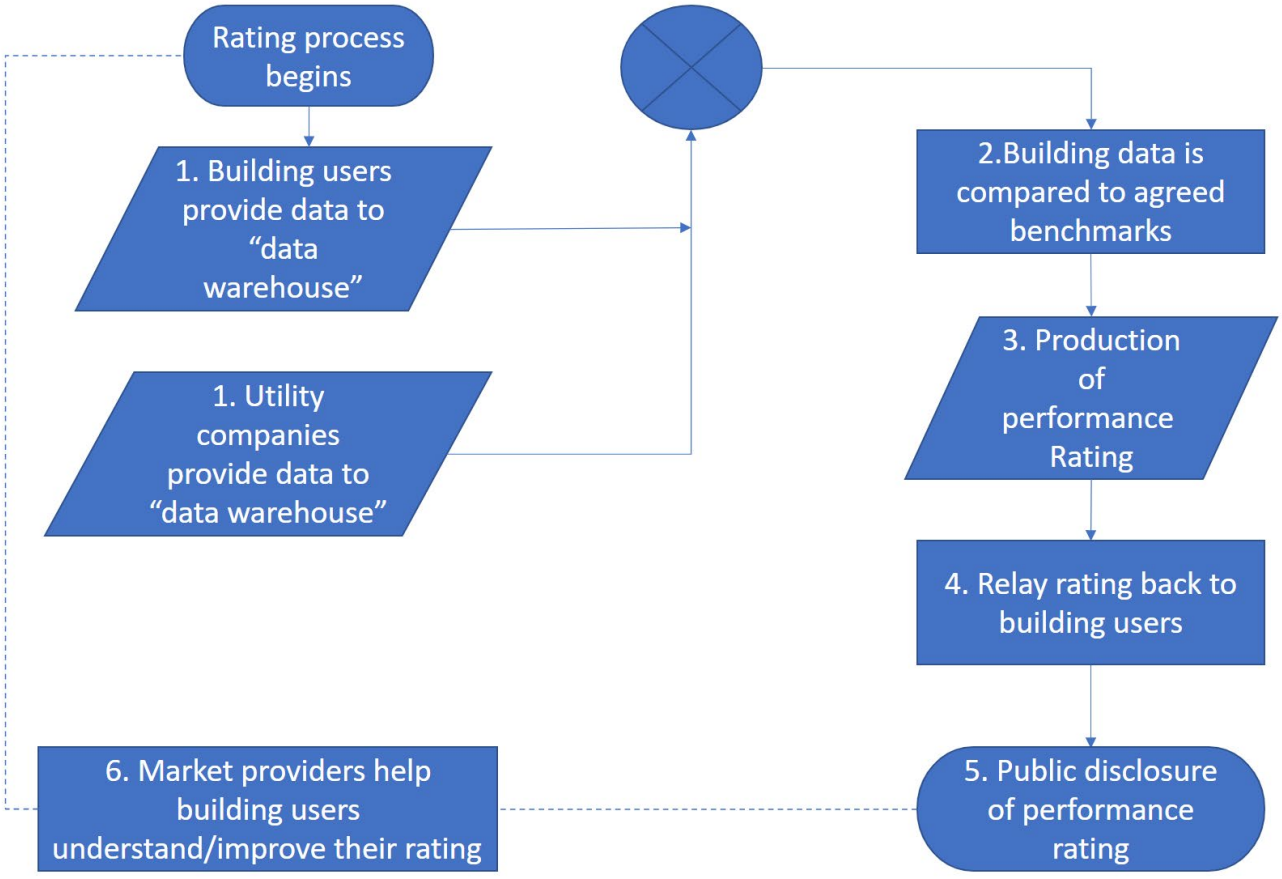

Figure 7: Proposed delivery model

Stage 1: Building level data and annual energy data needs to be collected

Stage 1 marks the beginning of the process. In order to get a rating, building level data is required: this is both information about the building and the annual metered energy data for the building.

The information required about the building, set out in Chapter 5, will be gathered when the building is onboarded onto the framework. During the onboarding process the Government proposes that the building will undergo a physical assessment by a qualified person. That person will gather the relevant information including address details, floor space data, operational hours, building use, on-site renewables and whether the building needs a base or whole building rating. They will also ensure the energy meters are set-up correctly. More detail will be provided on the specifics of the onboarding process and requirements in Chapter 5.

Once the ratings administrator has an accurate set of data on the fundamentals of the building and the activities within it, they will then need to understand the building's metered energy data, on an annual basis. The building's energy data will then be used in stages 2 and 3 to produce an accurate rating.

Throughout stage 1 of the delivery model, the aim is to minimise the time and work required by building owners/occupiers in supplying their data. The Government does not consider that buildings should need a physical assessment every year. Instead, once a building has been 'onboarded', the owner or single tenant can submit a desktop assessment to receive their annual rating, by specifying where key information has changed (such as energy use, operational hours, or staff numbers). One possibility for making the process quicker and easier is that the energy meter data collection could be automated via data sharing agreements between the utility provider and the owner of the rating.

Stage 2: Building level data and annual energy data is processed and compared to an agreed set of benchmarks

At stage 2 of the delivery model, the building's data (including its annual energy data) will need to be processed and compared to a set of agreed benchmarks. The technical considerations that go into developing the benchmarking methodology are outlined in more detail in Chapter 5.

In terms of producing accurate, trusted, and consistent ratings, it is vital that the benchmarks are supported by the industry and, if necessary, updated. Therefore, the Government proposes that the benchmarks are agreed, and any updates made, with the explicit involvement of sector specific and wider industry experts. This could be through a cross-industry committee, chaired by the ratings administrator, or through a standard setting process led by another organisation, for example the British Standards Institute.

The benchmarks for each sector of the non-domestic building stock will be developed in a similar way for consistency and fairness. We will also consider how best to make any required updates to benchmarks, for example a review every four years.

The Government proposes that the benchmarks are made publicly available, so that the market has full transparency over how ratings are calculated and how they can be improved.

Stage 3: Annual performance-based rating is produced for the building and is quality assured

Stage 3 is where the rating for the individual building will be generated. The ratings administrator will compare the building level data to the agreed benchmarks to produce the individual annual 1-6 star rating. The Government assumes that this is the most sensible point to undertake quality assurance, though this will be decided by the ratings administrator.

Stage 4 and 5: Annual performance-based rating is relayed back to the building owner or single tenant and disclosed publicly

Once the rating has been quality assured by the ratings administrator the building owner or single tenant will be notified of the rating. Again, the Government intends to make this an electronic process.

As the Government proposes to mandate the disclosure of the rating, the Government considers that the building owner or single tenant will be given a short period of time in which to raise any queries or concerns about the rating before it is published, either on gov.uk or on the ratings administrator's website.

Stage 6: Building owners/occupiers use the market to understand what their rating means, and how their rating can be improved

The delivery model can be considered to be in two parts. Up to stage 5, the delivery model is focused on the production of the rating - from the gathering of building level data through to public disclosure. Stage 6 of the delivery model focuses on how building owners and tenants will understand the rating, both in terms of why a given rating has been awarded and what action they can undertake to improve it.

The Government has engaged widely with the industry and concluded that the preferred approach is that a national performance-based rating delineate ratings and recommendations, with the Government and ratings administrator responsible for providing the former, and the market responsible for providing the latter. The Government considers that its primary role should be to pass the required legislation for the framework and for the ratings administrator to set up processes that are reliable, repeatable, and scalable for stages 1-5.

Commercial and industrial buildings above 1,000m² are usually complex and bespoke. To make meaningful and lasting improvements to these buildings, owners and occupiers must have a detailed understanding of how the building works, how it operates, and how it uses energy. This is especially true when it comes to viewing the decarbonisation of the building over the long term, with the requirement to reach net zero by 2050.

Stages 1-5 mean the ratings administrator will have enough data and enough information to provide buildings with an investment grade performance-based rating, year after year.

However, that level of data and information is not the same as the level of data and information required to determine the right interventions to improve the ratings of any given building.

The Government considers that many building owners and single tenants will be able to access the right analytics, advice, recommendations, and services to improve ratings through in-house capabilities. Where building owners or single tenants do not have in-house capabilities, the Government considers that it is better for the building owner or single tenant to seek specialist advice from the wider energy management market. This approach will also help to stimulate a competitive market for improving ratings, increasing the number of high-skilled jobs in the low carbon economy.

Large buildings owners, or single tenants, that are also a large business may also already have access to the advice they need to improve a property's rating. That is because large businesses are required to carry out an audit of their energy use, including energy used in buildings, every four years, under the Energy Savings Opportunity Scheme (ESOS). The ESOS audit report provides tailored recommendations to reduce energy use in the participant's buildings (though as ESOS participants are only required to audit 90% of their total energy use, and where ESOS participants have a large building portfolio they are only required to audit a representative sample, not all buildings may have been individually audited). ESOS participants could also opt to use future ESOS audits specifically to identify how to improve their rating for a particular set of buildings.

Question 10: Do you support the Government's proposal that the annual rating should not be accompanied by recommendations for improving the rating? If so, are there any changes you would make or considerations you would add to the proposal? If not, could you please explain why, providing evidence where possible.

Role of the Market

The Government's aim is to foster a competitive marketplace to improve building ratings.

Whilst the Government's aim is to enable every building owner and business to have access to good quality recommendations and advice, it is recognised not every client will need a state-of-the-art service. Instead, the aim is for the market to be able to provide a range of service offers, tailored to the individual needs of the building owner or business, and the building in question. Some organisations will already be clearly aware of their energy consumption, potentially having an in-house energy management department. These organisations may not require tailored advice and may not need to call on the market.

For the building owners and businesses that will need to use the market, service offers could range from basic recommendations and limited analytics, to more detailed analytics, tailored advice, and recommendations. The building owner or business would have a choice of the service they require depending on their needs and what they are prepared to pay. Two potential types of commercial model are illustrated in the figures below.

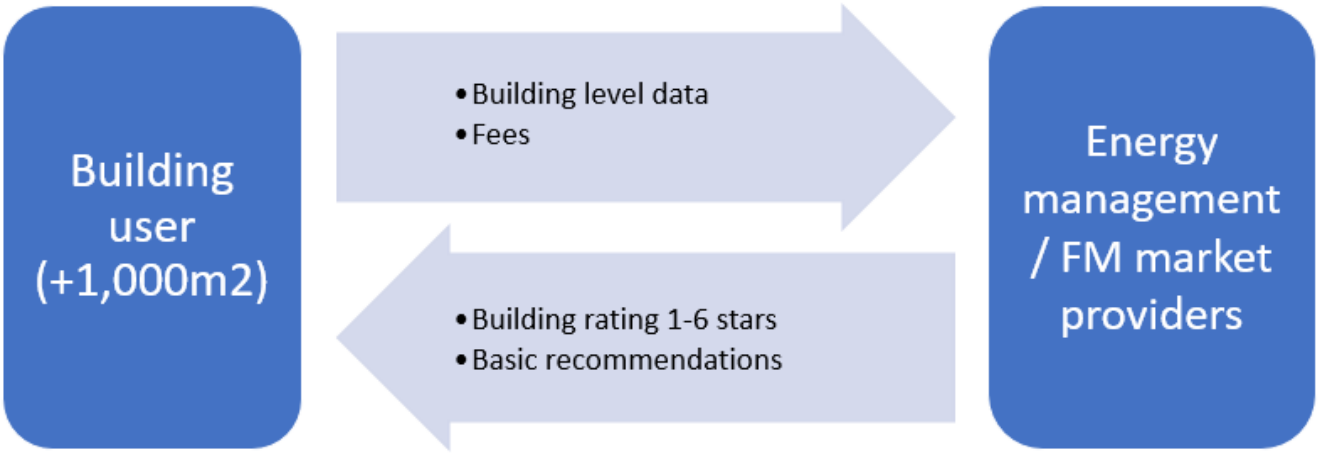

Figure 8: Basic Service Offer Example

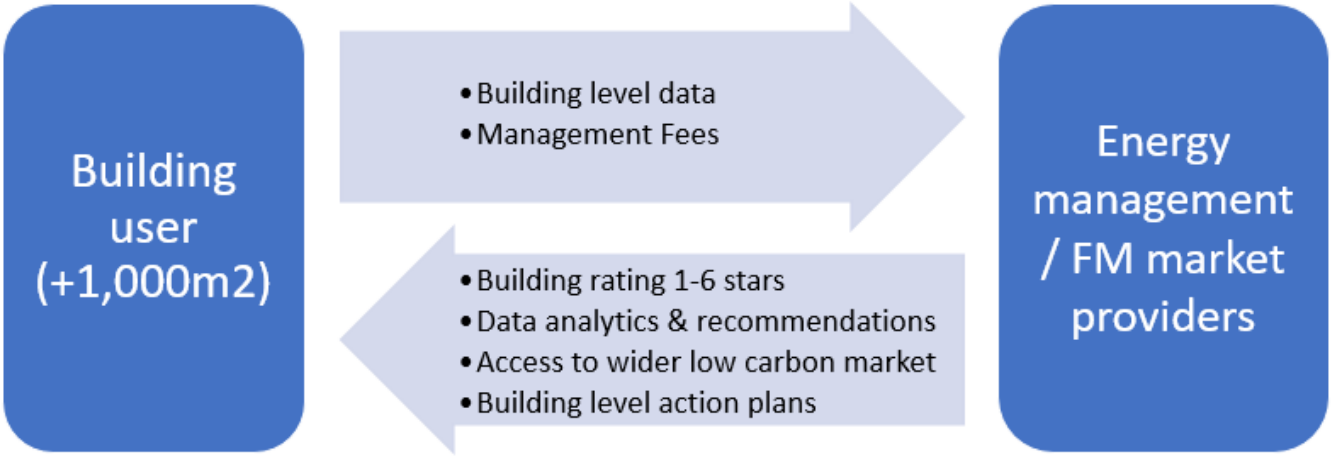

Figure 9: Advanced Service Offer Example

In the commercial relationship outlined in Figure 8, the building owner might pay a relatively low cost to be supplied with limited analytics alongside the rating and fairly high-level recommendations. In the relationship outlined in Figure 9, the building owner might pay a higher fee for more detailed analytics, better recommendations, access to preferred suppliers and more sophisticated portfolio management.

Stage 6 of the delivery model is market led because the market has the ability to provide a range of service offers, which the Government does not. In Australia, NABERS has developed over 20 years and key supporting markets have developed to work alongside the scheme over that time. The Government has attempted to structure proposals for introducing a performance-based policy framework in a way that allows these markets to play a key role in the UK in a shorter space of time.

Compliance, Enforcement and Exemptions

Having a credible and effective compliance and enforcement approach will be key to the success of a national performance-based policy framework.

A common feature of effective enforcement approaches is that they understand what the likely rate of compliance will be in the population in scope of the policy. This can help ensure that the size of the problem is not overestimated, where an extensive and expensive enforcement framework might be created unnecessarily because rates of compliance are naturally high. It is equally important the issue is not underestimated, where a light-touch enforcement regime cannot cope with high rates of non-compliance. The Government has commissioned research alongside this consultation to help identify the likely response of the building owners and occupiers in scope of the policy.

The final enforcement approach will consider this research, as well as take on board feedback from this consultation.

Key principles of enforcement

There are some key principles that the Government will consider when designing an enforcement approach. The approach should:

Understand the market: This can help segment those in scope into landlords and businesses that will actively comply, and those that will not comply without some enforcement action.

Be targeted: The Government intends to develop a targeted and sensible intervention, or set of interventions, which lifts as many parties as possible from non-compliance into active compliance. The Government will consider what legislation may be necessary to enable this.

Be cost effective: What will the cost of the preferred enforcement approach be? Is it affordable, and is it justified? Our preference is for the intervention that provides the most effective enforcement for the least cost.

Be clear: The Government intends to provide clarity on which party enforcement action will be taken, the penalties they may face, and who will be responsible for enforcement and, if necessary, setting out details in legislation.

Potential options for dealing with non-compliance

There are two main methods of enforcement available: publication of non-compliance and financial penalties.

- **Publication of non-compliance:** publicise those organisations that have not complied with the framework. This would depend on whether we have the data available to know

who should be, and who is, compliant taking into consideration any data protection issues relating to personal data. This approach may be effective with some businesses/organisations for whom Environmental, Social, and Corporate Governance (ESG) is important. For some, however, it may not be a motivating factor.

- **Financial penalty:** this could, most likely, be in the form of a penalty fine system. There could be a system of notices and warnings followed by a scale of fines with smaller fines for one-off non-compliance and larger fines for persistent breaches.

Options for enforcement body

When considering which body will be responsible for managing the enforcement of the rating it is important to consider the resources that may be required, the cost and burden of the enforcement and how proactive the enforcement body should be.

Some possible bodies that could carry out the framework enforcement role include:

- Ratings administrator
- BEIS
- Government agency

The Government will wait for the findings of the research project before identifying a preference for who is best placed to properly monitor compliance and take enforcement action if needed. There are also other considerations that will be taken into account, such as the scope of the role of the ratings administrator. It could make sense, for example, for the organisation responsible for the monitoring and verification of the framework to also be responsible for enforcing the framework.

Exemptions

Consideration of possible exemptions will be needed for some buildings which should not be required to obtain an annual performance-based rating.

The Government is initially of the view that only a small number of large non-domestic buildings should be exempt from the framework. The reasons for a valid exemption need to be properly worked out but could, for example, be for certain building types or use, such as those buildings with links to national security or where energy data is too sensitive to release. All buildings must reach net zero by 2050 so we will not consider exemptions that are only based on perceived difficulties in implementation.

Question 11: Do you support the Government's proposal that exemptions should be limited to a relatively few buildings? Are there any grounds for an exemption that you feel are appropriate, which the Government has not considered?

Ahead of the findings from the Government's research project we also welcome views on how the requirement to obtain and disclose an annual rating could be enforced most effectively.

Chapter 5 – Ensuring Ratings Improve Over Time

Whilst the Government's aim is for building recommendations and improvements to be market driven and market led, there is an important role for the Government to play in ensuring ratings improve over time. This chapter addresses the Government's role in ensuring that the right incentives are in place to deliver those improvements from day one, and beyond. This chapter will also set out the further incentives, penalties, and regulatory interventions that can be introduced if improvements are not happening at the rate required.

How can the policy framework be structured to ensure that ratings improve at the rate required to meet net zero?

A continuous and sustained improvement in building ratings is integral to the success of a performance-based policy framework. Improved building ratings will mean that large non-domestic buildings are reducing their energy consumption and carbon emissions - putting these buildings on the path to achieving net zero.

The Government proposes that the policy framework does not prescribe 'how' the building should improve its performance - it will simply reward or penalise any measured carbon and energy savings with an annual increase or decrease to the building rating.

It is easy to say that ratings need to improve over time, but ensuring it happens in reality requires an understanding of what building owners and businesses will need to do to improve the energy performance of their building. The diagram below is a visual model of what the Government considers those needs are:

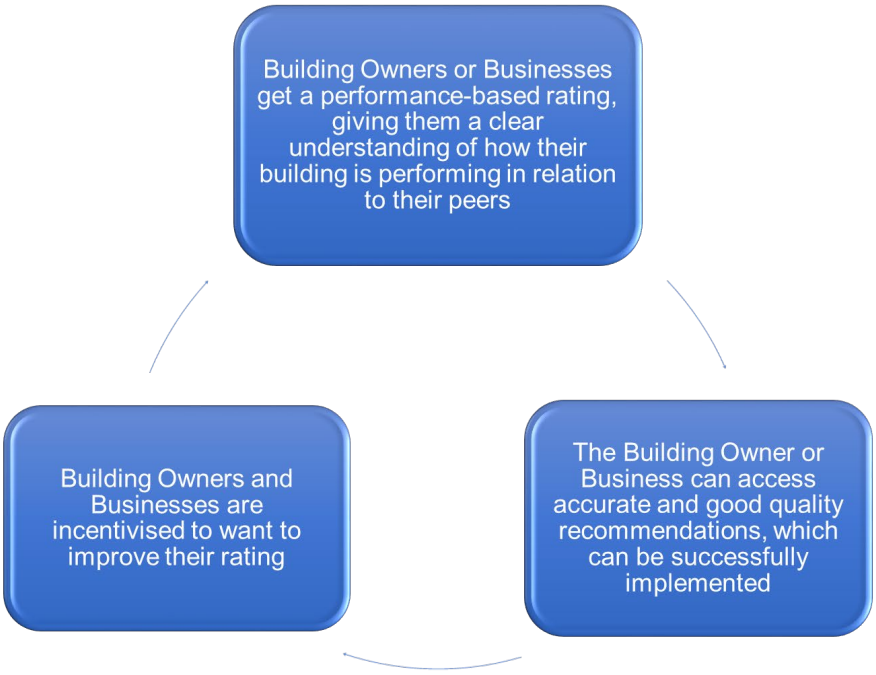

Figure 10: Conditions needed to help building owners and businesses improve their rating

The first condition, which underpins the others, is that building owners and businesses must **receive an annual building rating and understand how their building is performing** in relation to similar buildings. Unless building owners and businesses have access to that information, they cannot make an informed decision on how to improve their building. The rating is set up to provide and contextualise this information.

The second condition, and perhaps the most obvious, is that building owners and businesses need **to want to improve their rating over time.** In other words, they must be incentivised. Not all building owners and businesses will independently want to improve their rating. This is where it is essential that Government sets the right incentives and penalties from day one and has a credible list of interventions to 'tighten the screw' if building owners and businesses are not making improvements at the rate required.

Building owners and businesses may want their ratings to improve, but unless they have access to **accurate and good recommendations, from experts in the market or their own in-house capability,** those rating improvements will not happen.

How will the framework incentivise improvements from day one?

The evidence from the Australian NABERS scheme is that reputational drivers work. Over the last decade there has been a marked reduction in energy consumption and carbon emissions in the buildings in scope of the scheme, despite there being no regulatory requirement for

building owners and businesses to improve their energy efficiency, their ratings, or to lower their carbon emissions. However, the success of the NABERS scheme should not be put solely down to businesses and building owners wanting to enhance their reputations. As set out in chapter one, owners and occupiers of buildings in the REEB scheme in the UK improved considerably without their ratings being disclosed.[33] The graphic below has attempted to capture some of the key drivers of improved energy and carbon performance.

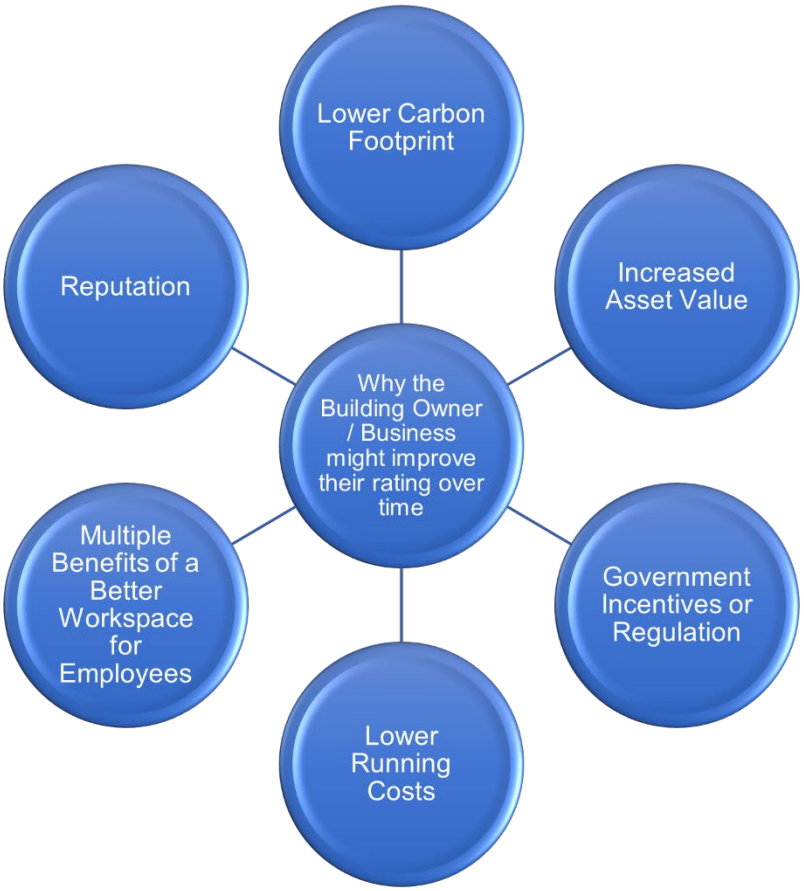

Figure 91: Key drivers of improved energy and carbon performance

By providing accurate, trusted and contextualised information, not just to building owners and businesses but also to the wider market, NABERS managed to tap into drivers like increased asset value, lower carbon footprints, lower running costs in addition to reputation. The Government's aim is for the annual ratings in England and Wales, with public disclosure as the first step, will look to drive improvements in largely the same way.

The benefits of an outcome-based policy framework, as set out previously, are that the Government can set a target for emissions, monitor progress, and introduce firmer regulation if necessary.

[33] It is worth noting that those building owners and occupiers that submit data into REEB can see how they individually perform against peers though this is not public. So, whilst there are some drivers to improve, it is not to the same level of scrutiny and reputational risk as is seen with a publicly available rating.

The Government does also intend for additional regulation to operate outside of this framework. This will include policies to drive the uptake of clean heating systems, and in rented buildings, the fabric measures that would have been required under ND PRS MEES.

In Australia, the leadership shown by the public sector in setting high procurement standards for public buildings is widely credited as a key contributing factor to its success.[34] The Government is currently exploring how the central government estate can be encouraged to show leadership to drive similarly positive outcomes in England and Wales.

Question 12: Are there any considerations you would like to add to the Government's analysis of the factors that are likely to drive improvements in ratings? Do you support the Government's proposals to improve ratings from day one?

Steps the Government could take if ratings are not improving at the rate required

Fiscal Interventions

As the framework will only recognise measured results, a strong financial incentive could be highly effective at motivating businesses and landlords to achieve higher ratings. This could take the form of a financial incentive / penalty structure linked to an existing tax, where if a building performs below the median of 3.5 stars (assuming the Government decides to use star ratings), the building owner or business could be expected to pay a premium based on how far below 3.5 stars the rating is. If the building performed better than 3.5 stars, incremental discounts could apply based on how far above 3.5 stars the rating is.

Alternatively, a freestanding financial incentive could be applied to the policy framework (i.e. not linked to any existing tax). This type of intervention could assess building performance over a given period of time (a four-year assessment cycle), and reward or penalise buildings based on their ratings over the period.

The Government is eager for lenders to use this framework to show their commitment to helping businesses make energy improvements over the 2020s and deliver net-zero by 2050. An outcome-based framework should open avenues for more innovative methods of lending. For example, access to capital could be provided upfront, with repayments and interest linked to future performance.

[34] The federal and state Government in Australia (except Tasmania) gradually adopted a target rating of 4.5 stars for new and existing government leases over the 2002-09 period, thereby helping drive the uptake of ratings in the market. Including the NABERS rating in Australian Government procurement turned it from a predominantly technical issue to a commercial concern with higher rated buildings more likely to secure Government leases. This has led to higher NABERS ratings being associated with higher rents and capital valuations. Source: Bannister, Paul, *NABERS: Lessons from 12 Years of Performance Based Ratings in Australia.*

Question 13: Do you consider that linking a clear financial incentive, or disincentive, to annual performance-based ratings would be an effective way to drive improvements in those ratings?

Regulatory Interventions

The Government considers that shifting to a performance-based policy framework is the right approach, but it will require different supporting regulation to the EPC.

The EPC is an effective metric for regulatory interventions because it can be used to require building owners to invest in the quality of their building prior to making a sale or renting out the building. The issue, as has been demonstrated, is that in the largest commercial buildings those investments do not always translate to improved energy use and lower carbon emissions in reality.

A performance-based approach is bold because it tackles this problem head on, **but it does mean that regulatory interventions must be designed to suit or support the metric**. It does not make sense, for example, to prohibit the sale or let of a building if a performance-based rating is below a 'minimum standard'. In order to improve the rating, the tenant or owner needs to be in the building, and they need to be using the building better.

The Government could look to introduce the following regulatory interventions to accelerate the energy performance improvements being achieved by building owners and businesses:

Table 1:Possible regulatory interventions

Intervention	Description
Low carbon heating	A building's performance will be significantly impacted by the heating system operating in the building. Heating systems are responsible for a large portion of carbon emissions and we will need to decarbonise them to achieve our net zero commitment. The action necessary to decarbonise buildings that are off the gas grid with heating systems fuelled by oil, liquid petroleum gas or coal, is clear. For the larger portion of stock connected to the gas grid, further work on the most efficient and effective measures to decarbonise their heating systems is required. These decisions will need to be informed by a comprehensive programme of research, development, and innovation over the coming years, including exploring the potential to use hydrogen for heating. While we continue to tackle the strategic uncertainty of the future gas grid and the role of hydrogen, making strides in improving the energy efficiency

	of these buildings is vital to ready them for their transition to low carbon heating. During this period, the annual performance-based ratings will positively recognise those who transition voluntarily or because of regulation. Longer-term, the annual ratings should present opportunities to further support the drive to decarbonisation heat. This could involve initiatives such as a clean heat rating cap – meaning buildings could not score above a certain star rating unless its primary heating system is low carbon (for example setting a cap at 4.5 stars). We expect this would further incentivise buildings who recognise the value of a high star rating and allow tenants to easily identify buildings which have decarbonised their heating. The impact of a cap would need to considered, including whether it undermines or distorts the scoring system by inadvertently creating an artificial ceiling in the market.
Introduction of Minimum Standards Across the Entire Stock	The Government could set minimum standards through the framework. As set out above, setting minimum standards through performance-based ratings would be more challenging than through PRS, but not insurmountable. The main consideration would need to be what would happen if the building owner or business did not achieve the required level of performance for their building. Minimum standards for a performance-based framework could regulate that any building under a certain star rating would need to improve their rating by a certain date or face a penalty.

Softer Interventions

Below are a range of softer interventions that the Government could use to help drive demand and incentivise building owners and businesses to improve their rating. At this stage, as with the proposals set out above, these are only suggestions and your views on their feasibility are welcome:

- **Publicising the top performing buildings online:** this would see the details, or potentially case studies, of highly rated buildings published on gov.uk, or the ratings administrator's website. This would introduce an element of competition and encourage other building owners and businesses to make improvements.
- **Special recognition for those buildings that achieve a certain star rating, e.g. 4.5 stars or above:** this would provide public and customer recognition for those building owners and businesses with high ratings. Building owners and businesses could publicise this on their website and other marketing material, and in the building itself.

- **‘Open building’ network for buildings with a high rating:** building owners and businesses with a high rating could invite other owners and businesses to visit their building(s) to see first-hand how they have improved their energy management. This would be an opportunity to showcase what can be achieved and inspire others to realise what they could do in their own building(s).

Question 14: What do you consider would be the impact of the incentives and interventions that have been suggested? Are there ways you think those incentives or interventions could be made more effective? Are there other incentives or interventions that the Government has not considered here, which you believe would be more effective at ensuring ratings improve over time?

Chapter 6 – Technical Considerations

Overview

Chapters 3 and 4 have set out the Government's vision for the rating framework, both in terms of how the framework can be implemented and delivered, and how it can be used to drive improvements in energy use and reduce carbon emissions.

Paul Bannister, a leading academic in energy efficiency and developer of the NABERS energy and water ratings, cut to the core of what a rating scheme is:

'Rating systems are a means of communicating a complex technical message in a format readily understood by the non-technical market.'[35]

Introducing a rating based on actual energy consumption may appear relatively straightforward. In reality, it is challenging to translate meter readings into a rating which is fair and consistent, which incentivises the right behaviours and outcomes, and which is trusted by the industry.

There are a variety of different ways to answer even the most fundamental questions, such as what a performance-based rating framework should measure and reward. For example, a rating that focuses too firmly on carbon emissions may fail to incentivise better energy performance as the grid decarbonises. On the other hand, a rating that concentrates on total energy performance may inadequately recognise the decarbonisation of heat sources.

An important issue is determining what the rating framework should be measuring and assessing. Obviously, at a high-level this will be based on meter readings. Meter readings in large non-domestic buildings are no different from meter readings in the average home: they show how much energy has been used over a period of time.

From this point, the technical decisions that underpin the performance-based framework need to ensure two things:

- **That the rating is fair and delivers a level playing field**
- **That the right outcomes are being measured and the right behaviours are being incentivised**

Ensuring the rating is fair and delivers a level playing field is about standardising the data. For example, translating the meter reading to energy intensity to account for how different fuels are used, accommodating different building sizes, accurately reflecting opening hours and occupancy levels, developing appropriate benchmarks and considering the day-to-day weather conditions.

[35] Bannister, Paul, *NABERS: Lessons from 12 Years of Performance Based Ratings in Australia*, p1.

The most difficult choices all relate to ensuring that the right outcomes are being measured and right behaviours are being incentivised. These include the extent to which the meter reading is broken down into carbon emissions, the extent to which buildings are compared to each other and compared to a net-zero trajectory, how the rating measures flexible use of energy, and how it accounts for on-site generation.

The Government recognises that there are no easy answers to these questions. The issues and questions set out in this chapter have been drafted in close collaboration with experts in the industry and will aim to set out a high-level proposal for how the rating framework could function and be presented, so that it fulfils our objectives.

Rating Types

The Government considers that a key feature of the rating should be that building owners and businesses are only required to improve the performance of the features of the building that are in their control.

The Government considers that there should be three types of rating, depending on whether you are a building owner, owner occupier or single tenant, or a tenant in a building with multiple tenants. These are:

- **Base rating:** this rating will apply to building owners in a multi-tenant site and will capture central services and central areas
- **Whole building rating:** this rating will be relevant to building owner occupiers or to large single tenants, and will capture all energy associated with the site for all services
- **Aspirational/voluntary tenant rating:** if large tenants have a significant floor area (>1,000m²), the Government could look to make a tenant rating available on a voluntary basis in the future. This rating will account for all energy used within a tenant's space including light and power and any supplementary hot water or air conditioning systems

It is important to utilise these different rating types, where appropriate, to account for the way different building users and occupiers will consume energy on site, as well as the differing scopes of responsibility for energy use. For example, a single tenant or owner occupier will typically be responsible for all the energy used on site and will have the ability to make behavioural changes or investments to improve all aspects of that energy use.

On the other hand, a building owner who rents the building out to multiple tenants may only be responsible for supplying the core building services (such as heating, ventilation, cooling, and energy used in communal areas). Therefore, they are not responsible for all the energy used in the building and do not have the power to make improvements.

As a result, it makes sense to rate and compare single-tenants or owner occupiers to other single-tenants and owner occupiers, using a whole building metric. Similarly, building owners who rent out the building should only be compared using the base building metric, because that is the scope of their responsibility and the scope of what they are able to improve.

The Government is considering the introduction of a tenant rating on a voluntary basis. That rating might only apply to large tenants in rented spaces over 1,000m². Further details on what that rating could look like have been set out below.

These ratings are broadly based on the NABERS approach. The most significant difference is that the Government considers that the 'whole building rating' should be used more extensively than in NABERS, where the 'base building rating' has been the dominant metric in their scheme.

Balancing the need to measure energy use and carbon emissions

A single base metric will be needed to account for the different fuel mixes used across the UK building stock and combine their usage into a single metric with appropriate weighting factors to account for different fuel characteristics.

Fundamentally, any metric which is chosen will be based on energy meter readings that will allow actual consumption to determine the rating. Simple meter readings should not be used as the final metric as they do not consider the various characteristics that each fuel type will have such as varying carbon intensities and primary energy factors. The Government has reviewed several possible base metrics:

- Carbon emissions
- Primary energy factors (PEF)
- Kilowatt hour electricity equivalent (kWh_e)

Each base metric has been assessed below, with a focus on the extent to which the rating can provide fairness and deliver the right outcomes and behaviours.

Carbon Emissions

Achieving net-zero is fundamentally about reducing greenhouse gas emissions. For simplicity, the Government converts all the gases that contribute to greenhouse emissions into carbon equivalent.

It is possible for the framework to measure building performance in terms of carbon emissions. This can be achieved by taking building meter readings, and then looking at the total carbon

that has been emitted in providing the site with the energy that it has used. All fuels will have different carbon intensities which could affect the rating and using a carbon-based metric will mean fuels with a high carbon intensity will negatively affect the rating compared to a low carbon fuel.

Based on the 2020 Government greenhouse gas (GHG) conversion factors for company reporting a kWh of natural gas will produce 0.20428kg$CO2_e$, a kWh of grid electricity will produce 0.2556kg$CO2_e$ while a kWh of coal will produce 0.32170kg$CO2_e$.[36] As the grid decarbonises over time, using electricity as the single fuel in a building will become more attractive as it will lead to higher ratings.

One drawback of measuring carbon emissions is that it is not the most consistent metric. While the carbon emissions for natural gas is well defined and relatively stable, the emissions linked to grid electricity are extremely variable and will depend on the fuel mix of the national grid. As a result, there may be large fluctuations between the carbon intensity of grid electricity on an annual basis. This may require significant adjustment factors over time to normalise the rating. An illustration of the carbon intensity of the UK grid and an estimated trajectory towards 2030 can be seen in Figure 12, where it has dropped by 11% from 2012 to 2020 and will have an estimated drop of 53% over the period 2012 to 2030.

The real risk with using a pure carbon metric is that, as the UK grid is due to continue to decarbonise rapidly over the coming decade, buildings will see their ratings improve even if their energy performance does not. In other words, building owners and tenants would be rewarded for the electricity grid de-carbonising. This could disincentivise them from improving energy use in the building, as their rating will improve regardless.

If a carbon-based metric is used, inefficient sites which may benefit from a low carbon energy source such as biomass, or have their own onsite renewable generation, may also achieve a high rating based on the sites low carbon intensity. While this may incentivise local low carbon generation, it will not reward the efficiency of a building and may prolong the installation of other measures of energy reduction, such as lighting or fabric upgrades.

The proliferation of green energy tariffs also complicates the issue of selecting carbon as the base metric. If businesses are already paying a premium for zero carbon energy from their provider, it is difficult to fairly assess the performance of two different buildings, one on a green tariff and one on a regular tariff.

Primary Energy Factors (PEF)

Primary Energy Factors (PEF) have become a more widely known metric in recent years, and are proposed to be used in the UK Building Regulations (Part L). These factors connect primary energy and final energy, providing information on how much of each fuel, and

[36] 2020 GHG Conversion Factors: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

therefore how much energy, is used to produce a unit of final energy which would be consumed by the end user. For example, extracting, refining, and transporting oil or gas all requires energy. The energy of the fuels spent in these processes are summed and compared to the final product of energy used by the end consumer. This will produce the PEF which will always have a value of 1 and above. The UK's PEF for all fuels are currently published in Table 30 of the draft (2021 consultation version) of the NCM modelling guide used for non-domestic buildings.

All fuels will have a defined PEF, which can allow for the combination of different fuels which will have different factors into a single performance indicator, typically kWh/m². In the UK, this method of combining fuels has been incorporated into the Simplified Building Energy Model (SBEM) and Part L with the same methodology. That methodology would also be applied here if primary energy is to be used as the framework's base metric.

An advantage of a PEF metric is that there is the link with other policies such as Part L and the fact that this metric is already widely understood. Based on 2019 values, natural gas will have a primary energy factor of 1.13 while grid electricity has a value of 1.501.[37] Over time it is estimated that these factors will change and by 2030 could have values of 1.12 and 1.3 respectively.[38]

Overall, PEF will have many of the same issues seen with a carbon-based metric. With PEF, ratings will still naturally improve over time due to grid decarbonisation and this may disincentivise building rating improvements. While it will still encourage a move away from fuels such as natural gas towards electricity, the pace will depend on the rate of grid decarbonisation. It will be a similar pace to a carbon-based metric but slower than an electricity equivalent option which has factors applied to it to incentivise electrical usage. This can be seen in Figure 12.

Another thing to consider with this metric is that weighting factors are applied to every fuel, which may increase the volatility of the rating over time depending on how these factors change. However, based on these estimated values it is believed that this would only result in a small shift in the ratings, which could be absorbed over time without creating unacceptable instability in the rating.

Kilowatt hour Electricity Equivalent (kWh_e)

The final option for a base metric is the concept of a kWh of electricity equivalent (kWh_e) as a method to standardise different fuels into a single figure. This metric uses the PEFs of fuels as already discussed but adjusts the PEF of grid electricity to always have a value of 1 compared

[37] https://www.bregroup.com/wp-content/uploads/2019/10/Briefing-note-on-derivation-of-PE-factors-V1.3-01-10-2019.pdf
[38] https://www.betterbuildingspartnership.co.uk/sites/default/files/media/attachment/BBP_Design%20for%20Performance_A%20new%20approach%20to%20deliver%20energy%20efficient%20offices_0.pdf

to the current PEF value of 1.501. This will make a kWh of grid electricity equivalent (kWh_e) the base unit used where the value of other fuels will be determined with primary energy factors.

Like carbon and PEFs, kWh_e will allow for the combination of multiple fuels into a single metric. The difference between this metric and the others is that no factors are applied to grid electricity, only to other fuels. This will increase the stability of the metric over time as the value of electricity will not change as the grid continues to decarbonise. As a result, this metric will not reward buildings with an increased rating as the grid improves, unlike both carbon and PEF options. Using this base metric, buildings will have to actively improve their efficiency to improve their rating.

As grid electricity will be fixed at a value of 1, this will help incentivise the shift away from natural gas heating systems to electric heat pumps and would create a more attractive environment to do so compared to a carbon or PEF metric. This is because the use of all fuels except electricity will have a weighting attached to them that will count against achieving a high rating.

Looking ahead to 2030, it is estimated that the projected change in natural gas weighting factor compared to electricity will change from 0.75 kWh_e per kWh to 0.86 kWh_e per kWh.

A disadvantage of this metric is that it is not well known in the energy market and, while metrics similar to PEFs have been adopted in other government schemes, it is still a variation which would need time to bed in.

As with all ratings it will be subject to changes over time from the decarbonisation of the grid. But it is believed that this would generate a small shift in the ratings and should be absorbed and not create an unacceptable instability of the rating. An estimated annual rating change from 2020 to 2030 can be seen in Table 2 and shows a 0.3% annual change for kWh_e compared to a 1.1% for both a carbon and PEF based metric.

Summary

The relative stability or instability of each metric is important to understand, as this will determine the extent to which the framework rewards or penalises building owners and businesses over time due to external factors (i.e. changes in the UK's energy mix and grid decarbonisation).

A useful way of demonstrating this is to show how each metric would have treated a hypothetical building that saw no change to any of its characteristics, fuel mix, or energy use through the 2010s.

To run this simulation, the change in each metric based on a 5,000m² office space with a total energy intensity of 210kWh/m² has been calculated with a consumption ratio of 75% electricity to 25% natural gas. It is assumed that there are no changes to the total energy consumption.

The change in each metric can be seen in Figure 12 along with a percentage value of this change in Table 2:

Table 2: Percentage Change in Metric Outputs Over Time

	% Change (2012 to 2030)	% Change (2020 to 2030)	Annualised % Change (2020 to 2030)
Carbon	-53%	-11%	-1.1%
Primary Energy	-51%	-11%	-1.1%
kWh_e	15%	3%	0.3%

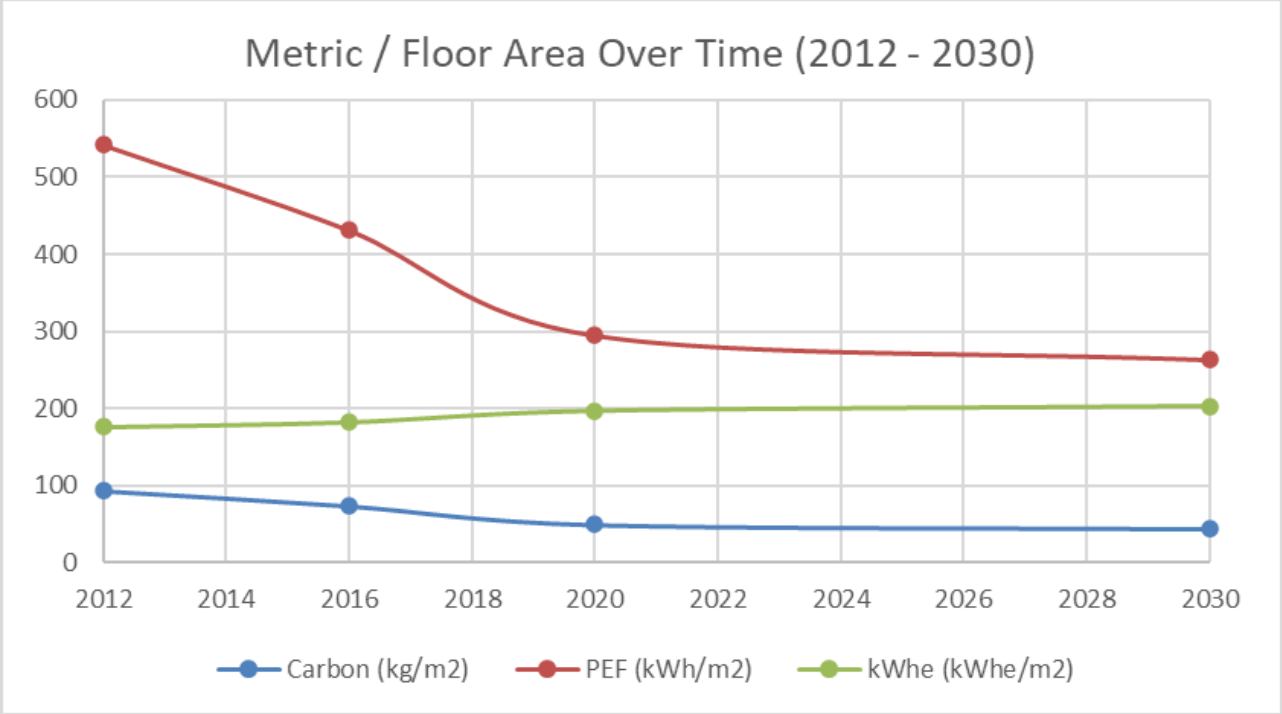

Figure 12: Normalised Metric Outputs Over Time

Based on these results we can see there has been a significant change, over 50%, in the per meter squared value of carbon and primary energy in the period from 2012 to 2020 while kWh_e has seen a more moderate change of 15%. This is a result of the dramatic decarbonisation of the UK electricity grid over this period.

Based on a more modest predicted rate of decarbonisation between 2020 to 2030, it is estimated that both carbon and PEF metrics would change by 11% while kWh_e will experience

a 3% change.[39] Annually a 1.1% change may be tolerable for a carbon and PEF metric but still exceeds stability given by an annual change of 0.3% for kWh_e.

The results also show that both carbon and primary energy values are declining over time, indicating a potential improvement in building efficiency despite the total energy consumption remaining constant. The inverse of this is happening with kWh_e where the normalised value is slowly increasing over time. As a result, based on a carbon or primary energy metric, a building's rating could improve over time despite no improvement in energy performance. If using a kWh_e metric, the same building's rating would slightly decline.

The Government does not consider that the framework should reward buildings with improved ratings just by virtue of the grid decarbonising. Ideally this framework should be a measurement of the building performance, based on a mixture of its fabric, assets, function, and operation.

In the below table, we have assessed the metrics discussed above against some key objectives of the framework and rated them from Strong to Linked to Partial and to Weak.

[39] https://www.betterbuildingspartnership.co.uk/design-performance-base-building-rating-tool-report

Table 3: Metric Matrix Showing the Impact each Metric has on Different Policy Objectives Along with Pros and Cons

Metric	Carbon Emissions	Primary Energy	Kilowatt hour Electricity Equivalent (kWh_e)
Energy Reduction	**Partial** - But not always (biomass is low carbon).	**Linked** - Conversion factors needed for all fuel types but ultimately linked to direct energy usage.	**Linked** - Conversion factors only needed for non-grid electricity fuel types but ultimately linked to direct energy usage.
Low Carbon/Fuel Switching	**Strong** - Clear link.	**Weak** - Reflected in trends for a given fuel/source but not in comparisons between them (Natural gas has a lower primary energy and higher carbon compared to electricity).	**Strong** - Reflected in trends for a given fuel or source but would incentivise change from natural gas to electricity.
Engagement with Customers	**Linked** - Limited understanding for some, high for others (ESG reporting).	**Partial** - Reasonable awareness with a common definition. However, the final rating will be the primary customer engagement.	**Partial** - Limited awareness and understanding. No common definition. However, the final rating will be the primary customer engagement.
Stability of Performance Over Time	**Partial** - Very dependent on variations in grid fuel mix.	**Linked** - Very dependent on variations in grid fuel mix. Linked with current Part L standards.	**Strong** - Stable for electricity but not for other energy uses. Linked with current Part L standards.
Incentivising flexible demand	**Weak** - Possibly in the future and would need time dependent factors. Infrastructure not widespread	**Weak** - Possibly in the future and would need time dependent factors. Infrastructure not widespread	**Weak** - Possibly in the future and would need time dependent factors. Infrastructure not widespread

The Government considers that using kWh_e as the base metric could strike an acceptable balance between fairness, energy efficiency, cost and environmental impact and encouraging

a move away from fossil fuels while also remaining comparatively stable. We therefore propose the following principles:

- Grid electricity will be the base unit and have no weighting factor applied to it
- To account for multiple fuel types in a single site, all fuel usage will be converted into a kWh equivalent of electricity (kWh_e), with primary energy factors applied to link different fuels
- Based on the most recent primary energy factor values and using kWh_e the following factors would apply: electricity is 1 kWh_e per kWh, and natural gas is approximately 0.75 kWh_e per kWh
- Ensure that metrics used for this performance rating remain up to date so they are reflective of the fuels at the time

Question 15: Do you agree with the Government's assessment and preferred approach? Please provide evidence or case studies, where possible, in your response.

Flexibility

Currently, other annual rating frameworks are generally based on a total amount of energy used over a fixed period. They give little consideration to the time at which the energy is used, or the presence of load shifting technologies like storage. The UK grid has a demand profile that varies between peak (weekday evenings) and off-peak periods and the emissions associated with the grid also vary accordingly. However, generally these variations in demand and intensity are currently not well accounted for in similar schemes. This is largely because the mechanism required to capture this data and allow buildings to adjust accordingly did not have widespread coverage in the non-domestic sector to allow it to be considered.

While network operators do apply Distribution Use of System (DUoS) charges using RAG (Red, Amber, Green) banding to vary charges at certain times of the day, this will only apply to grid users with half hourly energy meters. This does not cover a large proportion of the non-domestic sector. These bands have higher charges at times of peak demand as a method to encourage users to shift their demand where possible.

There are many benefits to shifting electricity demand away from peaks and to periods of the day when there is higher wind or solar generation. It reduces carbon emissions, by enabling better use of intermittent renewables. For building owners, it reduces bills (peak periods are more expensive) and they can potentially benefit from lower connection charges. There is also the non-financial benefit to business of improved power quality and reliability. It also reduces the costs of the energy system as a whole – with less generation and network capacity needed to meet peak demand.

Currently, the Government considers that the required levels of smart and sub metering are not likely to be in place to enable time dependent factors to form part of the rating from day one. This is also an extremely complex mechanism that is currently not in place. It is likely to only be possible to use annual totals. However, the Government's aim is that the policy framework delivers net-zero large commercial buildings. Achieving this in the most coherent way for the energy system in the UK will rely on the ratings being able to include time dependent factors in the future.

The Government wants to ensure flexible energy use becomes a core feature of the ratings, and will work with the industry to determine the most effective way to make this possible.

Question 16*:* **Do you agree that flexible energy use should be a core component of the rating? What is the best way, technically, to reflect flexible energy use in the rating structure?**

Rating Presentation, Benchmark and Scale

Rating Presentation

What 'format' the rating is in will determine the way information about building performance will be displayed to a non-technical audience. There are many different ways to do this, for example, NABERS uses a 1-6 star rating, the EPC uses a scale from A-G and Energy Star in the USA uses a scale of 1-100.

Whatever the format, it is critical that building owners, tenants, and the wider market can immediately understand how well a building is performing. A successful rating format should encourage building performance to improve and should aid comparisons between similar sites. It should ultimately be something that building owners and tenants can readily match to their own goals, and something that the wider market feels comfortable using as a key performance indicator (KPI).

Two options have been considered:

- **Option 1**: Letter and colour rating system similar to DECs and EPCs.
- **Option 2**: Star rating system like NABERS.

Option 1: Letter and Colour

One option for the rating format would be to continue the use of a letter and colour rating system as currently seen with EPCs and DECs. Both EPCs and DECs have a different take on how this rating style is applied. EPC ratings have a range between 0 – 100 with a corresponding letter from A – G, where the highest numbers (92+) are associated with an A rating. As DECs represent an operational rating, the scale is inverted and ranges from 0 –

150+. DECs also have an A – G letter scale with A (0 –25) being the most efficient and G (150+) the least.

For both EPC and DEC schemes, a colour is applied to each of the letter ratings broadly following an expanded RAG (Red, Amber, Green) status with green indicating the best rating for both schemes.

If a letter and colour rating was used for the performance-based policy framework it would likely follow the principles seen with the DEC rating where A is the top rating and G the bottom and would likely be associated with a numerical rating scale dependent on the form of the benchmark.

Option 2: Star Rating

An alternative option would be a rating similar to NABERS with a six-star system and a theoretical seventh star available for a net-zero building. The star ratings are simple, clear and unlike the letter and colour scheme, there is only one way to interpret a star rating with more stars representing a better rating.

For stakeholders, a star rating is instantly understandable. The Government proposes that the star rating also be linked with a numerical value. We would welcome views on the options of including half stars or decimal stars and how to strike the right balance of illustrating a site's performance in comparison to others and show smaller changes over time without being over complicated.

Overall, the use of the star ratings will avoid confusion with current EPC or DEC ratings which are based on the letter and colour system. This may contribute towards a more successful rollout of the performance-based ratings.

Preferred Rating Format

The Government's preferred option is to use a star rating system. It is a format that clearly rewards improvements and avoids confusion with the EPC which is already used in the UK building stock. This will also help separate the new in-use framework which is primarily a performance-based rating system compared to the EPC which uses modelled energy use.

Current thinking suggests having a decimal star resolution; however, this will be tested and may be adjusted to half stars if it is more suitable. There may also be a mixture of this with half shaded stars illustrated on the rating graphic in partnership with a numbered decimal rating showing the genuine rating. An example of this can be seen below.

Figure 13: Example Illustration of the ratings

Question 17: Do you agree with the Government's preferred option to use a star rating format? Are there any formats which the Government has not considered that you believe could be more effective?

Rating Benchmark and Scale

As with any outcome-based rating framework, the benchmark and scale used to rate participants is extremely important and will have a significant effect on the scores produced.

To clarify the difference between 'benchmark' and 'scale':

- Benchmark should be taken to mean the standard point of reference against which any buildings will be compared to generate their rating. This will ensure that businesses and building owners can have the performance of their building compared fairly against their peers.

- The scale is about deciding the parameters of the 1-6 stars, assuming stars are used. The parameters need to be set in a way that differentiates high, medium, and low performing buildings. This can be done by ensuring there is a good distribution of buildings across the star bands. However, the parameters also need to be set in a way that drives the stock towards net-zero by 2050. Therefore, a high performing building in 2025 may still need to improve considerably to be high performing in 2040 or 2050, and the scale must be able to reflect that.

The Government considers that all sectors will require individual benchmarks to account for the fact that buildings vary considerably from sector to sector. In certain sectors, sub-categories may be needed to allow for additional diversity within a sector. For example, in the retail sector a large food supermarket will have a different energy intensity compared to a large clothing store due to different cooling requirements for example, and it would be unfair and unrealistic to compare these two on the same benchmark.

The Government is planning on carrying out an internal review on the current state of energy benchmarks used in the market and how these might this interact with the rating. This review will be key to informing how the benchmarking for producing the building rating in the framework can be developed. As set out in Chapter 3, the Government proposes establishing a working group with the industry to agree how benchmarks should be applied in each sector, in a way that maintains the integrity of the rating framework and encourages all buildings to improve.

What approach did the NABERS scheme take?

Due to the success of NABERS the Government has reviewed the methodology they used. Originally, NABERS was designed as a 5-star scale, with the median market energy intensity and best practice intensity defining a linear scale between 2.5-stars and 5-stars. The scale was expanded to a 6th star which had half of the associated emissions of 5th star. This created a scale whose slope dramatically changed from the 5th to 6th stars. The scale was again updated in 2009 to allow for a single linear scale with theoretical 7th star added, although not awarded, and its midpoint defined at the middle of a 3-star rating band. This scale allowed NABERS to simplify their approach and avoid issues around defining suitable standard to score for 5-star ratings and above.

The scale used to generate these ratings can be expressed mathematically as:

$$R = L - K/\frac{E}{B}$$

Where:

- R is the rating as a decimal which has been rounded down to the nearest 0.5 to be expressed in the star format
- L is the upper limit of the star rating

- K is a constant that makes the median equal to 3 stars
- E is the energy intensity for the rated building
- B is the benchmark energy intensity

Applying NABERS principles to a sample of Building Energy Efficiency Survey (BEES) data, we can estimate what the distribution of ratings might look like.[40] This distribution is based on a nominal building which operates at 60 hours a week and with an energy intensity of 210kWh/m² achieving a 3-star rating. The Government does not suggest that this should be considered the benchmark building for this framework and has only been assumed for illustration purposes here.

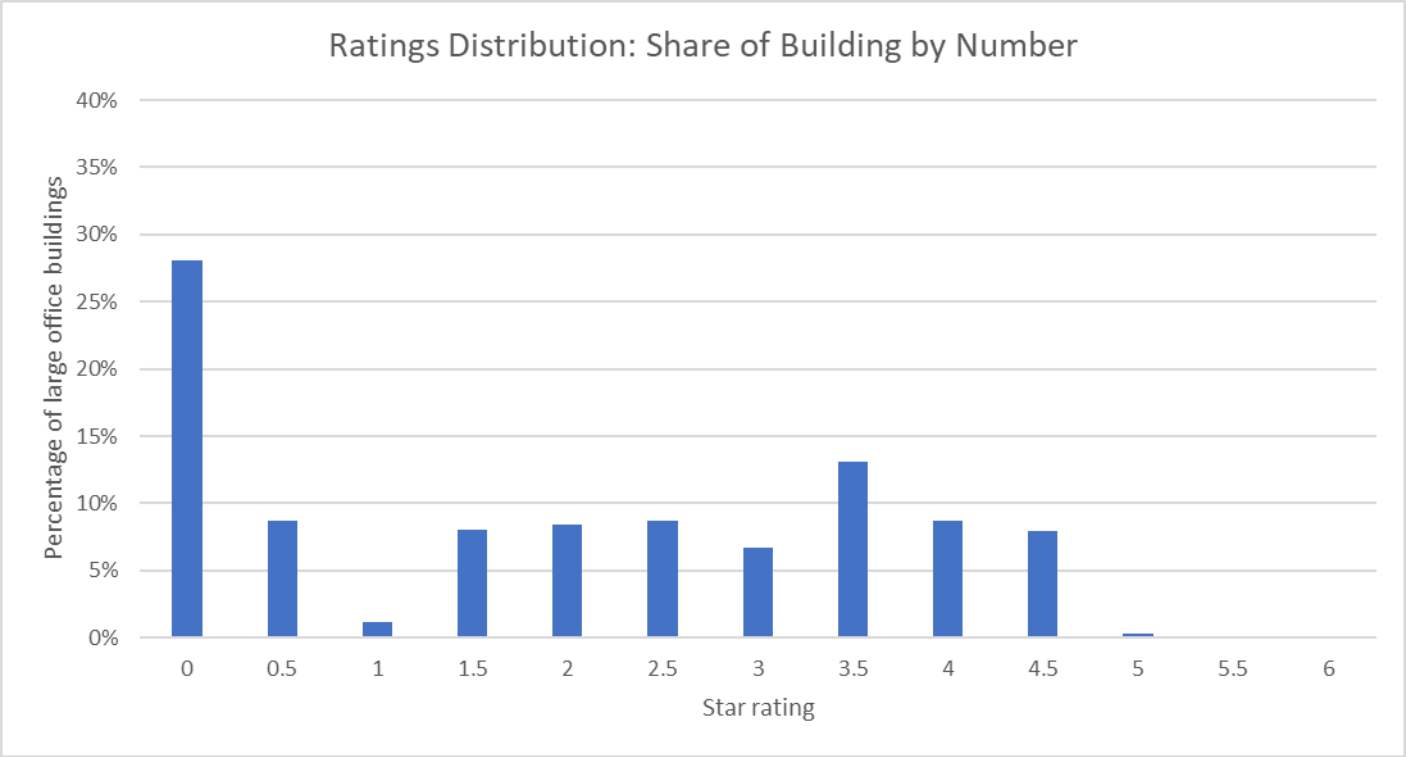

Figure 14: Estimated Rating Distribution, Share of Buildings by Number

This graph, with a significant proportion of buildings bunching near the bottom with low performance scores, illustrates the difficulty in selecting an appropriate benchmark and scale.

A key aim of this framework is to encourage improvements over time, particularly for buildings with a low rating. Adjustments to the lower end of the scale could be put in place to make it easier for poorly rated buildings to improve their rating faster than those with high ratings. This should encourage these buildings to improve and shift a large number of buildings away from the minimal rating. However, this is a balancing act where the Government wants to have a framework that is fair, avoids bunching and will encourage improvement over time.

However, in practice, NABERS uses a tabulated methodology based on a benchmark factor which allows for greater control defining the value of the individual rating bands and avoided numerical rounding issues between different applications. The benchmark factor is a ratio of

[40] Building Energy Efficiency Survey (BEES) - https://help.cbas.cloud/gZ75102ak23HFs/

the actual energy intensity of a building, over its expected benchmark intensity. Additional weighting factors can also be applied to account for operational hours, occupancy intensity, etc.

The specific values of the star rating bands will not be discussed in this paper and will be developed as part of the implementation of each phase.

Figure 15 shows a possible scale where the rating bands for each star have been manually adjusted with different gradients used for the lower, upper, and middle bands. Manually adjusting the bands would likely result in a nonlinear scale but an advantage of this could be to make it easier for poorly performing buildings to move away from ratings below one. This may encourage greater interaction with the framework as low rated buildings could see accelerated improvements in their ratings. A clear disadvantage of this method is that it does not create a fair and even scale where every reduction in energy is treated the same, no matter the overall performance of the framework.

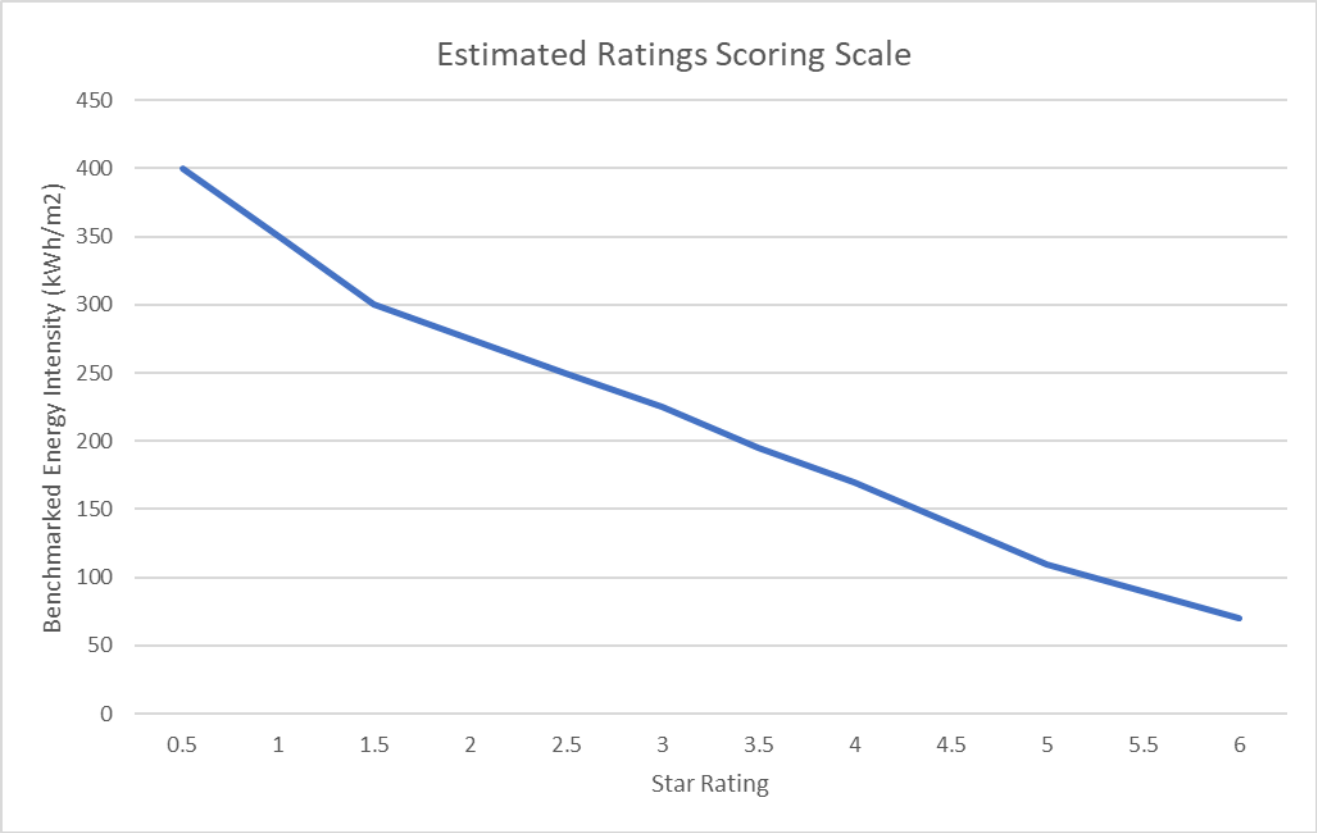

Figure 15: Estimated performance-based rating framework scoring scale

At this stage, the Government considers that a version of the tabular methodology may be the most effective way of structuring the rating scale. By clearly showing the value of the bands for each star, building users can see the progress that would be needed to reach the next star rating. Using the tabular method will also allow for greater control in assigning the value to star bands. This can be used to adjust the differences between star bands to make it easier for buildings to move up ratings. It is likely that this would only be used for buildings at the lower

end of the scale to incentivise them to improve their energy performance and increase their star rating.

Question 18: The Government welcomes feedback on the considerations outlined above. What are the key factors that the Government should consider in determining fair and effective rating benchmarks and a fair and effective rating scale? Where possible, please provide evidence, or case studies, to support your feedback.

Who is responsible to get the rating and what type?

UK Building Owners

Government intends that the rating will become the key currency for investors, building owners and building tenants to understand building performance.

However, due to the complex nature of buildings we acknowledge that one kind of rating will not cover all scenarios. For building owners, we have suggested that there will be two possible rating types available to them depending on the circumstance:

- **Base building rating:** Building owners with tenant space
- **Whole building rating:** Owner occupier/single tenant sites

Having these two categories of rating will allow for the many occupancy scenarios seen in the market. Having the two types will also ensure that as many buildings as possible will be capable of getting a rating.

To ensure there is no confusion and allow for direct comparisons between different buildings, we suggest that the category of the rating type will be disclosed near the main rating indicating if it is a base or whole building rating.

Further details and examples of what is in scope and how these ratings will apply to each sector will be covered in the sector specific consultations. A full overview of how these ratings will apply to the office sector is outlined in the accompanying *Phase one: Office Sector* paper.

Owner with Tenant Spaces

In the cases where landlords centrally manage a large building with multiple tenant spaces, the Government considers that it would be unfair to expect the landlord rating to include the energy consumption of tenants, as they have little control over how that energy is used. Instead, they will only be rated based on the central services provided, for example communal heating and lighting. In the cases where landlords provide central services directly to a tenant such as heating/cooling and centralised domestic hot water, we propose that energy will be included.

Examples of what is in scope of this rating for owners of offices above 1,000m² with tenant spaces is set out in the *Phase one: Office Sector* paper.

Owner Occupier / Single Tenant Site

In the case where a building is owner occupied or solely occupied by a single tenant, that building will be required to achieve a whole building rating. In this case, all energy consumed onsite will be the responsibility of the single occupier and will need to be accounted for via a whole building rating.

Tenant Rating

The Government is considering developing a voluntary tenant rating for multi-tenant spaces, potentially for large tenants with spaces over 1,000m². A tenant's area of responsibility will vary dramatically from sector to sector, and it may be that this suggestion is most appropriate in the office sector. As such, this has been explored further in the accompanying *Phase one: Office Sector* paper.

How to Get a Rating

The aim of the rating is to be investment grade at the lowest possible cost. To ensure the rating type is correct and the details of a site are accurate, the Government proposes that for the first rating a physical site visit will be required.

The purpose of that initial site visit will be to determine what type of rating will be required (base, whole, tenant), gather site data and verify existing assumptions such as separable floor areas, operational hours, and metering status. This should ensure that further site inspections are not required every year. The Government proposes that a site should only be re-visited after a four-year period unless there has been a fundamental change to the site. The annual ratings for those interim years can be achieved via desk-based audits. We propose that both site visits and desktop audits will be carried out by an appropriately trained and qualified person.

Initial Rating

For an initial rating, a site visit will be required to gather and confirm all received data where possible. During this visit separable floor areas, benchmark category, operational hours, occupancy, metering information and any other sector specific information should be gathered to produce the in-use rating. The Government considers that once established, much of the data collection can be automated and the initial site visit should be used to ensure the

accepted process for automated collection will work correctly, enabling rating renewals to be largely automated. The Government will aim to automate data and processes as far as possible. This automation of the data collection, such as meter data, should greatly reduce and streamline the costs for this framework, especially for rating renewals.

Once a rating has been achieved it will be valid for a 12-month period beginning from the nominated date. The nominated date, which will be the starting reference date for this rating, should be no later than three months after the assessment period, including a site visit. This will allow up to three months for data collection; analysis and a site visit where needed before a rating is calculated. This also enables the in-use rating to be aligned to other reporting periods.

The rating will be valid for 12-months from the nominated date before it is required to be renewed. It is extremely important that the rating is fair and robust for all and has an appropriate quality assurance programme to match these ambitions. The method of quality assurance to be used will not be discussed here and will likely be determined by the ratings administrator.

In the case of a new build or a first-year occupant to a space, where no existing in-use data exists and no rating will be possible, the occupant will only need to register the site. A rating will be required later once adequate data is available. This temporary exemption will need to be declared and should be noted in the central database. This will ensure no unnecessary burden is placed on new occupants/builds.

Follow up Ratings

Subsequent annual ratings can be achieved via desktop audits where the relevant data is submitted to produce a new rating. The required renewal data will include 12 months of energy data for the new assessment period, and any change to operational hours, floor area, vacancies etc. The exact methodology for these renewals has not yet been determined, the Government will take steps to streamline and automate the process where possible, such as via data sharing agreements between the utility provider and the owner of the rating before a final stage manual verification.

A strength of a 12-month reporting cycle will be that published ratings are recent, relevant and are a trustworthy indicator of current performance. The 12-month rating cycle means that a building must always monitor their performance with no lull in reporting that might be seen if the reporting cycle was longer.

Annual site visits could be carried out each year on a voluntary basis, although we do not intend to make that mandatory. However, a site visit will be required at least every four years to ensure the original input data is in line with the current site usage. Additional site visits may be required if there has been a fundamental change to the site such as a change of use, a significant separable floor area change etc.

The Government considers that this mixed approach between desktop and physical audits will strike the right balance between a high-quality, accurate and reliable rating, delivered at the lowest cost to buildings owners and businesses. There should be no gaps between successive reporting periods.

Schedule of Ratings

The proposed Phase one soft launch in April 2022 will require all appropriate sites to register with the ratings administrator and produce a rating within the first 12 months.

Disclosure of the rating in the first year will be voluntary but highly encouraged. There will be no fixed reporting date in this 12-month period which will allow groups to align their reporting periods to suit their needs. As previously mentioned, this will be an annual rating and it is envisioned that by allowing users to pick their reporting date it will not create a rush of submissions and strain on reporting assessors at a particular time. This flexibility will hopefully increase the value of the framework to the market as it can be incorporated into other corporate reporting structures.

Following the Phase one soft launch, mandatory ratings and disclosures will be required and enforced going forward. This soft launch approach to mandatory ratings and disclosures will also be applied to other sectors when they are added to the framework.

How might this work in practice?

While the rating will be required annually, the Government proposes that it should be a mixture of physical site visits and desktop audits.

Assuming a start date of April 1st, 2022 for Phase one and applying the above timeframes to a site that will have no significant change of use over the first five years the following sets out a schedule of audits and certification dates.

Year	Rating Method	Reporting Period	Certification Date
Year 0 – April 2022	Physical site visit	01/04/21 – 31/03/22	01/05/22
Year 1 – April 2023	Desktop audit	01/04/22 – 31/03/23	01/05/23
Year 2 – April 2024	Desktop audit	01/04/23 – 31/03/24	01/05/24
Year 3 – April 2025	Desktop audit	01/04/24 – 31/03/25	01/05/25
Year 4 – April 2026	Physical site visit	01/04/25 – 31/03/26	01/05/26

Table 4: Schedule of Audits and Certification Dates

Costs

The Government's ambition is for the rating to be accurate, reliable, and trusted, at the lowest possible cost to businesses and building owners.

The Government has proposed that site visits are only required once every four years, or unless the building has undergone a substantial change. The objective is that in the years where a site visit is not required, a lot of the necessary groundwork should be in place to ensure the ratings are accurate, and there should be a relatively low burden on businesses and building owners to supply the required information to update their rating.

The Government will set out its estimate for what the framework could cost, on a four-year cycle period, for each sector in the *Phase one: Office Sector* paper and the phase two and three papers. To provide an approximate range, in the *Phase one: Office Sector* paper the Government has estimated that the cost to business and building owners could fall in the range of:

Overall cost (including hassle costs) for 4 years coverage (£ rounded)	
Performance-based policy (first 4 years)	£4,100 - £7,500
Performance-based policy (subsequent 4 years)	£3,400 - £6,300

Table 5: Overall cost (including hassle costs) for 4 years coverage (£ rounded)

These estimated costs **include hassle and time costs** and are not necessarily representative of the prices building owners and businesses will be charged. Buildings also vary significantly by sector and by size, which will influence the cost. Any final price will be dependent on the final shape of the framework's final delivery model, which will be negotiated and agreed with the ratings administrator.

As a high-level estimate, the Government considers that these costs offer excellent value for money. By comparison, the overall cost of the NABERS scheme for a 4-year period was £12,000 (rounded figure).

As has been set out previously, the Government will look to automate processes and data feeds in order to minimise costs wherever possible, whilst protecting the integrity and quality of the rating.

Framework Inputs

By structuring this rating framework around outcomes and relying solely on these results, the framework will be technology neutral and will reward any initiative that reduces the measured impact of a building. To successfully do this the rating must rely on externally validated performance data. Externally validated data is less susceptible to manipulation or selective inclusions. This will improve the reliability of ratings and the credibility of the framework.

The required primary data inputs for the rating framework will include, but may not be limited to: floor area, 12-months of energy data, annual operation hours and location information. Additional secondary inputs will be needed to refine the rating and the framework and these are likely to vary from sector to sector and may include such these as occupancy/desk count, volume of sales/production etc. Sector specific factors will be determined in partnership with industry at the time when that sector is preparing to join the performance-based policy framework.

Ratings will be based on measured rather than estimated data. Where estimates are necessary due to missing or incomplete data, the Government will work with the industry and the ratings administrator to determine the fairest way of arriving at those estimates. Clear principles will be needed to ensure a consistent estimation approach.

Primary Data Inputs

The following sections set out the primary and secondary data inputs the Government proposes to use.

Floor Area

The building area will be assessed on its Net Internal Area (NIA) in line with the Royal Institution of Chartered Surveyors (RICS) standards. The applicable floor area will depend on the rating type, building and/or tenant.

Energy Data

12 months of energy data based on energy bills/metering readings will be required to provide the rating. The allocation of energy usage will be dependent on the rating type and will follow the reporting requirements of each rating type (base, whole, tenant).

The format of the energy data has not yet been determined and it could be in the form of an annual total, monthly totals, or file upload of half hourly data (HHD). The format of this input is likely to change as the framework matures and more granular energy data is commonplace. In time the Government hopes that this will allow for time of energy usage to be accounted for when producing the rating.

Operational Hours

The hours of use for the building are based on the hours that the building is required to be comfortable for occupants. These hours are often defined in an agreed lease. However, where this is not clearly outlined a reasonable interpretation should be used. Where no satisfactory lease hours are available, a tenant occupancy survey should be used, designed to determine the hours at which the occupancy is more than 20% of peak occupancy during a normal working day.

Climate and Location Data

Location data is determined by postcode and will allow for the influence of climate. Each postcode is referenced to a meteorological forecasting zone, which is characterised by a single location (typically the largest city) in that zone via heating degree days and cooling degree days. We intend that Unique Property Reference Numbers (UPRNs), or a similar referencing system, be used as part of the location data. This refencing could also be used to check and retrieve previous ratings once a database of disclosed ratings is available.

Secondary Data Inputs

Secondary data inputs will also be required to produce a rating, but the individual requirements may vary between sectors:

Building Benchmark/Category

Determining the type of building being rated and its appropriate benchmark will be critical to the operation of the performance-based policy framework. As already discussed in this paper, benchmarks and their values have not yet been determined and feedback on the Government's current proposal has been requested. At a high-level, the Government believes that all buildings within a sector should be judged equally based on a common applicable benchmark. However, it is understood that there may be many benchmarks within a particular sector to account for variances. For example, in the retail sector a large supermarket will have a different benchmark compared to a clothing retailer.

Industry Specific Corrections

It is important to note that additional factors apart from operational hours and floor area will influence energy usage onsite and these factors should be taken into consideration. These factors will vary between sectors but may include number of staff, occupancy utilisation, sales information, units of production etc. The impact of these factors has yet to be determined but each sector will be individually reviewed before it is included in the rating.

Question 19: Subject to the outcome of this consultation, the government will work with the ratings administrator, and with industry experts, to tailor the framework appropriately to each sector. At this stage, the Government welcomes any additional feedback on the high-level technical considerations outlined in this chapter, especially where there may be key considerations that we may have not addressed, or not been able to cover.

Where possible, it would be helpful if you could provide evidence and case studies to support your response.

Chapter 7 - Implementation Timetable

Evaluating Different Sectors

The Government has separated the non-domestic building stock into the following sectors:

- Offices
- Health
- Education
- Hospitality
- Industrial
- Arts, leisure, and community
- Retail
- Storage

The Government has outlined below a proposed set of criteria that could be applied to determine how ready each sector is, and when they could adopt the framework, and therefore which sectors should fall into phase 2 and phase 3 respectively.

Criteria	Rationale / further detail	What are the criteria for a high score?
Benchmarks	• Do benchmarks exist for this building type and/or could an accurate benchmark be produced quickly?	
Complexity of energy use	• Is it easy to dis-aggregate energy use in the building type/sector? i.e. is this energy clearly used for core services and this energy is clearly used for business processes?	• The more consistent the energy use in the sector the higher the score. • If there is inconsistent energy use in the sector, the score should reflect how straightforward / challenging this issue is to solve.
Physical Infrastructure	• To what extent is the physical infrastructure already in place in the building type/sector to introduce a rating? i.e. to what extent is there adequate metering?	
How complex and varied are the lease arrangements in the sector	• Is it clear who is responsible for energy use in the building type/sector between landlord and tenant? Can the landlord and tenant access the relevant data that they need to access?	• The more consistent and the simpler the leasing arrangements in the sector the higher the score. • If they are inconsistent or complex, the score should reflect how straightforward/challenging this issue is to solve.
Building owner and business demographic for the sector	• Are there a higher number of small to medium-sized businesses that own or rent the properties in this sector and to what extent will they be adversely impacted by the framework?	• The score should not necessarily reflect how many SMEs there are in the sector, but the extent to which SMEs might be adversely impacted
Costs	• Is there any reason why the cost of on-boarding a specific sector might be significantly higher than other sectors? • What is the ability of the framework to reduce the costs on the sector, whilst retaining the quality, consistency, and trustworthiness of the rating?	

Table 6: Criteria for Phasing the Introduction of the Framework to Different Sectors

To maximise the benefits of the phased approach, the Government would encourage other non-domestic sectors to use this strategy paper and take action to address the current gap in readiness. Any next steps are subject to the outcome of this consultation, but to help building owners prepare for a potentially wider rollout, the Government will publish a short guide on the steps that building owners and businesses can take to prepare for the ratings.

The Government may look for volunteer organisations to report their energy use data on a voluntary and confidential basis, as this could help the Government gather essential information to help develop the rating in sectors where understanding of energy performance is less developed, or less readily available. The reporting would not have to be public: the key aim would be to help these organisations and the Government to get ready for the next phase.