Department for
Business, Energy
& Industrial Strategy

AMENDING THE PRIVATE RENTED SECTOR ENERGY EFFICIENCY REGULATIONS

Consultation Stage Impact Assessment

December 2017

Title: Amending the Private Rented Sector Minimum Energy Efficiency Regulations – Consultation Stage Impact Assessment **IA No:** BEIS033(C)-17-HLE **RPC Reference No:** RPC17-BEIS-3608(2) (The RPC opinion refers to a previous version of this impact assessment. The RPC is content to review the updated evidence for the final stage impact assessment) **Lead department or agency:** Department for Business, Energy and Industrial Strategy **Other departments or agencies:** None	**Impact Assessment (IA)** **Date:** 19 December 2017 **Stage:** Consultation **Source of intervention:** Domestic **Type of measure:** Secondary legislation **Contact for enquiries:** PRSconsult@beis.gov.uk

Summary: Intervention and Options

RPC Opinion: Green

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANDCB in 2014 prices)	**In Scope of One-In, Three-Out?**	**Business Impact Target Status** Measure qualifies as
£200m	-£490m	£19.1m	Yes	Qualifying Provision

What is the problem under consideration? Why is government intervention necessary?

Upgrading the energy efficiency of homes addresses the root cause of fuel poverty, reduces greenhouse gas emissions, lowers energy bills, and improves security of energy supply. A number of market barriers and failures exist in the energy efficiency market, preventing the deployment of energy efficiency in the absence of Government intervention. The Private Rented Sector (PRS) faces particular barriers, such as the 'split incentive' whereby landlords are responsible for the cost of energy efficiency improvements but tenants are the main beneficiaries. Government intervention is necessary to overcome these barriers.

What are the policy objectives and the intended effects?

The policy is intended to amend the current domestic Private Rented Sector Energy Efficiency Regulations to ensure that action is taken to upgrade the energy efficiency of the sector. The intended effects are to: make progress against Government's statutory fuel poverty and climate change commitments; reduce energy demand in the private rented sector, thereby lowering energy bills and improving energy security; and improve thermal comfort and subsequent health outcomes.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Alternatives to regulation have been assessed and determined as insufficient on their own to overcome the split incentive barrier. These include improving information, fiscal incentives, and providing subsidy.
As a result, the Government is consulting on amending the existing regulations by placing a responsibility on landlords to meet the cost of energy efficiency improvements where no subsidy or Pay As You Save (PAYS) finance is available, subject to a cost cap of:
Policy Option 1: £1,000; Policy Option 2: £2,500; Policy Option 3: £3,500; Policy Option 4: £5,000.

Policy Option 2 is the preferred option, as outlined in Section 5.13, as this provides a balance between achieving a greater ambition for the policy and ensuring landlords are not over-burdened with costs. Despite option 1 having the highest NPV, option 2 makes greater strides in lifting homes in the private rented sector to band E and fuel poor households out of the worst performing properties and towards the Government's stated aim to upgrade all fuel poor homes to EPC band C by 2030. This achievement is not included in the quantification of the NPV, which also delivers greater health benefits to households who cannot afford to heat their homes to warmer temperatures.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 10/2021

Does implementation go beyond minimum EU requirements?		N/A		
Are any of these organisations in scope?	**Micro** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)		**Traded:** -0.5	**Non-traded:** -1.7	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible minister:  Date: 18/12/2017

Summary: Analysis & Evidence — Policy Option 1

Description: The domestic Private Rented Sector Energy Efficiency Regulations (2015) are amended to remove the 'no upfront cost' and 'no net cost' to landlords requirements, and to introduce a cap on the costs of meeting the regulations at **£1,000 per property**.

FULL ECONOMIC ASSESSMENT

Price Base Year 2016	PV Base Year 2017	Time Period Years 45	Net Benefit (Present Value (PV)) (£m)		
			Low: N/A	High: N/A	Best Estimate: 301

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	N/A	1	N/A	**N/A**
High	N/A		N/A	**N/A**
Best Estimate	1		10	**270**

Description and scale of key monetised costs by 'main affected groups'

The largest societal costs are the material and labour costs associated with installation of energy efficiency measures (PV, £139m), enforcement costs for Local Authorities (PV, £35m), the hidden costs associated with the installation of energy efficiency measures (PV, £36m), as well as other smaller costs. Under this option there are no operating costs. The vast majority of these costs are expected to be incurred by landlords.

Other key non-monetised costs by 'main affected groups'

None identified.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	N/A	N/A	N/A	**N/A**
High	N/A		N/A	**N/A**
Best Estimate	N/A		27	**571**

Description and scale of key monetised benefits by 'main affected groups'

Households that have energy efficiency measures installed are the main affected group. They will benefit from energy savings (PV, £327m), and increased comfort from warmer homes (PV, £95m). Society will also benefit from improved air quality (PV £58m), and reduced traded (PV £19m) and non-traded (PV £72m) greenhouse gas emissions.

Other key non-monetised benefits by 'main affected groups'

The UK is likely to benefit from lower energy imports, and lower costs of meeting peak energy demand. Health impacts associated with the improved energy efficiency of properties treated under the regulations have been estimated at PV £77m. This benefit has not been included in the cost benefit analysis due to potential overlap with comfort taking.

Key assumptions/sensitivities/risks — **Discount rate (%)**: 3.5 (years 1-30), 3.0 (>30 years)

All landlords are compliant with the regulations and pre-requisite regulations requiring rented properties to have an Energy Performance Certificate at the point at which they are offered for rent;
Capital costs that landlords face are in line with our capital cost central assumptions; Energy prices over time are in line with IAG central projections. Sensitivity analysis is provided in section 7.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only):
Costs:	Benefits:	Net:	
7.9	0	-7.9	39.5

Summary: Analysis & Evidence — Policy Option 2

Description: The domestic Private Rented Sector Energy Efficiency Regulations (2015) are amended to remove the 'no upfront cost' and 'no net cost' to landlords requirements, and to introduce a cap on the costs of meeting the regulations at **£2,500 per property**.

FULL ECONOMIC ASSESSMENT

Price Base Year 2016	PV Base Year 2017	Time Period Years 45	Net Benefit (Present Value (PV)) (£m)		
			Low: 136	**High:** 270	**Best Estimate: 200**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	1	1	18	**540**
High	1		18	**510**
Best Estimate	1		17	**503**

Description and scale of key monetised costs by 'main affected groups'

The largest societal costs are the material and labour costs associated with installation of energy efficiency measures (PV, £323m), the operating costs of measures installed (PV, £4m), enforcement costs for Local Authorities (PV, £35m), the hidden costs associated with the installation of energy efficiency measures (PV, £58m), as well as other smaller costs. Landlords will also face a cost stemming from the time spent on compliance activities (PV, £32m). The vast majority of these costs are expected to be incurred by landlords.

Other key non-monetised costs by 'main affected groups'

None identified.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	N/A	N/A	33	**677**
High	N/A		38	**781**
Best Estimate	N/A		34	**703**

Description and scale of key monetised benefits by 'main affected groups'

Households that have energy efficiency measures installed are the main affected group. They will benefit from energy savings (PV, £390m), and increased comfort from warmer homes (PV, £111m). Society will also benefit from improved air quality (PV £72m), and reduced traded (PV £20m) and non-traded (PV £110m) greenhouse gas emissions.

Other key non-monetised benefits by 'main affected groups'

The UK is likely to benefit from lower energy imports, and lower costs of meeting peak energy demand. Health impacts associated with the improved energy efficiency of properties treated under the regulations have been estimated at PV £78m – however, this figure omits the health impact of some of the new measures installed under this option compared to option 1 due to limitations of our evidence in this area. This benefit has not been included in the cost benefit analysis due to potential overlap with comfort taking.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5 (years 1-30), 3.0 (>30 years)

All landlords are compliant with the regulations and pre-requisite regulations requiring rented properties to have an Energy Performance Certificate at the point at which they are offered for rent; Capital costs that landlords face are in line with our capital cost central assumptions; Energy prices over time are in line with IAG central projections. High and low scenarios have been estimated using different capital cost assumptions (see annex C – Key assumptions: Capital cost section) as capital costs not only impact the NPV but also other key estimates under this policy. Further sensitivity analysis is provided in section 7.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only)
Costs: 19.1	**Benefits: 0**	**Net: -19.1**	95.5

Summary: Analysis & Evidence — Policy Option 3

Description: The domestic Private Rented Sector Energy Efficiency Regulations (2015) are amended to remove the 'no upfront cost' and 'no net cost' to landlords requirements, and to introduce a cap on the costs of meeting the regulations at **£3,500 per property**.

FULL ECONOMIC ASSESSMENT

Price Base Year 2016	PV Base Year 2017	Time Period Years 45	Net Benefit (Present Value (PV)) (£m)		
			Low: N/A	**High: N/A**	**Best Estimate: 159**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	N/A	1	N/A	**N/A**
High	N/A		N/A	**N/A**
Best Estimate	1		22	**630**

Description and scale of key monetised costs by 'main affected groups'

The largest societal costs are the material and labour costs associated with installation of energy efficiency measures (PV, £399m), the operating costs of measures installed (PV, £40m), enforcement costs for Local Authorities (PV, £35m), the hidden costs associated with the installation of energy efficiency measures (PV, £61m), as well as other smaller costs. The vast majority of these costs are expected to be incurred by landlords.

Other key non-monetised costs by 'main affected groups'

None identified.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	N/A	N/A	N/A	**N/A**
High	N/A		N/A	**N/A**
Best Estimate	N/A		38	**789**

Description and scale of key monetised benefits by 'main affected groups'

Households that have energy efficiency measures installed are the main affected group. They will benefit from energy savings (PV, £446m), and increased comfort from warmer homes (PV, £128m). Society will also benefit from improved air quality (PV £77m), and reduced traded (PV £24m) and non-traded (PV £114m) greenhouse gas emissions.

Other key non-monetised benefits by 'main affected groups'

The UK is likely to benefit from lower energy imports, and lower costs of meeting peak energy demand. Health impacts associated with the improved energy efficiency of properties treated under the regulations have been estimated at PV £84m - this figure omits the health impact of some of the new measures installed under this option compared to option 1, due to limitations of our evidence in this area. This benefit has not been included in the cost benefit analysis due to potential overlap with comfort taking.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5 (years 1-30), 3.0 (>30 years)

All landlords are compliant with the regulations and pre-requisite regulations requiring rented properties to have an Energy Performance Certificate at the point at which they are offered for rent; Capital costs that landlords face are in line with our capital cost central assumptions; Energy prices over time are in line with IAG central projections. Sensitivity analysis is provided in Section 7.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only)
Costs:	**Benefits:**	**Net:**	
20.1	0	-20.1	100.5

Summary: Analysis & Evidence — Policy Option 4

Description: The domestic Private Rented Sector Energy Efficiency Regulations (2015) are amended to remove the 'no upfront cost' and 'no net cost' to landlords requirements, and to introduce a cap on the costs of meeting the regulations at **£5,000 per property**.

FULL ECONOMIC ASSESSMENT

Price Base Year 2015	PV Base Year 2017	Time Period Years 45	Net Benefit (Present Value (PV)) (£m)		
			Low: N/A	**High: N/A**	**Best Estimate: 127**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	N/A	1	N/A	**N/A**
High	N/A		N/A	**N/A**
Best Estimate	1		35	**986**

Description and scale of key monetised costs by 'main affected groups'

The largest societal costs are the material and labour costs associated with installation of energy efficiency measures (PV, £613m), the operating costs of measures installed (PV, £105m), enforcement costs for Local Authorities (PV, £35m), the hidden costs associated with the installation of energy efficiency measures (PV, £103m), as well as other smaller costs. The vast majority of these costs are expected to be incurred by landlords.

Other key non-monetised costs by 'main affected groups'

None identified.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	N/A	N/A	N/A	**N/A**
High	N/A		N/A	**N/A**
Best Estimate	N/A		52	**1,113**

Description and scale of key monetised benefits by 'main affected groups'

Households that have energy efficiency measures installed are the main affected group. They will benefit from energy savings (PV, £727m), and increased comfort from warmer homes (PV, £212m). Society will also benefit from improved air quality (PV £87m), and reduced traded (PV £50m) and non-traded (PV £38m) greenhouse gas emissions.

Other key non-monetised benefits by 'main affected groups'

The UK is likely to benefit from lower energy imports, and lower costs of meeting peak energy demand. Health impacts associated with the improved energy efficiency of properties treated under the regulations have been estimated at PV £193m - this figure omits the health impact of some of the new measures installed under this option compared to option 1, due to limitations of our evidence in this area. This benefit has not been included in the cost benefit analysis due to potential overlap with comfort taking.

Key assumptions/sensitivities/risks — **Discount rate (%)**: 3.5 (years 1-30), 3.0 (>30 years)

All landlords are compliant with the regulations and pre-requisite regulations requiring rented properties to have an Energy Performance Certificate at the point at which they are offered for rent;
Capital costs landlords that face are in line with capital cost central assumptions; Energy prices over time are in line with IAG central projections. Sensitivity analysis is provided in Section 7.

BUSINESS ASSESSMENT (Option 4)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only)
Costs:	**Benefits:**	**Net:**	
32.2	0	-32.2	161.0

Contents

1. Problem under consideration

1. Upgrading the energy efficiency of homes addresses a number of Government objectives directly, by:
    - **Tackling the root cause of fuel poverty**, making progress towards the Government's statutory fuel poverty targets;
    - **Reducing greenhouse gas emissions** in the domestic sector, contributing to the Government's legally binding emission reduction targets;
    - **Lowering energy bills**, helping keep bills as low as possible for households; and
    - Reducing energy demand and contributing to ensuring that the UK has a **secure and resilient energy system**.

2. Private rented properties are among the least energy efficient in the domestic housing stock, accounting for a quarter of all F or G-rated homes despite the sector making up only a fifth of the stock.[1] Homes in the domestic Private Rented Sector (PRS) that are F and G-rated represent around 5% of private rental market, and around 1% of the overall housing stock. Importantly, however, they:
    - account for a **disproportionate number of households in fuel poverty** – in England around 45% of F or G-rated PRS homes are fuel poor, whereas only 11% of the wider population are in fuel poverty;
    - represent some of the **coldest homes in the housing stock** – the most inefficient domestic properties are on average up to 2^{o}C colder in winter than the most efficient homes, posing a risk to tenant health;
    - contribute to **residential greenhouse gas emissions**, which from an end-user perspective make up 23% of all emissions in the UK;
    - face **significantly higher energy costs** of keeping warm than typical households: on average over £600 per year more than E-rated PRS homes and almost £1,000 more per year than the average home[2];
    - provide the opportunity to **improve the security of energy supply** through lowering energy consumption – the International Energy Agency estimates that that since 1990 energy efficiency improvements have reduced the UK's energy imports by around 25 million tonnes of oil equivalent, and reduced the UK's import bill by around $7 billion.[3]

    More details are available in Annex A.

3. In 2015 Government put in place regulations requiring private landlords letting properties in England and Wales to ensure that those properties reach a minimum energy efficiency standard of Energy Performance Certificate (EPC) Band E in order to be able to let them. The regulations, which come into force for new tenancies from April 2018 (and with all tenancies covered by April 2020), exempted landlords from meeting the standard if doing so meant they faced either upfront costs or net costs (see Annex A for further details). It was expected that the majority of landlords would use Green Deal Finance[4] as a means of funding of

[1] The energy performance of domestic buildings is measured using Energy Performance Certificates (EPCs), which rate homes on a scale from A (very efficient) to G (very inefficient). More information can be found here: https://www.gov.uk/buy-sell-your-home/energy-performance-certificates

[2] Typical energy cost to heat a home given dwelling and household characteristics. BEIS analysis based on EHS 2015/16

[3] International Energy Agency Energy Efficiency Report (2015), available at: http://www.iea.org/publications/freepublications/publication/MediumTermEnergyefficiencyMarketReport2015.pdf

[4] Green Deal Finance is a mechanism whereby a homeowner can apply for a loan in order to fund energy efficiency improvements, whereby measures are only funded if the lifetime savings are greater than the costs of the installation. More information can be found here: https://www.gov.uk/green-deal-energy-saving-measures/overview

energy efficiency improvements without facing any upfront cost. Further, the repayments under the Green Deal are recouped through tenants' energy bills, thereby avoiding any net costs to the landlord.

4. In 2015, the Government ended public investment in the Green Deal. Since then, the scheme has remained in operation so that existing Green Deal Plans can be serviced, and to allow for any private finance providers to enter the market. The level of activity has, however, been comparatively low[5]. This means that significantly fewer landlords than originally intended may be able to finance energy efficiency improvements without incurring upfront or net costs. In these circumstances, landlords would be able to register for an exemption from the regulations and would not be required to make any energy efficiency upgrades. As discussed in the accompanying consultation document, there have been recent signs of renewed interest in the Green Deal. For instance, the Green Deal Finance Company was sold to new owners in January 2017 following which Green Deal Plans are again being offered. Other private finance providers have also expressed interest. However, the full extent to which the market might develop is yet unclear.

5. The following sections outline the barriers to energy efficiency in the domestic PRS in the absence of Government intervention, the policy objectives of updating the existing Regulations, a cost-benefit analysis of the proposed updates, provisional estimates of the impact on business (specifically the Equivalent Annual Net Direct Cost to Business), and risks and uncertainties.

2. Rationale for intervention

6. There are a range of market failures and barriers to energy efficiency improvements in the domestic PRS, which provide rationale for Government intervention in the private rental market (further detail is set out in Annex A). These include:
    - **misaligned incentives**, such as where the costs of upgrading a property fall to landlords but the benefits of lower energy costs and/or a warmer home accrue to the tenant, with the landlord not necessarily being able to capture the benefits through increases in rent;
    - **externalities**, such as energy prices not fully reflecting the climate change costs of burning fossil fuels, or the public health benefits of warmer homes not fully accruing to those who pay for energy efficiency upgrades;
    - **incomplete or asymmetric information**, such as landlords or tenants not having a good understanding of the benefits of energy efficiency;
    - **equity** considerations, whereby lower income households can be 'locked in' to energy inefficient homes without the means to either make upgrades themselves nor move to a more efficient home.

7. The above barriers are exacerbated by relatively high tenant turnover in the PRS. A quarter of private sector tenants have lived in the private rented sector for less than two years and 50% of tenants do not stay in the same property for 5 years or more.[6] The majority of major energy efficiency improvements, such as wall or loft insulation, take longer time periods for the full benefits to accrue. This means that even if the above barriers can be overcome, the tenant is likely to have moved on before the full benefits can be experienced.

[5] For further information see: https://www.gov.uk/government/news/green-deal-finance-company-funding-to-end
[6] According to data analysed from the English Housing Survey 2015 (EHS). For further information on the EHS please see: https://www.gov.uk/government/statistics/english-housing-survey-2015-to-2016-private-rented-sector

8. Without Government intervention to amend the current Private Rented Sector regulations it is likely that these barriers will continue to prevent the take up of energy efficiency measures, with negative consequences for Government objectives.

3. Policy objectives

9. The Government's overarching policy objective is to ensure that the 2015 Regulations are effective in driving energy efficiency improvements in the worst performing domestic PRS properties. While a fledgling Green Deal/'Pay As You Save' finance offer is now returning to the market, it is not yet clear whether a suitable, nationally available finance product will be available in the short to medium term. The Government is therefore proposing to take action to amend the Regulations to ensure improvements in the energy performance of F and G-rated PRS homes take place regardless of the long-term availability of Pay As You Save funding, or other sources of 'no cost' funding or subsidy.

10. Effective operation of the domestic PRS regulatory framework will support two of the Government's statutory objectives:

    1) **Making progress towards fuel poverty targets**: raising energy efficiency standards in the PRS to EPC Band E by 2020 mirrors the Government's interim target by the same date.[7] The Regulations would therefore make a positive contribution to the Government's fuel poverty commitments for England, as well as the Welsh Government's own statutory target for 2018.[8]

    2) **Reducing energy demand and greenhouse gas emissions**: improving the energy efficiency of privately rented homes will cut energy use and the greenhouse gas emissions that result from it, contributing to the Government's climate change commitments.[9]

11. Improved energy efficiency standards in the sector will also contribute to improving public health, and increase security of energy supply. Further detail on the policy objectives is in Annex A.

4. Rationale for regulation and policy options

4.1 Rationale for regulation and alternatives considered

12. The 2015 Private Rented Sector Regulations Impact Assessment[10] outlined the rationale for regulation as a means of overcoming the barriers identified in Section 2. The primary rationale continues to be that

[7] The Government has a statutory target to raise as many fuel poor homes as reasonably practicable to energy efficiency Band C by 2030, with interim milestones of Band E by 2020 and Band D by 2025. The fuel poverty target for England and its interim milestones are measured using the Fuel Poverty Energy Efficiency Rating (FPEER), which is based on the same Standard Assessment Procedure methodology used to generate an EPC rating for domestic properties. More information is available here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332236/fpeer_methodology.pdf

[8] For more information see: DECC (2015) *Cutting the cost of keeping warm – a fuel poverty strategy for England*, https://www.gov.uk/government/publications/cutting-the-cost-of-keeping-warm; Welsh Government (2010) *Fuel poverty strategy 2010*, http://gov.wales/docs/desh/publications/100723fuelpovertystrategyen.pdf

[9] For more detail on the UK Government's climate change commitments, see: https://www.gov.uk/guidance/carbon-budgets

[10] Section 4.1, see: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401382/150202_PRS_Final_Stage_Revised_For_Publication.pdf

regulation is necessary to overcome the misaligned (or split) incentives that are particularly prevalent in the PRS – such as where the costs of improvements fall to landlords but tenants are the main beneficiaries.

13. A number of alternative approaches to regulation have been considered and either assessed as being unlikely to drive energy efficiency improvements or there is evidence to demonstrate that they have limited impact. These include:

- **Improving information**: The latest data show that over 90% of landlords rent out properties as a part-time exercise,[11] and the vast majority are not represented by a landlord association. This makes providing consistent information to the market as a whole complicated. This is exacerbated by landlord inertia even when information is provided. For example, the most recent Private Landlord Survey found that upon obtaining an Energy Performance Certificate, 70% of landlords had no intention of taking any action to improve the energy efficiency of their home, despite having information what could be done at low cost.
- **Subsidising upfront costs**: PRS homes have been eligible for upgrades under a succession of Government funded schemes and obligations on energy suppliers (such as the Energy Company Obligation (ECO) that provide funding for upgrades[12]). However take up has consistently been disproportionately low. For example, the PRS accounts for just under 20% of the housing stock, but just 9% of measures delivered under the 'CERO' element of ECO (which can be delivered to any suitable property) have been in the sector.[13] Subsidising costs alone appears to be insufficient to overcome barriers in the PRS.
- **Fiscal incentives**: Between 2004 and April 2015 landlords were able to claim a tax deduction of up to £1,500 per property for improvements under the Landlord's Energy Saving Allowance. Total claims under the allowance were low, however, which resulted in Government choosing to close the scheme.
- **Voluntary action / self-regulation**: The diverse nature of PRS landlords and the fact that the vast majority do not belong to a landlord association limits the scope for effective voluntary standards that cover the whole market. Some Local Authority-led voluntary accreditation schemes have resulted in landlords signing up to minimum energy efficiency standards, however take up has again been relatively low compared to the size of the market.

4.2 Policy options

14. Regulation continues to be the Government's preferred means of driving energy efficiency improvements in the domestic PRS, due to the barriers set out in Section 2 and the issues with alternatives to regulation set out in Section 4.1. As a result, the Government intends to amend the existing PRS Regulations in two ways:

1) To remove the 'no cost to the landlord' principle, which would transfer some or all of the cost of improvements from the tenant to the landlord (under Green Deal Finance a charge is attached to the property's electricity meter to repay the upfront cost of measures with the energy user – normally the tenant in the case of rented property – repaying the charge over time) in instances where Green Deal Finance (or other suitable 'no cost' finance) is unavailable, or is only available to partially cover the costs of improvements;

[11] See DCLG's 2010 Private Landlord Survey, available at: https://www.gov.uk/government/statistics/private-landlords-survey-2010
[12] For further detail on the Energy Company Obligation see: https://www.gov.uk/government/consultations/energy-company-obligation-eco-help-to-heat
[13] Household Energy Efficiency Statistics (2016, November): https://www.gov.uk/government/statistics/household-energy-efficiency-national-statistics-headline-release-november-2016

2) Introduce a cost cap to ensure that landlords are not faced with disproportionate costs of ensuring their properties achieve an EPC of Band E or above.

15. Landlords whose properties are in scope of the regulations (details of which are in Annex A) would continue to be able to claim an exemption for 5 years for a limited number of specified reasons. Exemptions available include where a property/properties are not suitable for the necessary energy efficiency improvements (for example a cavity wall insulation measure in an area exposed to wind-driven rain if there is no other energy efficiency measure available for that property), or where a legally required consent cannot be obtained (for example planning consent for external wall insulation in a conservation area). Where landlords are not able to upgrade their property / properties to EPC Band E without exceeding the cost cap, they will be required to make as much progress as is feasible towards that goal within the cap, and then register an exemption on the PRS Exemptions Register on the basis that they have installed all relevant measures and the property remains below EPC Band E. The current full list of exemptions is discussed in detail in the domestic PRS minimum standards guidance available at: https://www.gov.uk/government/publications/the-private-rented-property-minimum-standard-landlord-guidance-documents

16. The primary rationale for putting in place a cap on costs, rather than a cost-effectiveness test like that which formed the basis of the Green Deal mechanism[14], or a payback test as established for the non-domestic PRS minimum standards, is the simplicity for domestic landlords to implement and for Local Authorities to enforce. Views from stakeholders on this would be welcome during the consultation.

17. The policy options considered in this Impact Assessment (IA) are therefore:

- **Policy Option 0: Do Nothing**. No amendments would be made to the current Regulations, and few energy efficiency improvements would be expected in F and G-rated PRS properties (see Section 5.2 for further detail on expected take up under this option).
- **Policy Option 1: Introduce a cost cap of £1,000**. Landlords would be required to upgrade their properties to at least EPC Band E, or incur costs of no more than £1,000 (nominal prices) per property in improving the energy efficiency to as close to this level as possible.
- **Policy Option 2 (preferred option): Introduce a cost cap of £2,500**. As Policy Option 1 but landlords would face costs of no more than £2,500 (nominal prices) per property.
- **Policy Option 3: Introduce a cost cap of £3,500**. As Policy Option 1 but landlords would face costs of no more than £3,500 (nominal prices) per property.
- **Policy Option 4: Introduce a cost cap of £5,000**. As Policy Option 1 but landlords would face costs of no more than £5,000 (nominal prices) per property.

18. The following Section summarises the analytical approach to assessing these options and results, while further detail on the assumptions and modelling approach are set out in Annex D. The analysis draws on the latest available evidence on the size of the PRS, the costs of energy efficiency measures, the potential for landlords to make improvements to their properties, energy prices and other key modelling inputs. However, Government expects to gather further evidence as part of the consultation and may implement updates to some elements of the evidence base (for example, when new energy price projections become available these would be used in place of the currently published series) before the consultation response and final stage Impact Assessment are published.

[14] An example of a cost-effectiveness mechanism would be where only measures that had projected energy bill savings that were greater than the upfront costs would be required to be installed.

5. Analytical approach and options analysis

5.1 Appraisal period

19. The Regulations come into force from the 1 April 2019 and will continue indefinitely. A choice therefore has to be made about the appropriate period over which to assess their impact. An appraisal period of 45 years is used. This begins in 2017, two years before the Regulations come into force in 2019, in order to capture the costs which local authorities may face in setting up the necessary systems to enforce the regulations. It ends in March 2061, the point at which all measures installed is the Apr 2019 to March 2020 window for landlords to comply with the amended regulations will have expired (the longest living measures are cavity wall and loft insulation which are estimated to have a lifetime of 42 years).

5.2 Counterfactual

20. Policy Options 1 – 4 are assessed against the 'Do Nothing' Option 0 – the counterfactual. In this scenario no amendments are made to the PRS Regulations, and we assume that Green Deal Finance (or an alternative 'Pay As You Save' financing product) continues to be unavailable nationally, or unavailable at the required scale. As a result, it is assumed no action is taken as a direct result of the Regulations, with a majority of landlords whose properties are in scope registering an exemption. In the Risks and Uncertainty section we assess the impact that a certain deployment of energy efficiency measures using Green Deal Finance would have on the NPV. Any landlords that have so far not needed to obtain an Energy Performance Certificate (EPC), for example where a tenancy has not been reviewed since the requirement to have an EPC was introduced but is being changed during the April 2019 to March 2020 window, are assumed to have obtained one in order to register an exemption.

21. As a result any energy efficiency improvements in the F and G-rated PRS stock from April 2019 – March 2020 are assumed to result from other policies such as the Energy Company Obligation[15], and the replacement of boilers that have come to the end of their lifetime by landlords (more detail on the counterfactual can be found in Annex B). As such, the costs and benefits of measures that would have been delivered in the counterfactual are not attributed to the PRS Regulations.

22. This counterfactual is used as the baseline both for the cost-benefit analysis in Section 5.5 and also the provisional Equivalent Annual Net Direct Cost to Business outlined in Section 6.

23. Under the policy scenarios, the delivery that would have occurred under the counterfactual is essentially brought forward, so is not additional. For instance, where insulation and heating measures would have been installed in F or G-rated PRS properties in 2021 or 2022 under the Energy Company Obligation, these are assumed to be brought forward and delivered by April 2020 as this is the point by which all landlords in scope must have complied with the amended regulations.

24. At present no assumption is made about the impact the amended regulations would have on the scale of Energy Company Obligation delivery to the PRS. It may be, for instance, that the amended regulations would incentivise greater levels of delivery in the sector as more landlords seek access to funding under that scheme than under the counterfactual. This is an area Government will seek evidence on as part of the consultation.

[15] For further information see: https://www.gov.uk/government/consultations/energy-company-obligation-eco-help-to-heat.

5.3 Re-installation of measures

25. By the end of the appraisal period in which measures are installed due to the amended regulations - 2019 – 2061 - all of the measures installed by 2020 will have expired. For instance, low energy lighting has an estimated lifetime of 10 years and gas boilers a lifetime of 12 years. The Regulations will still apply, and it is therefore assumed that landlords will replace measures as they expire. Where measures have been paid for under policies like the Energy Company Obligation under the counterfactual, it is assumed that landlords will incur the costs of replacing them on a like-for-like basis once they come to the end of their lifetime.[16]

26. When considering both the original installation and later re-installation of measures it is assumed that landlords seek to achieve a rating of Band E only and do not go beyond that. Were landlords to choose to install measures to achieve a higher level of energy efficiency than is required, this would not be a direct result of the regulations.

5.4 Categories of costs and benefits analysed

27. A range of costs and benefits have been considered across the 4 policy options, with the majority of them summarised in Table 1. It should be noted that Government will be seeking to gather evidence and validate assumptions as part of the consultation.

Table 1: Categories of costs and benefits analysed

Group that costs or benefits fall to	Type of cost/benefit	Included in cost-benefit analysis or described qualitatively?
Costs		
Landlords (businesses)	• Capital cost of installing measures	Monetised in cost-benefit analysis
	• Hidden costs of installing measures, such as the time required to oversee installation (shared with tenants)	
	• Operating costs, excluding fuel use (e.g. annual maintenance of new central heating systems and solar PV)	
	• Landlords will face compliance costs in proving compliance with the regulations and applying for an exemption when this is not possible	
	• Familiarisation costs of understanding amended Regulations	
	• Finance costs, quantified as the 'opportunity cost' of using private capital to achieve social aims (more detail in Annex C)	
Local authorities	• Familiarisation costs of understanding amended Regulations	
	• Cost of enforcing regulations	

[16] We do not assume that there is an Energy Company Obligation or equivalent in place beyond its currently committed end date of March 2022, therefore measures that are installed under that scheme in the counterfactual are assumed to be paid for by landlords when they are required to be re-installed. These re-installation costs are attributed to the amended regulations.

Group that costs or benefits fall to	Type of cost/benefit	Included in cost-benefit analysis or described qualitatively?
Tenants	• Hidden costs of installing measures, such as the time required to oversee installation (shared with landlords)	
Benefits		
Tenants	• Lower heating costs	Private benefit, not included in cost-benefit analysis – although the social value of lower energy use is included as a benefit to society
	• Improved thermal comfort in homes (comfort taking)	Monetised in cost-benefit analysis (also a benefit to society)
	• Improved health outcomes as a result of warmer homes	Quantified (Section 5.9), but not included in the cost-benefit analysis because of potential double-counting with comfort-taking
Society	• Lower energy use, freeing up fuel/power/resources to be used elsewhere in the economy	Monetised in cost-benefit analysis
	• Improvements in air quality from lower fuel use	
	• Reductions in greenhouse gas emissions	

5.5 Cost-benefit analysis

28. Table 2 summarises the main quantifiable costs and benefits of the different policy options, which have been monetised and discounted in line with HM Treasury's *Green Book*[17] and supplementary guidance on valuing energy use and greenhouse gas emissions.[18] The impacts have been modelled using BEIS's National Household Model, details of which can be found in Annex C, alongside the key assumptions and overall modelling approach. It is worth noting that the NHM periodically undergoes updates and it is expected that between now and potential publication of the final IA some estimates will change to reflect this.

Table 2: Estimated costs and benefits of policy options (Present Value, £m, 2016 prices), 2017 – 2062[19]

Type of cost or benefit	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Capital costs of installing measures	139	323	399	613
Operating costs of new heating and Solar PV systems	0	4	40	105

[17] HM Treasury (2013). *The Green Book*. Available at: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

[18] BEIS (2016). *Valuation of energy use and greenhouse gas (GHG) emissions*. Available at: https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

[19] Figures might not add up due to rounding.

Hidden Costs	36	58	61	103
Finance Costs	23	52	64	99
Familiarisation and compliance costs for landlords	37	32	31	31
Costs of enforcement to LAs	35	35	35	35
Total Costs (A)	**270**	**503**	**630**	**986**
Value of energy saved	327	390	446	727
Value of increased comfort in the home	95	111	128	212
Value of improvement in air quality	58	72	77	87
Value of traded greenhouse gases saved	19	20	24	50
Value of non-traded greenhouse gases saved	72	110	114	38
Total Benefits (B)	**571**	**703**	**789**	**1,113**
Net Present Value (B – A)	***301***	***200***	***159***	***127***
Benefit:Cost Ratio (B / A)	*2.1*	*1.4*	*1.2*	*1.1*

29. Table 2 shows that across the options the capital cost of installing measures represents the largest overall cost, and this rises as the cost cap increases as landlords would be required to install more expensive measures under a higher cap. Hidden costs (which include the time cost of researching appropriate upgrades and overseeing installations) and finance costs (which capture the cost of foregone investment due to landlords being required to invest in energy efficiency instead of elsewhere in the economy) also rise as the cost cap increases, again because landlords would need to install more measures under a higher cap (or higher cost technologies). Enforcement costs (incurred by Local Authorities) remain static across each option and familiarisation costs (incurred by the landlord to familiarise themselves with the regulations and measures to install) are only slightly higher in Option 1 due to the volume and type of measures being installed under this Option.

30. Table 2 also shows that the value of the energy saved is the greatest monetised benefit across the policy options, which is driven by the number and type of measures installed. As a result, the benefit rises as the cost cap increases from Options 1 to 4. The benefits in terms of improved householder comfort, air quality and greenhouse gas emissions are all driven by the changes in energy used in the home, which means that they all increase with a higher cost cap.

31. Even though the monetised overall costs and benefits rise between Options 1 and 4 as a result of more landlords having to take more action under higher cost caps, the net present value falls between Options 1 and 4. This is a result of more expensive energy efficiency measures having lower (and in some cases negative) net benefits than the types of measures installed under Option 1. There are also diminishing returns as demonstrated by the benefit:cost ratio. For example, moving from a cost cap of £1,000 under Option 1 to a cost cap of £5,000 under Option 4 leads to more higher cost measures – such as double glazing and solid wall insulation – being installed, and this means that the benefits of Option 1 are 2.1 times higher than the costs, whereas for Option 4 this is 1.1.

32. Not all of the impacts of the Regulations can be monetised as part of the cost-benefit analysis, but are important to consider when determining the appropriate level of a cost cap. The following sections outline a number of these impacts. The costs to business, including the Equivalent Annual Net Direct Cost to Business (EANDCB), are outlined in Section 6.

5.6 Number of F and G-rated homes reaching Band E and measure mix

33. Table 3a outlines the number and type of measures installed as a result of the regulations under Options 1 to 4 and the proportion of F and G-rated PRS properties that are estimated to reach EPC Band E or above as a result of the regulations. The measures installed are net estimates, meaning that measures that would have been installed in absence of the proposed changes – for example under the Energy Company Obligation or the natural replacement of boilers – have been excluded, so here we only present the measures installed directly as a consequence of the amended Regulations.

34. The modelling approach assumes that landlords seek to achieve an energy efficiency rating of EPC Band E at the lowest capital cost, subject to the cost cap. Therefore if a single, higher cost measure would achieve Band E at an upfront cost of £2,000, and Band E could also be achieved using a package of multiple lower cost measures that cumulatively add up to £2,500, we assume that the landlord would choose the former.

35. Under Policy Option 1 there is a greater emphasis on low cost measures such as low energy lighting and hot water cylinder insulation, with some of these substituted for higher cost measures such as storage heaters and solar PV under Options 2 and 3. Option 4 brings in the installation of more expensive measures such as solid wall insulation and first time central heating as landlords can meet the Regulations through a single installation.

Table 3a: Estimated number and type of measures installed as a result of the Regulations by April 2020

Type of installation	Policy Option 1:	Policy Option 2:	Policy Option 3:	Policy Option 4:
	Cost cap of £1,000	Cost cap of £2,500	Cost cap of £3,500	Cost cap of £5,000
Loft insulation	30,900	30,400	29,800	63,400
Cavity Wall Insulation	7,700	13,300	13,700	31,300
Solid Wall Insulation	0	0	0	22,600
Floor insulation	23,700	45,000	49,400	76,100
Draught-proofing	67,100	50,500	57,200	54,600
First Time Central Heating	0	0	0	18,800
Electric Storage Heater	0	92,000	90,200	92,300
Heating Controls	52,200	51,000	44,100	38,300
Hot Water Cylinder Insulation	105,900	88,700	81,900	21,100
Hot Water Thermostat	37,000	28,600	25,400	48,800
Low energy lighting	109,300	97,600	96,400	21,300
Double glazing	0	0	5,500	12,400
Solar PV	0	2,200	23,200	38,200
Total	**433,800**	**499,300**	**516,800**	**539,200**

36. Table 3b shows the proportion of F or G-rated PRS households[20] that are estimated to be able to achieve EPC Band E under the alternative cost cap levels. As would be expected, the higher the cap, the greater the proportion of the sector (in scope) that could achieve Band E by 2020.

Table 3b: Estimated proportion of F or G-rated PRS homes in scope that do / do not achieve Band E by 2020

	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Percentage of F and G-rated PRS homes reaching Band E	14%	30%	32%	42%
Percentage of F and G-rated PRS households not reaching Band E but taking some action	86%	70%	68%	58%

5.7 Impact on number of homes insulated

37. Amending the Regulations is expected to drive greater uptake of insulation in the PRS than if only other policies – such as the Energy Company Obligation (ECO) – were in place alone. The estimated number of homes insulated by April 2020, netting off the estimated overlaps with other policies, are shown in Table 4. As would be expected and consistent with the deployment of insulation shown in Table 3a, in general higher levels of cost cap would result in a larger number of homes insulated.

Table 4: Estimated number of homes insulated by April 2020 (net of the counterfactual)

	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Number of homes insulated by April 2020	129,400	139,200	155,600	260,400

5.8 Impact on fuel poverty

38. The latest statistics for 2015 show that 89% of fuel poor households are Band E or above, though other policies such as the Energy Company Obligation are expected to increase this.

39. Table 5 shows the estimated impact of the policy options on progress towards the 2020 fuel poverty target milestone, of raising as many fuel poor homes as reasonably practicable to energy efficiency Band E by 2020[21], and the percentage of fuel poor households living in a home rated F or G that would receive at least a measure under the various policy options. It has not been possible to estimate the impact on fuel poverty in Wales due to data limitations.

40. It should be noted that currently there are limitations in estimating the full impact of the amended regulations on fuel poverty, in part due to not being able to account for measures that are not major

[20] This covers those in scope of the regulations – properties such as listed buildings are exempt.

[21] For further information see the Fuel Poverty Strategy for England: https://www.gov.uk/government/publications/cutting-the-cost-of-keeping-warm. It is important to note that the fuel poverty target and EPCs use similar but slightly different methodologies –details of which can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332236/fpeer_methodology.pdf .

insulation or heating installations,[22] and also due to the complexity of the interactions with other policies that affect the extent of fuel poverty. As a result, the impacts in Table 5 should be seen as indicative. We do not attempt to estimate the overall number of fuel poor households at each target milestone level, due to the aforementioned methodology limitations.

41. It is important to also note that fuel poverty projections can be subject to a high degree of uncertainty, given that they are reliant on projected changes in energy prices, incomes, and energy efficiency levels (of which the PRS regulations are only one driver).

42. Corresponding with the trends in Table 3b, higher cost caps mean more properties achieving EPC Band E by 2020, and this in turn leads to a greater proportion of fuel poor households in England achieving Band E or better. As Table 3a shows higher cost caps would lead to more measures being delivered and this means a higher proportion of fuel poor household living in homes rated F or G would receive at least a measure.

Table 5: Estimated impact of policy options on the Fuel Poverty Target Milestone and number of fuel poor households living in a home rated F or G receiving at least a measure by 2020 (England only)

	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Percentage-point change in fuel poor households at Band E or above by 2020	0.06	1.13	1.49	1.82
Percentage of fuel poor households living in private rented F or G rated homes receiving at least a measure	11%	55%	64%	73%

5.9 Impact on health outcomes

43. Health impacts of the policy options have been estimated using BEIS's Health Impacts of Domestic Energy Efficiency Measures (HIDEEM) model, and are show in Table 6.[23] HIDEEM uses empirical relationships between the efficiency of the home and its internal temperature and air quality, to estimate changes in the risk of a range of health conditions materialising. These are expressed in *Quality Adjusted Life Years* which are valued and discounted using supplementary *Green Book* guidance on valuing health.[24] The HIDEEM estimates are only the value of improvements in tenant health from the installation of major heating and insulation measures, and at this stage do not include any estimated cost savings to health service providers. Savings to providers are likely to be substantial, given that excess hospital bed days in England cost the NHS around £300 each[25].

[22] At the present the fuel poverty estimates take account of first time central heating, storage heaters, cavity wall insulation, loft insulation, solid wall insulation and solar PV. They do not currently take account of other measures delivered under the amended PRS regulations.
[23] Further details of the HIDEEM model can be found in Annex G of the 'ECO: Help to Heat' Impact Assessment, here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/534669/ECO_Transition_Consultation_IA.PDF
[24] For more information see: https://www.gov.uk/government/publications/green-book-supplementary-guidance-health
[25] Department of Health (2015), *Reference Costs 2014-15*, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/477919/2014-15_Reference_costs_publication.pdf

44. The magnitude of the positive health impacts is driven primarily by the scale and type of measures installed, so rises as the cost cap increases from Option 1 to Option 4 with the higher volumes of insulation deployment. Between Options 1 and 2, total monetised health benefits remain roughly the same. This is partly because although Option 2 brings a significant volume of measures such as electric storage heaters, these are not captured through HIDEEM and so are not accounted for here. Option 3 brings higher health benefits due to the installation of double glazing, while Option 4 brings a significant volume of other measures, such as solid wall insulation and additional loft insulations, and this is reflected in its higher health impacts.

Table 6: Estimated value of improvements in tenant health (net of the counterfactual), £m, 2016 prices (not including re-installations)

Measure	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Central Heating	0	0	0	0
Draught-proofing	17	13	14	14
CWI	9	16	16	37
Loft	51	50	49	104
SWI	0	0	0	28
Double glazing	0	0	4	10
Total	**77**	**78**	**84**	**193**

5.10 Impact on greenhouse gas emissions

45. Table 7 summarises the estimated impact of the amended Regulations (net of the counterfactual) over 5 year periods covering Carbon Budget 4 (2023 – 2027) and Carbon Budget 5 (2028 – 2032) and also over the entire appraisal period.

Table 7: Estimated savings in greenhouse gas emissions (net of the counterfactual), MtCO2e

MtCO2e	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Carbon Budget 4 – Traded Sector	0.1	0.1	0.2	0.3
Carbon Budget 4 – Non-traded Sector	0.1	0.2	0.2	0.1
Carbon Budget 5 – Traded Sector	0.1	0.1	0.1	0.2
Carbon Budget 5 – Non-traded Sector	0.1	0.2	0.2	0.1
Appraisal period – Traded Sector	0.4	0.5	0.6	1.2
Appraisal period – Non-traded Sector	1.1	1.7	1.8	0.6

5.11 Impact on landlords and the private rental market

46. Landlords are the group that would bear the greatest costs that arise from amending the Regulations, as they would be responsible for funding the upfront cost of the installations required. Table 8 shows the estimated average capital cost per property (in nominal terms, net of costs covered by ECO) to landlords of either upgrading it to Band E or making as much progress as possible within the cost cap. This compares

against average (mean) gross rental income in the F and G-rated PRS of around £7,500 - £8,500 per year per property, based on the 2014 English Housing Survey, although there is significant variation across landlords.

Table 8: Estimated average capital cost to landlords from amending the Regulations (nominal prices)

Average (mean) cost per property	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Average cost for those achieving Band E or above (net of ECO)	£150	£865	£975	£1,700
Average cost for those making as much progress as possible towards Band E before applying for an exemption (net of ECO)	£325	£1,025	£1,430	£2,100

47. The average cost for landlords per home does vary between those who are able to achieve Band E compared to those who cannot. This is largely due to there being relatively large price differences between packages of lower cost measures (for example low energy lighting, loft insulation, draught-proofing) and higher cost measures (such as double glazing). This means that unless a property is already close to achieving an EPC Band E, most landlords would need to install a number of low cost measures and some would need to install a higher cost measure before either they reach EPC Band E or the cost cap prevents them from needing to take any further action.

48. The capital costs (materials + labour + VAT) that fall on landlords outlined in Table 8 are only those costs that are subject to the cap. Landlords may also bear the majority of the hidden costs of installing measures, such as researching which measures would be appropriate, contacting installers about undertaking the work, and 'make good' costs post-installation.[26] As set out in Table 2, in present value terms the hidden costs of installations are estimated at PV £36m – £103m, with 75% of those estimated to fall on the landlord and the remaining 25% falling on the tenant[27] (including time costs of overseeing installations on behalf of the landlord).

49. Annex D contains an analysis of the wider potential impacts on landlords, which can be summarised here in terms of:
    - **Energy efficiency in relation to the wider fiscal landscape**: alongside the amendments to the PRS Regulations some landlords would, from April 2017, see a phased reduction in their ability to claim tax relief on mortgage interest. This would reduce profitability for higher-rate tax-paying landlords, potentially restricting rental income as a means of financing energy efficiency upgrades. Basic rate income tax payers would be unaffected, however, HMRC have estimated that, as a result, 82% of domestic landlords will not have any increased tax liability as a result of these rule changes.
    - **Size of the market**: a number of academic studies[28] have examined the relationship between regulation and the size of the private rental market across a number of countries, finding there to be an ambiguous connection. For example, the UK approach has been largely deregulatory and the PRS

[26] In keeping with recent PRS Regulations Impact Assessments and others involving the installation of domestic energy efficiency measures (such as the January 2017 Energy Company Obligation Impact Assessment), hidden costs are estimated using the 2009 report by ECOFYS *The Hidden Costs and Benefits of Energy Efficiency and Carbon Saving Measures*, available at: http://webarchive.nationalarchives.gov.uk/20111011153039/http://www.decc.gov.uk/assets/decc/what%20we%20do/supporting%20consumers/saving_energy/analysis/1_20100111103046_e_@@_ecofyshiddencostandbenefitsdefrafinaldec2009.pdf

[27] The assumption on the proportion of hidden costs that fall to the tenant is based on internal analysis on how the hidden costs reported in the ECOFYS report (link) split between landlords and tenants.

[28] Including one from the London School of Economics (Scanlon & Kochan, 2011) and another from the University of Cambridge (2012).

has grown substantially, however Germany has among the largest PRS in Europe but adopts a highly regulated approach. These studies were conducted, however, before the Government announced that from April 2016 buy-to-let landlords will also face an additional 3% stamp duty charge. Overall however it is not anticipated that amending the PRS regulations would have a significant effect on the size of the market.

- **Market rents**: in a transparent rental market with good information and informed consumers, landlords should in theory be able to command a rent premium as a result of offering prospective tenants a property with lower energy costs. However, at present the Government's assessment is that F and G-rated PRS properties make up a small section of the private rental market (around 5%), and that the majority of landlords will already be charging the maximum rent that tenants in the local area are willing to pay. This limits the extent to which landlords would be able to raise rents as a result of the amended regulations. The Government is collecting further evidence on any possible rent premia during the consultation.
- **Value of property**: a number of studies both from abroad and in the UK have shown a statistically significant link between higher standards of energy efficiency and higher property values. For example, a study for the UK found that EPC Band D-rated homes commanded a 10% sale premium compared to F or G-rated homes. Landlords may, therefore, benefit from improved capital value as a result of the amended regulations, but this will vary depending on the property and only if they look to sell in future – we therefore do not seek to quantify this here.
- **Investment in the sector**: the drivers of investment in the PRS are complex, however the evidence the Government has gathered to date implies that the prospect of future rent gains or growth in the value of property are the main drivers. The amended PRS regulations would affect a relatively small share of the market, and would require energy efficiency improvements that could potentially add to the value of the property. It is the Government's assessment at present, therefore, that amended regulations would not have a significant impact on investment – though we would welcome further evidence during the consultation.

The Government will seek to collect further evidence of the impact on landlords and the private rental market as part of the consultation, and evidence submitted from stakeholders would be welcome.

5.12 Impact on tenants

50. Tenants would be negatively affected to some degree in that they may need to bear some of the hidden costs of installing energy efficiency measures (such as overseeing the installation on behalf of the landlord) – it is assumed that tenants bear 25% of such costs. However, overall tenants are expected to be the main beneficiaries of the energy efficiency improvements as it is not anticipated that landlords will be able to capture them through higher rents (see Section 5.11). Section 5.9 sets out the estimated value of improvements in tenant health, however there are likely to also be significant reductions in heating costs as set out in Table 9.[29] Higher cost caps would drive deployment of more major energy saving measures, thereby increasing the scope to make energy bill savings.

Table 9: Estimated average annual energy savings experienced by tenants in 2020 (2016 prices)

	Policy Option 1: Cost cap of £1,000	Policy Option 2: Cost cap of £2,500	Policy Option 3: Cost cap of £3,500	Policy Option 4: Cost cap of £5,000
Average (mean) annual energy bill saving per household	£85	£95	£109	188

[29] The bill savings estimates are based on central scenario from the latest published energy price projections in the Green Book supplementary guidance on valuation of energy use and greenhouse gas emissions for appraisal.

5.13 Analysis of policy options

51. Table 10 summarises the strengths and weaknesses of each option in relation to the cost-benefit analysis and policy principles outlined above[30]. Boxes in red indicate the worst policy option in relation to each criterion, green boxes indicate the best, yellow the second best and orange the third best.

Table 10: Analysis of policy options

Policy Option	Net Present Value (£m)	Percentage of F and G-rated PRS homes reaching Band E in 2020	Estimated number of homes insulated by April 2020	Estimated percentage-point change in fuel poor households at band E in England at 2020	Estimated percentage of fuel poor households living in F or G rated homes receiving at least a measure	Estimated total value of improvements in tenant health (£m)	Estimated average capital cost to landlords to achieve Band E or above	Estimated average annual energy bill savings experienced by tenants in 2020
1. £1k cap	301	14%	129,400	0.06	11%	77	150	85
2. £2.5k cap	200	30%	139,200	1.13	55%	78	865	95
3. £3.5k cap	159	32%	155,600	1.49	64%	84	975	109
4. £5k cap	127	42%	260,400	1.82	73%	193	1,700	188

• **Policy Option 1** has the highest net present value, but has the poorest fuel poverty improvement of all the options considered. The percentage of F and G rated properties reaching band E and tenant energy bill savings are also the lowest amongst the policy options, although the average cost of improvements for landlords to achieve Band E is the lowest.

• **Policy Option 2** has a large and positive net present value, while giving a relatively low (second lowest) average cost of improvements for landlords. It also performs well in terms of tenant energy bill savings, value of health benefits improvement and number of homes insulated by 2020.

• **Policy Option 3** has a lower net present value and higher average cost to landlords than options 1 and 2. The percentage of F and G rated properties reaching Band E, the improvement in progress towards fuel poverty objectives, the number of homes insulated and health impacts are higher than options 1 and 2, however.

• **Policy Option 4** scores the worst in terms of net present value and average cost of improvements for landlords. This option does, however, deliver the highest percentage of F and G rated properties reaching Band E, number of homes insulated, tenant energy bill savings and value of health benefits.

The analysis suggests that Option 2 should be the preferred option as this strikes the right balance between achieving a robust ambition for the policy at a reasonable cost to landlords. Despite option 1 having the highest NPV, option 2 makes greater strides in lifting homes in the private rented sector to Band E and fuel poor households out of the worst performing properties and towards the Government's stated aim to upgrade all fuel poor homes to EPC band C by 2030. Achieving greater progress towards the statutory Fuel Poverty targets is not included in the quantification of the NPV, which also delivers greater health benefits to households who cannot afford to heat their homes to warmer temperatures.

The Government accepts that some measures may benefit from cost reductions in the future, as a result of innovation. For instance, the cost of thin solid wall insulation could be very much lower than present day

[30] Carbon savings have not been added as a criterion as the impacts in Carbon budgets 4 and 5 across the policy options are small.

systems, and the cost of solar PV panels has already fallen dramatically. To reflect this, the Government accepts that landlords should be encouraged to install today's most cost effective measures, which also tend to be lower cost. Coupled with the small number of additional properties assisted to reach Band E under a £3,500 cap, the preferred option of £2,500 optimises the balance between the regulatory burden on landlords and the benefit to tenants at a reasonable cost. Option 4 has been discounted because of its poor NPV and excessive burden on landlords.

6. Regulatory impact

6.1 Equivalent Annual Net Direct Cost to Business & Business Impact Target

52. The proposed amendments to the PRS regulations will result in increased costs to landlords, who are assumed to all be businesses (see section 6.2) in keeping with previous regulations affecting the sector.[31] This means that the PRS regulations would change from a 'zero net cost' measure to an 'in' measure as a result of the proposed amendments being made.

53. Direct costs determined to be in scope are:
    - **Capital costs of installations** (parts, labour and VAT[32])
    - **Administration costs** (familiarisation with the amended regulations)
    - **Compliance costs (the cost of time taken by landlords to prove compliance with or apply for an exemption from the regulations)**
    - **Hidden costs of installations** (25% of which is assumed to fall to tenants)
    - **Operating costs**, excluding fuel (i.e. maintenance of central heating and solar PV only)

54. The direct costs to business are therefore the sum of each of the 4 components above, over the appraisal period of the policy (45 years). The main assumptions and evidence sources used for each component are set out in Annex C. Using the Department for Business, Energy and Industrial Strategy's Impact Assessment Calculator,[33] the provisional Equivalent Annualised Net Direct Cost to Business (EANDCB) of the preferred policy option of a £2,500 cost cap is set out in Table 11 below, alongside the Business Net Present Value and Business Impact Target score.

Table 11: Provisional EANDCB and Business Net Present Value (£m)

	Policy Option 2: Cost cap of £2,500
Equivalent Annualised Net Direct Cost to Business (EANDCB) – 2014 prices	19.1m
Business Net Present Value[34] – 2014 prices	490m
Score against the Business Impact Test	95

[31] For example see the 2015 PRS Impact Assessment (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401382/150202_PRS_Final_Stage_Revised_For_Publication.pdf) and the recent consultation Impact Assessment on Domestic Heating Replacement Regulations (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/575300/Short_Term_Domestic_Boiler_2016_Initial_IA.pdf)

[32] VAT is not counted in the cost-benefit analysis (Table 2) as it is a transfer from landlords to the Exchequer, but landlords face this direct cost and therefore VAT is included as part of the capital costs when calculating the EANDCB.

[33] Available at: https://www.gov.uk/government/publications/impact-assessment-calculator--3

[35] Available at: https://www.gov.uk/government/statistics/private-landlords-survey-2010

6.2 Small and Micro Business Assessment

55. Table 12 sets out an estimate of the portfolio size for domestic landlords, drawing on data from the Department for Communities and Local Government's Private Landlord Survey.[35] This shows that the majority of domestic landlords own one property 78% and 1% of landlords own 25 or more properties.[36]

Table 12: Estimated distribution of property portfolios for private landlords

Number of properties	Proportion of private landlords
1	78%
2-4	17%
5-9	3%
10-24	1%
25-100	1%
>100	0%

Classification of PRS Landlords as small and micro businesses

56. As most landlords in the domestic PRS only own one property, it seems appropriate to make the conservative assumption that all landlords in the domestic sector should be classified as small or micro businesses for the Small and Micro Business Assessment.

57. There are around 1.5 million domestic landlords in England and Wales.[37] It should also be noted that while small and micro businesses comprise most of the sector, only a minority of businesses are required to take action as a result of the Regulations, with only landlords owning the least energy efficient properties (those, F and G rated) required to make any improvements to their properties. This equates to around 5% (around 83,500) of businesses operating in the domestic private rental market (assuming the distribution of property ownership for F and G rated properties is the same as that for the overall PRS). Given most landlords only own one property they are highly unlikely to require more than 49 staff.

Rationale for the non-exclusion of small and micro businesses from the Regulations

58. All domestic landlords are classified as small and micro business for the purpose of this assessment; therefore their exclusion would remove most, if not all, of the intended benefits of the policy. Many of the costs incurred by landlords as a result of the Regulations are likely to be on a per-property basis – meaning that landlords with small property portfolios (and therefore deemed to be small or micro businesses, as discussed above) will not be disproportionately burdened by the Regulations.

59. With the costs of understanding the Regulations, however, there are clear economies of scale – with landlords with large property portfolios able to spread the costs of installation or organising finance over a large number of properties.

Mitigating the impact on small and micro businesses

60. The proposed amendments discussed in this impact assessment will affect the same landlord cohort as those in scope of the 2015 Regulations, a majority of whom are likely to be small and micro businesses. The establishment of a cap on likely landlord costs is designed to moderate the effect of a requirement on these businesses to improve any sub-standard rental property to a minimum of EPC band E, even where no third-

[35] Available at: https://www.gov.uk/government/statistics/private-landlords-survey-2010
[36] This distribution is based on all PRS properties. Similar data for properties that are specifically, 'F' or 'G' rated are not available.
[37] Estimate based on HMRC Survey of Personal Incomes 2013-14 which shows the number of landlords declaring income from letting their properties in the UK.

party funding is available. Landlord businesses whose tenants qualify for supplier obligation support may be able to access full or partial funding for improvements which will further mitigate the impacts for these landlords. The impacts, including estimated average costs, of improving substandard property to an EPC Band E, are set out in Table 8.

61. As discussed in the impact assessment for the 2015 regulations, it is possible that some of the burden faced by some small and micro landlords is partially offset through the use of letting agencies. These agencies may, in some instances, bear the costs of understanding the Regulation, and can therefore advise landlords using the agency about compliance. Agents are likely to have economies of scale as they may manage a number of properties on behalf of landlords. However, this will only offset the costs in a small number of instances, with around 68% of small landlords not using letting agencies when letting out a domestic property.

62. Government has published comprehensive guidance to landlords and others with an interest in the minimum standard to ensure that businesses in scope can understand their obligations in as straightforward a manner as possible. This landlord guidance is available here[38], and will be updated in due course to reflect any changes to the domestic regulations made as a result of this consultation exercise.

7. Risks and uncertainties

63. The impacts of the amended PRS regulations are uncertain due to a range of factors. The main factors identified are:

- **Capital costs**: the extent to which landlords make energy efficiency improvements will depend on the costs they face against the proposed cost cap. The analysis in this IA draws on the most up to date evidence available on capital costs, but these may change in future – for example as a result of innovation. Our High and Low NPV estimates for options 2 (preferred option) reflect the impact of using different capital cost assumptions (low and high respectively according to the ranges outlined in Annex C). We chose to alter capital cost assumptions to estimate our High and Low scenario for our preferred option because capital costs not only have a significant impact on the NPV but also on other key variables such as cost to landlords and the proportion of PRS properties achieving Band E. Table 13 provides additional detail on the impact that varying our capital cost assumptions would have on key estimates under option 2.

Table 13: Estimated change in percentage of homes reaching EPC Band E and average costs under high and low capital cost assumptions (nominal prices)

	Central cost assumptions	High cost assumptions	Low cost assumptions
Net Present Value (£m)	200	136	270
Percentage of homes in scope achieving EPC Band E	30%	29%	32%
Percentage of homes in scope taking action but not achieving EPC Band E	70%	71%	68%
Average (mean) capital costs for those achieving EPC Band E	£865	£930	£875
Average (mean) capital costs for those not achieving EPC Band E	£1,025	£1,160	£1,090

The sensitivities in Table 13 intuitively show that if the costs landlords face are higher than those assumed under the central scenario, fewer would achieve Band E. Higher costs of measures mean that more landlords would find that they could not make further progress towards Band E without breaching the cost cap, and this is reflected in the lower proportion of properties reaching Band E compared to the

[38] www.gov.uk/government/publications/the-private-rented-property-minimum-standard-landlord-guidance-documents

central scenario. Under a scenario where costs of measures are lower, a larger number of landlords can achieve Band E within the cost cap.

- **Energy prices**: future energy prices are uncertain, and as outlined above the value of energy saved by the amended regulations is a major driver of the benefits.[39] Throughout this Impact Assessment we use the central price projections from the Green Book supplementary Guidance on valuing energy and greenhouse gas emissions. The table 14 below shows the sensitivity of our analysis to "high" and "low" price projections.

Table 14: Estimated Net Present Value of policy options under central, high and low energy price assumptions

Net Present Value (£m)	Central energy price assumptions	High energy price assumptions	Low energy price assumptions
Option 1: cost cap of £1,000	301	384	215
Option 2: cost cap of £2,500	200	330	77
Option 3: cost cap of £3,500	159	298	27
Option 4: cost cap of £5,000	127	248	20

The sensitivity analysis of our four options to higher and lower energy price assumptions shows that they all generate positive net present values under all price scenarios.

- **Green Deal Finance**: Following the closure of the Green Deal Finance Company to new business in 2015, the Green Deal Finance Company was sold in early 2017. Since then the new owners have started the process of introducing a new Pay As You Save finance offer to the market. However, there is no guarantee that, this will lead to an offer which a majority of landlords might access in the medium term. Therefore our appraisal assumes that no measures would be installed using Green Deal finance given the lack of evidence on how many landlords might access Green Deal finance under the renewed scheme. The Government published a call for evidence recently to help fill this gap. The call for evidence closed on 23 November 2017 and BEIS is currently assessing the material which has been submitted. A Government response will be published in due course. Finally, we expect further evidence to emerge for the remainder of the financial year (FY18) about the success of the renewed Green Deal scheme. We intend to incorporate this emerging evidence in the final stage of this impact assessment.

  In the meantime, as an illustration, we have modelled a scenario under our preferred option (£2,500 cost cap) where £10m worth of energy efficiency measures would be delivered through Green Deal finance. Under this scenario, the £10m worth of measures installed through the Green Deal finance are removed from our policy scenario – measures removed met the Golden Rule[40]. This leads to a new NPV of £190m, down from £200m in our policy scenario. This shows, therefore, that even in the scenario that a proportion of measures are delivered through Green Deal finance our NPV still remains clearly positive.

[39] Energy price assumptions also affect comfort taking, but this is a smaller benefit compared to the value of energy saved.
[40] https://www.gov.uk/government/publications/how-savings-figures-are-calculated-under-the-green-deals-golden-rule

Annex A: Policy background, objectives and rationale for intervention

Policy background

1. Private rented properties are among the least energy efficient in the housing stock (see 'Scale of the Problem' section below). This means that the sector accounts for a disproportionate number of households in fuel poverty, some of the coldest homes in the housing stock, and some of the most cost-effective opportunities to cut carbon emissions and energy bills.

2. The Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015 contain several provisions to raise energy efficiency standards in the Private Rented Sector (PRS). The key provision is the Minimum Level of Energy Efficiency (Part 3 of the Regulations) which provides that: from April 2018 domestic and non-domestic privately rented properties in England and Wales must meet a minimum energy efficiency standard of EPC E in order to be let. The standard will apply to all privately rented property let on a qualifying tenancy type, and which is legally required to have an EPC. The minimum standard will take effect from the point at which a new tenancy is issued, or where an existing tenancy is renewed. The standard will then apply to all relevant properties, even where there has been no change in tenancy, from 1 April 2020 in the domestic sector - this is referred to as the 'backstop' date.

3. The current regulations require landlords to install measures which can be funded with no upfront and no net cost to the landlord. The Regulations provide that measures will involve no upfront or net cost where they can be fully paid for using Green Deal finance, supplier obligation funding (meaning the Energy Company Obligation (ECO) or its successor(s)), or other third party funding (for example Local Authority grants). Green Deal finance, in many cases in combination with supplier obligation support, was anticipated to be the main route for funding improvements under the Regulations.

4. Following the closure of the Green Deal Finance Company to new business in 2015, the Regulations, if not amended, are likely to be significantly less effective at driving improvements to the domestic private rental stock than anticipated. The Green Deal Finance Company was sold in early 2017 and the new owners have started the process of introducing a new Pay As You Save finance offer to the market. However, there is no guarantee that, this will lead to an offer which a majority of landlords might access in the medium term. A fuel poverty focused successor to the current supplier obligation, ECO, will deliver energy efficiency improvements from 2018 to 2022 (with a proposed 2017/18 transition scheme, ECO: Help to Heat, working to bridge the gap between the end of the current ECO scheme and the beginning of the next obligation). The increased focus on fuel poor households may mean, however that not all private landlords are able to access ECO support to comply with the regulations.

5. Given these levels of uncertainty around availability of permitted finance, it is likely that, if the Regulations remain unchanged, a majority of domestic landlords may be able to claim an exemption from the prohibition on letting substandard property, diluting the intended impact of the minimum standard. The majority of relevant exemptions under the current Regulations, including the exemption relating to lack of suitable finance, last for five years, and domestic landlords will be able to begin registering exemptions from October 2017.

Policy objectives

6. The Government's overarching policy objective is to ensure that the 2015 Regulations are effective in driving investment in the energy efficiency of the worst performing buildings in the domestic private rented sector (PRS). The proposed amendments seek to ensure that, in the absence of a Green Deal finance mechanism, the 'minimum level of energy efficiency' provisions deliver energy efficiency improvements additional to that which may be delivered through energy company obligation funding alone. Effective operation of the domestic PRS regulatory framework will support two of the Government's statutory objectives:

- **Tackling fuel poverty**: raising energy efficiency standards in the PRS to EPC Band E by 2020, mirrors the Government's interim target to raise as many fuel poor homes in England to energy efficiency Band E by the same date.[41] The Regulations would therefore make a positive contribution to the Government's fuel poverty commitments for England, as well as the Welsh Government's own statutory target for 2018.[42]

- **Reducing energy demand and greenhouse gas emissions**: improving the energy efficiency of privately rented homes will cut energy use and the greenhouse gas emissions that result from it, contributing to the Government's climate change commitments.[43]

Broader policy objectives

7. The installations driven by amending the 2015 Regulations will also contribute to number of broader Governmental objectives:

    - **Increase the security of the UK's energy supply**: reducing domestic energy use means lower demand for imported fuels and power generation, including at times of peak energy demand.

    - **Support economic growth, jobs in the green construction industry and investment**: Increased demand for energy efficiency measures is likely to support productivity growth and jobs within the green construction industry and the wider supply chain. Greater competition within these markets may also spur innovation, lowering the end costs of installing measures, and help sustain jobs. There could be benefits in the wider macro-economy associated with some of the bill savings experienced by households being spent on other goods and services.

    - **Improving public health outcomes**: the least energy efficient homes are typically also the coldest homes (see Figure A3 below), and cold homes can lead to poor health outcomes, with a resulting resource pressure on health services. Improving the energy efficiency of F and G-rated PRS homes should lead to improved health outcomes for households and generate resource savings for health service providers.

Scale of the problem

8. There were an estimated 4.5 million domestic PRS properties in England and Wales in 2015-16 (the latest available data from the 2015 English Housing Survey[44]) comprising around 20% of the total domestic housing stock. This makes it the second largest form of tenure after owner occupied.

9. The Government's official means of measuring energy efficiency is the Standard Assessment Procedure (SAP)[45], which rates domestic properties on a scale from 1 (very high energy costs) to 100 (very low energy costs). This scale is in turn banded on a scale from 'G' (very high energy costs) to 'A' (very low energy costs). Between 2005 and 2015 the average SAP rating in the PRS increased from 46 (an EPC Band E) to just over 60 (an EPC Band D). This improvement over time is partly due to an increase in the sector's size over this period, and is shown in Figure A1 below, whereby a large number of more efficient properties have entered the sector and improved the average efficiency. New properties were responsible for most of the increase in

[41] The fuel poverty target for England and its interim milestones are measured using the Fuel Poverty Energy Efficiency Rating (FPEER), which is based on the same Standard Assessment Procedure methodology used to generate an EPC rating for domestic properties. More information is available here:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332236/fpeer_methodology.pdf

[42] For more information see: DECC (2015) *Cutting the cost of keeping warm – a fuel poverty strategy for England*, https://www.gov.uk/government/publications/cutting-the-cost-of-keeping-warm; Welsh Government (2010) *Fuel poverty strategy 2010*, http://gov.wales/docs/desh/publications/100723fuelpovertystrategyen.pdf

[43] For more detail on the UK Government's climate change commitments, see: https://www.gov.uk/guidance/carbon-budgets

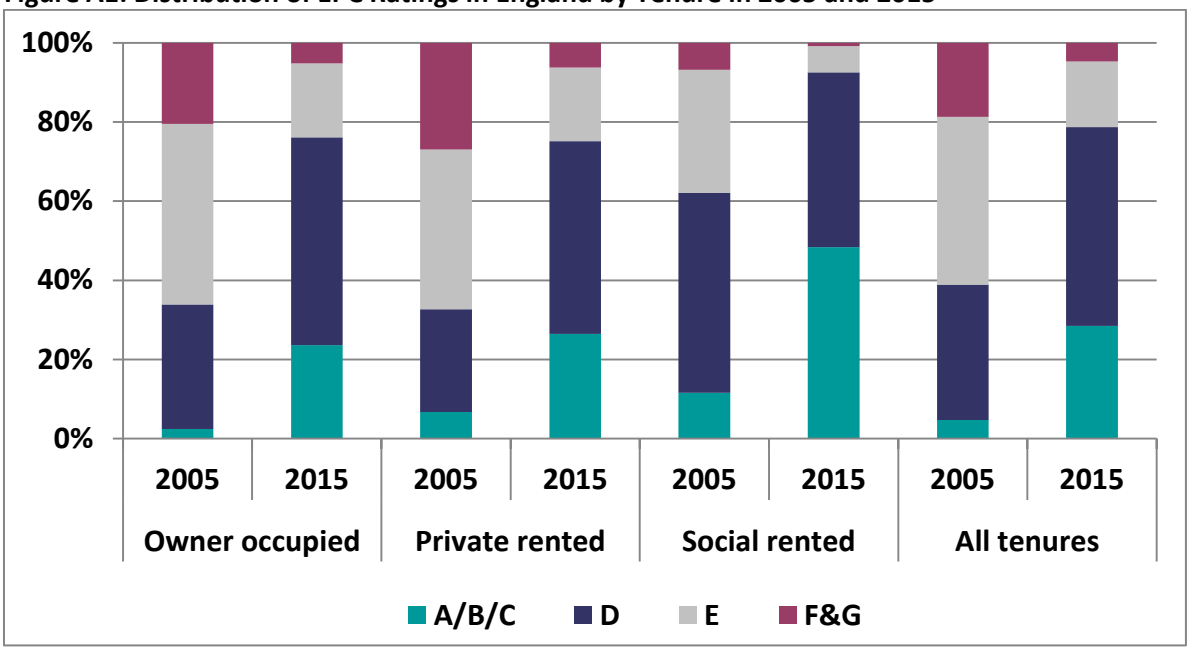
[44] There has not been a housing survey in Wales since 2008, therefore English data are scaled up by 5% to broadly account for the Welsh housing stock.

[45] For further information see: https://www.gov.uk/guidance/standard-assessment-procedure

PRS supply, meaning that by 2015 around 17% of PRS properties in England were post-1990 vintage compared to around 15% for the owner occupied sector. Newer properties tend to have higher energy efficiency ratings, due to more stringent building regulations.

10. There remains, however, a stock of older properties in the PRS which have the lowest energy ratings of all domestic properties. The sector has a high proportion of dwellings constructed pre-1919 – 34% compared with 20% in the owner occupier sector. Figure A1 below shows the distribution of EPC ratings by tenure in 2005 and 2015. Although there has been a reduction in the proportion of F/G PRS properties over this period, in part this may be due to the growth in the PRS sector with more new build and energy efficient properties entering the sector.

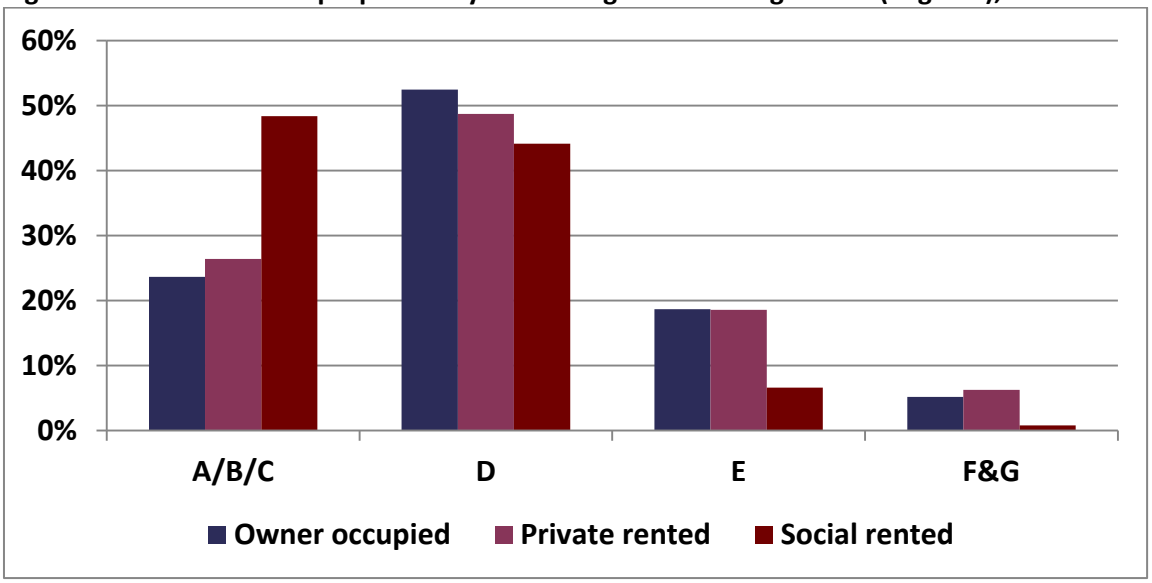
Figure A1: Distribution of EPC Ratings in England by Tenure in 2005 and 2015



Source: English Housing Survey 2015

11. The distribution of EPC ratings within the PRS, and a comparison with other tenures, is shown in Figure A2 below. As can be seen from the graph the PRS has the highest percentage of homes with the lowest energy efficiency ratings.

Figure A2: Distribution of properties by EPC Ratings and housing tenure (England), 2015



Source: English Housing Survey 2015

12. The English Housing Survey produces statistics on the number of PRS properties in England using dwelling and household weights. Dwelling weights would include properties which are vacant and not currently let (these would not require a EPC and so be exempt from the regulations), while the statistics based on household weights only include properties which are let and so require a valid EPC and are subject to the PRS regulations.[46] We therefore use household weights to estimate the number of F or G-rated PRS properties in scope of the regulations, using a 5% uplift to account for properties in Wales as there has not been a housing survey in Wales since 2008 and the number of households in Wales is equivalent to around 5% of the English total.[47]

13. Based on the 2015 English Housing survey if all properties in England and Wales in the PRS were required to obtain or display an EPC when they are let out, we estimate there were around 280,000 domestic PRS properties in England and Wales with an EPC rating of Band F or Band G in 2017 (see the following two sections for the types of property that are excluded as part of this calculation). Therefore at the beginning of 2017 there are estimated to be approximately 280,000 F or G-rated PRS properties in England and Wales in scope of the regulations.

Properties not in scope of the regulations

14. The domestic PRS Regulations only apply to those properties that require an Energy Performance Certificate (EPC). Exclusions for certain buildings are set out in the accompanying DCLG guidance documents[48], and typically apply to Houses in Multiple Occupation (HMOs) and listed buildings/ancient monuments. However the PRS regulations do apply where an EPC exists for the property and only part of the property is let (such as an individual room within a House in Multiple Occupation). The PRS regulations also apply to listed buildings which are legally required to have an EPC.

Houses in Multiple Occupation (HMOs)

15. A property is classified as a House in Multiple Occupation if at least 3 tenants live in the property, forming more than 1 household, where tenants share toilet, bathroom, or kitchen facilities. The 2014 English Housing Survey suggests that around 10% of domestic PRS properties in England and Wales fall under this definition of HMO. Whether an HMO is required to obtain an EPC depends on the particular set-up of the property and/or tenancy agreement.

Listed buildings and ancient monuments

16. Data on the number of listed buildings within the domestic PRS stock are not available at present. However, DCLG's impact assessment on the recast of the Energy Performance of Buildings Regulations[49] provides estimates of the number of these building types. This reports that there are approximately 374,000 listed buildings in England. As the IA also notes, a further 20,000 buildings are listed as ancient monuments. This implies that around 400,000 buildings may fall into the category of a listed building or ancient monument. Around 25% of these lie within the privately-owned domestic buildings sector.

17. Data on the specific tenure of these building types is not available. However, according to the 2014 English Housing Survey the PRS accounts for around 23% of privately owned homes (with the other 77% being owner occupiers), therefore a pro-rata estimate for the PRS would mean that around 23,000 properties could be exempt from obtaining an EPC because they are either a listed building or ancient monument (of the 100,000 within the private domestic sector outlined above). This represents less than 1% of the PRS housing stock.

[46] We will seek to gather evidence during the consultation on the extent to which currently vacant domestic properties are likely to enter the PRS in the period 2018 – 2020.
[47] Calculated on the latest household estimates for England and Wales as published in the 2016 fuel poverty National Statistics report, available here: https://www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2016
[48] https://www.gov.uk/buy-sell-your-home/energy-performance-certificates
[49] Available here: https://www.gov.uk/government/publications/improving-the-energy-efficiency-of-our-buildings

18. Combining HMOs with listed buildings and ancient monuments we exclude 10% of PRS properties from our modelling of the impacts of the amended regulations.

Rationale for Government intervention

Market failures and behavioural barriers

19. There are a range of barriers that prevent households making energy efficiency improvements to their homes, with some particularly relevant to the Private Rented Sector. These have been well documented in previous PRS Impact Assessments,[50] but can be summarised as follows:

- **Misaligned incentives** – for properties in the PRS, the costs of installing energy efficiency measures traditionally fall to landlords, while the benefits of lower energy bills and a warmer property usually fall to tenants. This generates a split-incentive, whereby landlords have little motivation to invest in upgrading the energy efficiency of their property as they do not enjoy the benefits. In principle, in a well-functioning market, rent levels should fully reflect differences in a property's energy efficiency. This would overcome the issue, however the presence of other market failures, such as imperfect information on the costs and benefits of energy efficiency measures, mean rents may not fully reflect differences in energy efficiency.

- **Externalities** – households generate carbon emissions through using energy in the home (e.g. heating). They experience the benefit of doing so (e.g. a warm home), but the climate change costs resulting from the emissions are not fully reflected in the price they pay.[51] This leads to overconsumption of fossil fuel-based energy and low demand for energy efficiency because the costs and benefits to society of energy use are not aligned.

- **Incomplete or asymmetric information** – the energy efficiency market is characterised by a lack of trusted information for consumers, who are not well informed about energy efficiency measures. Householders may not be aware of the potential benefits, or be less well informed about the performance of measures than those looking to sell them. As a result, households may heavily discount the potential benefits to them from energy efficiency improvements and choose not to take them up.[52]

- **Access to capital** – the upfront cost of energy efficiency measures means households must choose between investing in them or using the same money for other purposes (the 'opportunity cost'). For some households the choice may be between measures and funding essentials such as food, or borrowing at high interest rates. In these circumstances households might choose not to invest even where bill savings outweigh upfront cost due to the 'opportunity cost' of investing.

20. Where tenants have the option to invest in energy efficiency upgrades themselves, short tenancy lengths can mean that in many instances they are unlikely to live in a property long enough for the benefits of energy efficiency to be worth the initial investment. Table A1 shows that around a third of tenants have lived in their current place of residence for under a year, and the typical length of stay for all tenants is around two years.

[50] For example see the 2015 Final Stage Impact Assessment (Section 2): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401382/150202_PRS_Final_Stage_Revised_For_Publication.pdf

[51] The exception here would be electrically-heated homes, as electricity generation is subject to caps on emissions and generators have to buy permits. This generates a price for carbon emissions from electricity consumption.

[52] Royal Institute for Chartered Surveyors (2010) "Energy Efficiency and Value Project" noted a lack of consistent or easy to access information on energy efficiency and found that this influenced a low level of demand for energy efficiency measures. Consumer research undertaken in 2011 for the Department of Energy and Climate Change showed that after requests for lower heating costs, having access to convincing information about benefits and information from a trusted source are the main reasons given for what would encourage people to make their homes more energy efficient.

Table A1: Length of residence in the Domestic Private Rented Sector

	< 1 Year	*1-2 Years*	*2-3 Years*	*3-5 Years*	*5-10 Years*	*10-20 Years*	*20-30 Years*	*> 30 Years*
Private Renters (%)	13.5	11.7	10.9	14.2	25.3	17.1	4.0	3.3

Source: English Housing Survey, 2015

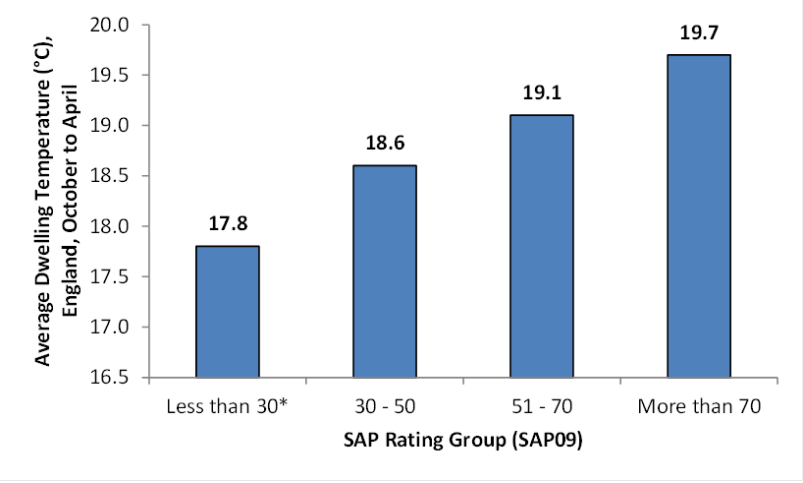
Equity considerations

21. The above barriers to improving energy efficiency are compounded by concerns that a disproportionate share of F or G-rated PRS homes are lived in by households in fuel poverty. For example, in England around 11% of all households are fuel poor, around 21% of all PRS households are fuel poor, while it is estimated that over 46% of F or G-rated PRS households are fuel poor. Households on lower incomes typically face the greatest trade-offs between using their constrained resources to adequately heat their homes and spending on other basic essentials. Upgrading the energy efficiency of the dwelling is the most sustainable and cost-effective means of alleviating fuel poverty, fuel poor households often lack funds to make improvements themselves.

22. Living at low temperatures poses a risk to health, with a range of negative morbidity and mortality impacts associated with exposure to the cold. The Marmot Review Team report on cold homes and health[53] and the Hills Fuel Poverty Review[54] set out the strong body of evidence linking low temperatures to these poor health outcomes – in particular the cardiovascular and respiratory illnesses that drive the number of excess winter deaths each year (almost 44,000 in England and Wales in 2014/15 – the latest statistics).[55]

23. Poor energy efficiency standards, and high energy costs driven by poor energy efficiency, have been shown to be robustly linked to lower indoor temperatures (see Figure A3). Households in the PRS facing the barriers to upgrading their energy efficiency risk being 'locked in' to low temperatures and the subsequent negative health outcomes. Improving the energy efficiency of homes has been demonstrated to improve indoor temperatures significantly, reducing the risk to tenants of poor health outcomes.

Figure A3: Average dwelling temperatures during winter heating season (2011), by SAP rating group[56]



[53] Marmot Review Team (2011). *The Health Impacts of Cold Homes and Fuel Poverty*. Available at: http://www.instituteofhealthequity.org/projects/the-health-impacts-of-cold-homes-and-fuel-poverty

[54] Hills (2011). *Fuel Poverty: The Problem and Its Measurement*. Available at: http://sticerd.lse.ac.uk/dps/case/cr/CASEreport69_Executive_Summary.pdf

[55] Office for National Statistics (2015). *Excess Winter Deaths Statistics*. Available at: http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/excesswintermortalityinenglandandwales/201415provisionaland201314final

[56] The SAP scale (1 – 100) is used to determine EPC bands. For example, Band G covers ratings 1 to 20, F covers 21 to 38 and so on. The group "Less than 30" refers to the very least efficient homes (all G-rated and some F-rated).

Annex B: Counterfactual and policy overlaps

1. The impacts of the consultation policy proposals have been assessed against a 'Do Nothing' baseline – the counterfactual. There are two main aspects to the counterfactual that affect the net costs and benefits (including the direct ones to business):

Number of landlords applying for an exemption

2. The impacts of the consultation policy proposals have been assessed against a 'Do Nothing' baseline – the counterfactual. Given that under the current Regulations landlords can apply for an exemption if they face upfront or net costs from installing measures, and that Green Deal Finance is not currently available at scale, an assumption is made no activity would occur in the PRS as a direct consequence of the Regulations as it is assumed the majority of landlords would claim this exemption. We would welcome feedback on this from the consultation and we will be monitoring how the market develops ahead of the consultation response to determine whether GDF is likely to feature. Exceptions to this delivery assumption are those improvements that occur as a result of other policies such as the Energy Company Obligation, or from the natural replacement of boilers as they come to the end of their natural lifetime. Some measures would also be installed by landlords themselves.

3. This is a conservative assumption as some landlords may choose to meet the Regulations by spending from accumulated funds and hence face no up-front cost, therefore not claiming an exemption. However, there is no firm evidence at present relating to how many landlords would still proceed in this scenario and how many may already have acted post 2014.

Measures delivered to private rented homes under other policies

4. Counterfactual uptake of insulation and conventional heating measures is taken from the modelling underpinning the recent consultation Impact Assessment on the Energy Company Obligation. The successor scheme to the current ECO scheme is expected to run until 2022, we assume in this analysis that the annual profile of measures in the transitional period of the scheme 2017/18 is the same in future years until 2020[57] and this is netted off PRS measures delivery. This may change if the scheme targeting of recipients for measures changes during the period from 2018.

5. The ECO modelling estimates the impact of that policy on different household types, and provides an estimate of the level of uptake that could be expected under existing policies, i.e. with ECO but excluding the regulations. This enables us to estimate the number of households in the PRS who would install measures such as central heating, condensing boilers, heating controls, loft insulation, cavity wall insulation, solid wall insulation, or heat pumps, in the absence of the PRS Regulations.

6. As the tariff for Feed in Tariffs for landlords installing Solar PV into F or G-rated properties is lower than the standard tariff we do not assume that there would be significant take up of this measure in the absence of the regulations. Measures which are covered by the Renewable Heat Incentive e.g. air source heat pumps and biomass boilers have high up front capital costs so installation of these measures would not typically be in the scope of the cost cap levels being put forward for consideration, apart from where there is no cost cap. At present heat pumps are not included in the analysis, but we will seek to address this limitation for the final stage impact assessment.

7. The upgrade of properties which currently have a non-condensing boiler, which requires replacement, to condensing boilers would have happened in the absence of the regulations due to building regulations (all new boilers installed into properties are now required to be condensing boilers). An estimate has been made

[57] See link to the ECO transitional scheme IA: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/534669/ECO_Transition_Consultation_IA.PDF

of how many boiler upgrades occur over the period up to 2020 and these have been netted off the delivery of the PRS regulations.

Annex C: Modelling approach and key assumptions

1. This annex sets out the detail of the costs and benefits analysed in the cost-benefit analysis, the modelling approach used in this impact assessment and the key assumptions made.

Costs and benefits included in the cost-benefit analysis

Costs

2. **Installation costs**. This is expected to be the largest individual cost of the Regulations. When installations come to the end of their life, it is expected that replacement will be made. It is assumed that installation costs are incurred again at that stage and these costs are included in the NPV.

3. For the purposes of this IA, we do not assume any reductions in the real costs of installations over time except for Solar PV systems, which are assumed to fall by around 7% between 2015 and 2020, based on projections by Parsons Brickerhoff.[58] In practice, technological improvements and increased competition may lower the costs of installing energy efficiency measures and therefore lower the costs of the Regulations. We also do not assume the costs to rise over time, either, as it is assumed that the supply chain can meet the additional demand for energy efficiency measures.

4. **Operational costs**. Covers the annual cost of running heating measures e.g. boilers and Solar PV installations, these costs include servicing and maintenance costs. The input assumptions are detailed under 'Key Modelling Assumptions' below.

5. **Financing Costs**. Supplementary guidance to the Green Book on valuing energy use and greenhouse gas emissions[59] advises that "the costs of private financing would generally be considered to be a real social cost". This is because financing costs may affect private sector allocation decisions. When capital is tied up in a specific project, alternative profitable use of such capital is ruled out and there is a foregone social benefit. Finance costs have been included in this consultation stage impact assessment, ensuring consistency with guidance, and mirroring assumptions used in the latest Energy Company Obligation Impact Assessment whereby we assume a social interest rate of 5.5%[60] over 5 years. We will look to gather further evidence on the opportunity costs of using private capital for social aims in the private rented sector during the consultation. The inclusion of private financing costs reduces the NPV and represents a prudent approach to avoid overestimating policy benefits.

6. **Hidden costs**. These include the time taken by landlords to research potential installations, to liaise with the installer, prepare the property for installation and any oversight, as well as clean-up or redecoration costs associated with the installation. Some of these costs may fall to the tenant, therefore we assume – in line with the 2015 PRS Impact Assessment – that 75% of these costs fall to landlords and 25% fall to the tenant[61].

[58] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/456187/DECC_Small-Scale_Generation_Costs_Update_FINAL.PDF

[59] Available at: https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

[60] 146. The Committee on Climate Change have previously undertaken research on the appropriate means of estimating the opportunity cost of capital where private funds are used to achieve social aims. They found that the appropriate for individual financing of social aims was in the region of 3.5% to 7.5%. We use the mid-point of this range, 5.5%, as the assumed private interest rate assumption. The CCC report is available here: http://archive.theccc.org.uk/aws/Time%20prefernce,%20costs%20of%20capital%20and%20hiddencosts.pdf

[61] The assumption on the proportion of hidden costs that fall to the tenant is based on internal analysis on how the hidden costs reported in the ECOFYS report (link) split between landlords and tenants.

These costs are estimated to be small in the majority of cases. The costs are consistent with those used in the ECO Help to Heat consultation stage Impact Assessment.

7. **Understanding the Regulations familiarisation costs (landlords)**. Landlords will face costs in understanding the Regulations. The cost to landlords is associated with the time they spend reading this guidance. This is assumed to take, on average, one hour for domestic landlords (see 'Key Input Assumptions' below for details).

8. **Compliance costs (landlords)**. Landlords will also incur a time cost in applying for an exemption from the regulations when this is required and also gathering the necessary materials to prove compliance (see 'Key Input Assumptions' below for details).

9. **Understanding the Regulations (letting agents)**. There may be a small cost to letting agents in understanding the Regulations. These costs are likely to be small and have not been monetised.

10. **Administration and enforcement costs**. Local authorities will be required to administer and enforce the PRS Regulations. These costs are expected to be small, as Local Authorities will already monitor and enforce the requirement to have an EPC. There will therefore only be small additional costs associated with monitoring that these landlords have also complied with the Regulations. Costs to local authorities will largely be in the form of staff costs. These have been estimated drawing on evidence submitted by Local Authorities for the 2015 Impact Assessment, which we will seek to update as part of the consultation.

Benefits

11. **Energy savings**. Installation of energy efficiency measures reduces the resources needed to meet demand. This has been monetised in accordance with Green Book supplementary guidance on valuing energy use and GHG emissions.

12. **Air quality improvements and reductions in greenhouse gas emissions**. Improvements in energy efficiency reduce the amount of energy that needs to be used. This reduction improves air quality and reduces traded and non-traded carbon emissions. Reductions in carbon emissions help meet the UK's legally binding carbon targets, while improvements in air quality reduce adverse health impacts, and long-term environmental impacts (including climate change). The benefits have been calculated in accordance with Green Book supplementary guidance.

13. **Comfort taking**. Energy efficiency measures reduce the amount of fuel required to deliver a given level of energy service, meaning that some households will heat their homes to a higher temperature, for a longer period, or heat more rooms in their homes. This is valued at retail energy prices which act as a proxy for the willingness of consumers to pay for the additional comfort.

Background to the National Household Model (NHM)

14. The modelling of landlord actions under the amended PRS regulations is undertaken using the National Household Model (NHM). This uses discrete event simulation, which is a flexible modelling method characterised by the ability to represent complex behaviour within, and interactions between, individuals, populations and their environments. The term *discrete* implies that such a model moves forward in time at discrete intervals, from one event to another for instance, and that these events are mutually exclusive. Only the event being simulated by the model can change the state of a case over time (illustrated in Figure C1).

For example in this instance, *cases* can be thought of as PRS F and/or G rated properties whist *events* represent the installation of energy efficiency measures.

Figure C1: Visualisation of discrete event simulation

15. The NHM models energy-related behaviour for domestic dwellings using a SAP-based energy calculation. This simulation environment allows the energy and carbon savings from installing measures to homes across housing stock in England and Wales to be modelled. The dwelling data is derived from the English Housing Survey (EHS) 2014.

16. The NHM periodically undergoes updates and it is expected that between now and potential publication of the final IA some estimates will change to reflect this.

Modelling Approach

17. For the purposes of this impact assessment the NHM is used to simulate the impact of different cost cap options to improve the energy efficiency of EPC F or G-rated rated properties in the private rented sector. In essence, the model simulates the change in energy efficiency ratings (according to the Standard Assessment Procedure, SAP) of F and G-rated PRS properties should every property be required to reach a standard of EPC Band E before it can be re-let. This would involve some level of investment by landlords (who can draw on other sources of funding, such as the Energy Company Obligation) and the model looks to simulate what level of investment may be optimum for each property in terms of overall SAP improvement in the sector over the period 2019-2020.

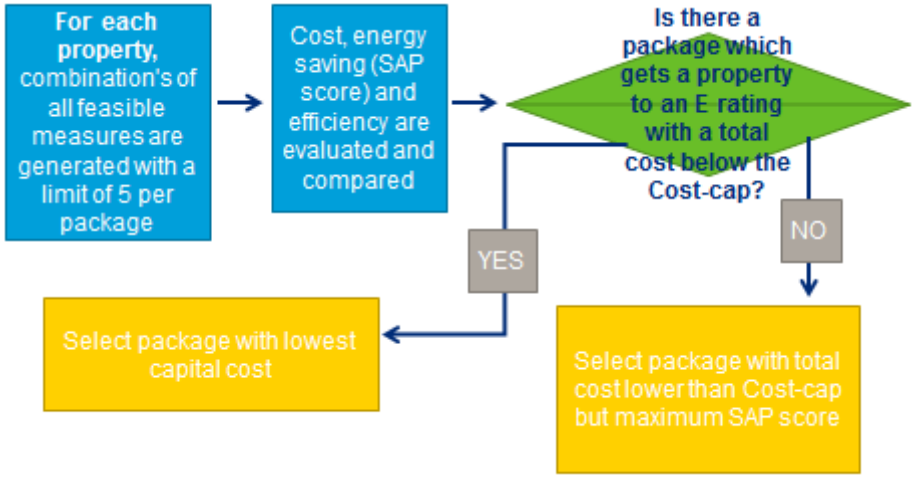
18. The modelling is undertaken using the following steps:
    - Derive the housing stock for the beginning of 2019, the point at which landlords are assumed to start taking action to comply with the domestic PRS regulations. This is derived from the 2014 EHS and described in Annex A.
    - Once derived, the technical potential to install energy efficiency measures in the remaining housing stock is then updated using the latest National Statistics.[62] This allows the model to more accurately identify in which properties there is still scope to install specific energy efficiency measures.
    - 10% of the stock is then removed to exclude properties which are exempt from the regulations from analysis, such as listed buildings or properties of multiple occupancy (see Annex A).
    - For each remaining property in the sample, combinations of all feasible measures are generated from five specified groups (shown in Figure C2a) with a limit of five per package. Only one measure per group may be included in each package. These are then applied to the dwellings over the period 2019 – 2020.

[62] Household Energy Efficiency Statistics (including technical potential update), available at: https://www.gov.uk/government/collections/household-energy-efficiency-national-statistics

Figure C2a: Packages of measures that the NHM chooses from to install in PRS homes

- The model seeks to allocate the optimal package which gets the property to an EPC Band E at a total cost below the specified cap option being assessed. If such an outcome cannot be achieved, the model then allocates packages of measures with a total cost below the specified cap but which collectively maximise the property's SAP rating (illustrated in Figure C2b).

Figure C2b: Choice function which the NHM deploys to allocate the optimal package of measures to PRS homes to maximise SAP improvement



- The output from the model allows the changes which have occurred as the result of installing new measures over the period 2019-2020 to be examined. The stock is also directly compared at the start (2019) and end (2020) of the policy's lifetime through key comparative variables; SAP score changes, new measures installed, their costs and energy savings (as a result of measures installed).

Key Modelling Assumptions

19. The PRS model within the NHM uses consistent assumptions with other models used for related policies – such as the latest Energy Company Obligation Impact Assessment[63] – with two main exceptions.

[63] https://www.gov.uk/government/consultations/energy-company-obligation-eco-help-to-heat

20. The PRS model includes **Solar Photovoltaic (PV)** panels in the selection of measures which can be applied to F or G-rated homes as part of the policy. With this type of measure, however, factors such as roof coverage, efficiency and total energy produced and/or sold back to the National Grid had to be considered to accurately reflect the impact this measures inclusion may have on SAP ratings and carbon savings. Considerable research, testing and collaboration with BEIS engineers and scientists was undertaken to establish an intuitive approach for the measures addition, and assumptions on efficiency and proportion of generation exported are consistent with those used in modelling for Feed-in Tariffs. This resulted in the following assumptions being included in the model;

    - the proportion of roof area that can be covered by Solar PV per household is assumed to be 30%,
    - 50% of the energy produced by the panels is assumed to be used by the household with the other 50% being exported back to the grid,
    - the efficiency of any Solar PV installation is taken to be 12%,
    - the take-up of the measures is capped at 50% of the total stock under assessment - this accounts for households with unsuitable orientation, overshadowing and also includes flats.

21. The other exception is centred on **boiler sizing** and the allocation of **First Time Central Heating (FTCH)**. Previous research has indicated that average domestic boiler size is considered to be between 24 – 28kw, and anything in excess of 60kW to be considered 'non-domestic'. However, the PRS policy is focused specifically on the lower extremes of the property distribution- EPC F/G homes. In some cases, these may constitute larger, older properties which require larger boiler sizes to meet a household's heat demand. As the PRS is focused on domestic properties, boilers included in the measures are capped at a size of 60kW.

22. Also connected is the application of **FTCH** which is applied as a function of boiler installation size and cost. By default, the NHM accounts for the cost of FTCH based on floor area. For the PRS, we have chosen to modify this to incorporate data on delivered costs of FTCH that are used for ECO modelling. This applies scaling factors to the cost of boiler installations to account for the additional charges a landlord may incur through installing a central heating system – such as new radiators, piping work and labour costs. These scaling factors are based on delivery data from the Warm Front Scheme which are consistent with the data used for ECO modelling.

Key input assumptions

Capital costs

23. Table C1 presents the measure cost per dwelling type of the different measures (excluding heating) which may be applied to properties and can also be combined into various packages of measures. For major installations such as cavity wall insulation, loft insulation, solid wall insulation the costs are the same as those used for the most recent Energy Company Obligation Impact Assessment, with adjustments made to include the cost of VAT (which most landlords would be expected to need to pay, but energy companies would not be expected to) and also an uplift of 25% for heating measures to reflect that landlords would not achieve the economies of scale that energy suppliers would under the Energy Company Obligation. This uplift is consistent with assumptions made in the 2015 PRS Impact Assessment. For minor insulation measures, the costs are consistent with those used in the 2015 PRS Impact Assessment but in 2016 prices. For Solar PV installations, capital costs are calculated as a function of roof area based on data from Renewable Energy Consumer Code (RECC)[64]. The Department will be looking to update the evidence on

[64] For more information, see: https://www.recc.org.uk/

these measure costs as part of the consultation and would welcome evidence from consultees on these assumptions.

Table C1: central non-heating capital cost assumptions used in the modelling, by dwelling type (2016 real prices)

	Dwelling Type							
Measure Description	**Small Flat**	**Large Flat**	**Small Semi-detached House**	**Large Semi-detached House**	**Small Detached House**	**Large Detached House**	**Small Mid-terrace House**	**Large Mid-terrace House**
Loft insulation	£189	£452	£242	£389	£326	£672	£231	£357
Low cost cavity wall insulation	£399	£452	£555	£693	£714	£998	£483	£530
High cost cavity wall insulation	£1,680	£2,625	£2,205	£3,570	£2,415	£3,885	£2,835	£4,515
Hot water cylinder insulation (tank)	£36	£36	£36	£36	£36	£36	£36	£36
Draught proofing	£50	£86	£81	£129	£109	£225	£76	£120
Low energy lights	£36	£60	£60	£84	£72	£96	£60	£84
Cylinder (hot water tank) thermostat	£315	£315	£315	£315	£315	£315	£315	£315
Heating controls (appliance thermostat)	£473	£473	£473	£473	£473	£473	£473	£473
Replacement warm air unit	£2,100	£2,100	£2,100	£2,100	£2,100	£2,100	£2,100	£2,100
Double/secondary glazing	£2,880	£4,320	£6,600	£7,680	£7,080	£9,960	£4,680	£6,000
Solid wall insulation (external)	£5,565	£7,035	£8,190	£8,820	£10,710	£12,075	£7,140	£7,875
Floor insulation	£504	£860	£813	£1,287	£1,095	£2,249	£761	£1,193

24. Table C2 breaks down the capital cost assumptions for gas and oil boiler installations, as well as first time central heating associated with each fuel type and storage heaters by size. Again these cost assumptions are the same as those used in the most recent Energy Company Obligation Impact Assessment, with adjustments made for VAT and landlords not being able to achieve the same economics of scale as energy suppliers.

Table C2: central capital cost assumptions for heating measures used in the PRS modelling (2016 real prices)

	Gas Boiler	**Gas with First Time Central Heating**	**Oil Boiler Upgrade**	**Oil with First Time Central Heating**	**Storage Heaters**
kW Capacity					
12	£2,173	£3,079	£3,584	£4,320	£1,412
15	£2,327	£3,298	£3,615	£4,358	£1,479
18	£2,430	£3,443	£3,766	£4,539	£1,775
24	£2,783	£3,944	£4,583	£5,524	£2,138
28	£3,527	£4,999	£5,346	£6,445	£2,494

25. Tables C3 to C6 show the high and low capital cost assumptions used to estimate our low and high NPV scenarios under option 2, as well as the additional sensitivity analysis in Section 7. For those measures that

are also modelled for the Energy Company Obligation (cavity wall insulation, loft insulation, solid wall insulation, first time central heating, and boiler replacements) the high and low assumptions mirror the ranges used in that analysis, which are based on evidence from commissioned research and observed delivery data.[65]

Table C3: high capital cost assumptions for non-heating measures used in the PRS modelling (2016 real prices)

	Dwelling Type							
Measure Description	**Small Flat**	**Large Flat**	**Small Semi-detached House**	**Large Semi-detached House**	**Small Detached House**	**Large Detached House**	**Small Mid-terrace House**	**Large Mid-terrace House**
Loft insulation	£599	£620	£651	£683	£798	£1,008	£620	£683
Low cost cavity wall insulation	£662	£672	£693	£725	£840	£1,260	£693	£704
High cost cavity wall insulation	£2,730	£3,885	£2,888	£3,780	£2,835	£4,830	£3,990	£5,985
Hot water cylinder insulation (tank)	£43	£43	£43	£43	£43	£43	£43	£43
Draught proofing	£60	£103	£97	£155	£131	£270	£91	£144
Low energy lights	£43	£72	£72	£101	£86	£115	£72	£101
Cylinder (hot water tank) thermostat	£378	£378	£378	£378	£378	£378	£378	£378
Heating controls (appliance thermostat)	£567	£567	£567	£567	£567	£567	£567	£567
Replacement warm air unit	£2,730	£2,730	£2,730	£2,730	£2,730	£2,730	£2,730	£2,730
Double/secondary glazing	£3,600	£5,040	£8,400	£9,600	£8,400	£12,000	£6,000	£6,600
Solid wall insulation (external)	£6,405	£7,035	£9,450	£10,500	£12,600	£21,000	£8,400	£7,875
Floor insulation	£655	£1,118	£1,057	£1,673	£1,424	£2,924	£990	£1,551

Table C4: high capital cost assumptions for heating measures used in the PRS modelling (2016 real prices)

	Gas Boiler	Gas with First Time Central Heating	Oil Boiler Upgrade	Oil with First Time Central Heating	Storage Heaters
kW Capacity					
12	£2,724	£4,414	£4,457	£5,687	£1,705
15	£2,918	£4,727	£4,496	£5,737	£1,785
18	£3,047	£4,936	£4,684	£5,976	£2,142
24	£3,490	£5,654	£5,700	£7,272	£2,581
28	£4,423	£7,166	£6,650	£8,484	£3,011

[65] For more information, see: https://www.gov.uk/government/consultations/energy-company-obligation-eco-help-to-heat

Table C5: low capital cost assumptions for non-heating measures used in the PRS modelling (2016 real prices)

	Dwelling Type							
Measure Description	**Small Flat**	**Large Flat**	**Small Semi-detached House**	**Large Semi-detached House**	**Small Detached House**	**Large Detached House**	**Small Mid-terrace House**	**Large Mid-terrace House**
Loft insulation	£105	£252	£126	£168	£147	£336	£116	£168
Low cost cavity wall insulation	£315	£368	£504	£630	£578	£788	£368	£473
High cost cavity wall insulation	£1,260	£2,100	£2,100	£3,308	£1,995	£3,045	£2,100	£3,990
Hot water cylinder insulation (tank)	£29	£29	£29	£29	£29	£29	£29	£29
Draught proofing	£40	£69	£65	£103	£87	£180	£60	£96
Low energy lights	£29	£48	£48	£67	£58	£77	£48	£67
Cylinder (hot water tank) thermostat	£252	£252	£252	£252	£252	£252	£252	£252
Heating controls (appliance thermostat)	£378	£378	£378	£378	£378	£378	£378	£378
Replacement warm air unit	£1,470	£1,470	£1,470	£1,470	£1,470	£1,470	£1,470	£1,470
Double/secondary glazing	£1,440	£3,600	£5,760	£7,200	£6,000	£8,400	£3,840	£5,760
Solid wall insulation (external)	£4,515	£7,035	£7,350	£8,190	£9,345	£10,500	£5,775	£7,875
Floor insulation	£353	£602	£569	£901	£767	£1,574	£533	£835

Table C6: low capital cost assumptions for heating measures used in the PRS modelling (2016real prices)

	Gas Boiler	**Gas with First Time Central Heating**	**Oil Boiler Upgrade**	**Oil with First Time Central Heating**	**Storage Heaters**
kW Capacity					
12	£1,621	£1,744	£2,710	£2,953	£1,120
15	£1,736	£1,868	£2,734	£2,979	£1,172
18	£1,813	£1,950	£2,848	£3,103	£1,407
24	£2,076	£2,234	£3,466	£3,776	£1,695
28	£2,632	£2,832	£4,043	£4,405	£1,977

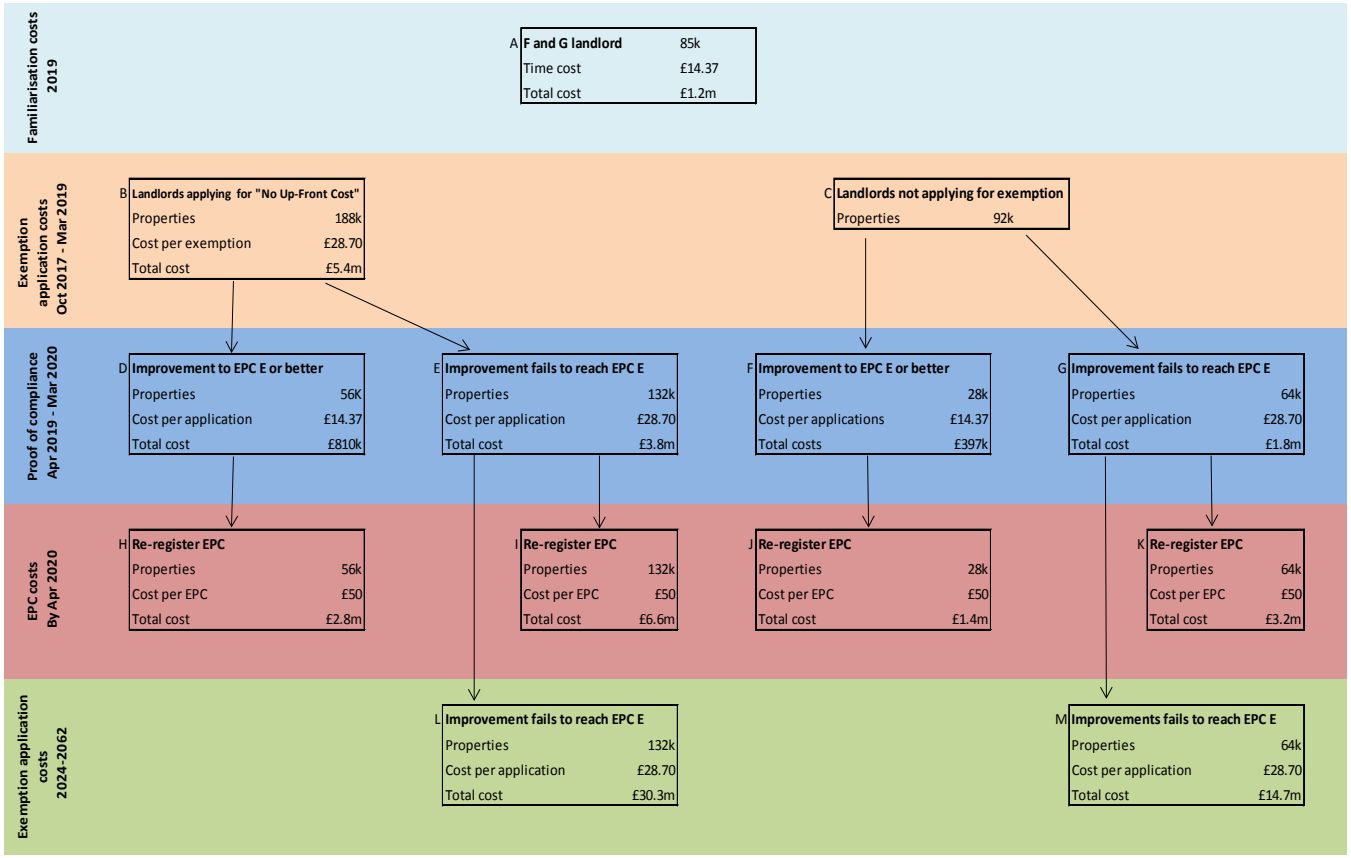
Administration costs

26. The administration costs of the amended regulation apply only to the time costs of familiarisation for landlords. An hour's familiarisation time has been assumed, and valued using the median hourly gross wage cost taken for a full time estate agent (as a proxy for landlords) according to the 2016 Annual Survey of Hours and Earnings (ASHE). A 30% uplift has been applied to cover on-costs in line with the standard cost model, this gives an hourly cost of £14.37 in 2016. We make the assumption of 1 hour's familiarisation time being required per landlord who may own one or a number of properties in scope. The cost per hour is then grossed up by multiplying by the number of landlords in scope (estimated at around 83,500 – as outlined in section 6.2) to estimate an aggregate one-off familiarisation cost incurred in 2019 of £1.2m (see box A in the flow chart). We will look to validate this assumption as part of the consultation.

Costs of applying for an exemption and proving compliance

27. The costs to landlords of applying for an exemption, related to gathering necessary evidence to demonstrate and register an exemption where one applies and also prove compliance have been monetised and included in the NPV and EANDCB calculations. A summary of the costs by time period is shown in the diagram below:

Figure D: Landlord routes to compliance and compliance costs



<u>Costs over the October 2017-March 2019 period</u>

28. Over this period landlords will be able to apply for an exemption from the regulations due to the "no upfront cost requirement". Based on EHS 2014/15 data (assuming a uniform distribution in the dates tenancies of different lengths start) around 67% of F/G properties (187k properties) would have a renewal of tenancy occurring over this period and hence come into the scope of the regulations. We make a conservative assumption that landlords apply for an exemption for all of these re let properties over the October 2017-March 2019 period.

29. The cost of an exemption is assumed to be the equivalent of two hours of a landlord's time, the time being required to gather documents to support and register an exemption on the exemptions register. The cost of a landlord's time is based on the 2016 Annual Survey of Hours and Earnings (ASHE) as discussed above and two hours of time cost estimated to be £24.7. So the total costs to these landlords for applying for an exemption is £5.35m (as shown in box B in the flowchart). Over this period around 92k properties are not estimated to have the tenancy agreements renewed and landlords of these properties are not required to take action.

Costs over the April 2019-March 2024 period

30. Over the April 2019-March 2020 period landlords will have to carry out improvement work to properties in scope of the amended regulations. Over this period, landlords who are able to carry out work which improves their properties to an E EPC band are assumed to spend an hour of their time in gathering the necessary documents to prove their compliance. As shown in the flow chart, around 89.5k F/G properties are moved to an E EPC band by 2020 (boxes D and E in the flow chart). The total cost for landlords of these properties equivalent to one hour's wage of £14.37 is £1.3m.

31. Over this period around 68% of properties will not move to a band E EPC (around 189.5k properties) as a result of improvement work to meet the regulations (boxes E and G in the flow chart). For these properties landlords will have to register an exemption for each property (a five year exemption lasting to 2024). This is estimated to take up two hours of a landlord's time per property £28.7 and this leads to a total cost of £5.45m.

32. Landlords who carry out improvement work may also carry out a post-measure installation EPC assessment. Although this is not a regulatory requirement the cost of a domestic EPC assessment based on current market costs is around £50. So the total costs for landlords to carry out a new EPC assessment on all F/G properties in scope (groups H, I, J and K in the flow chart) would be £13.95m. As having a new EPC assessment carried out on a property is voluntary these costs are not included in the NPV or EANDCB calculations.

Costs over the 2024-2062 period

33. Over the period 2024-2062 landlords of properties which cannot be improved to an EPC band E (around 189.5k properties) will have to register an exemption for their property every five years if these properties can still not be raised to an EPC band E. The total cost to landlords of registering these exemptions every five years is estimated to be £43.6m (boxes L and M) assuming that it takes two hours of a landlords time to apply for an exemption per property.

Hidden costs of installations

34. The hidden costs of installing measures are drawn from the ECOFYS report[66] drawn on by the 2015 PRS Impact Assessment and the Energy Company Obligation Impact Assessment. These are summarised in Table C7.

Table C7: Hidden cost assumptions used in the PRS modelling (2016 prices)

Energy efficiency measure	Estimated hidden cost (£)
Loft insulation	145
Cavity Wall Insulation	115
Solid Wall Insulation	215
Floor insulation	405
Draught-proofing	40

[66] See the ECOFYS (2009) "The hidden costs and benefits of domestic energy efficiency and carbon saving measures" report for further details http://webarchive.nationalarchives.gov.uk/20121217150421/http:/www.decc.gov.uk/assets/decc/what%20we%20do/supporting%20consumers/saving_energy/analysis/1_20100111103046_e_@@_ecofyshiddencostandbenefitsdefrafinaldec2009.pdf

First Time Central Heating	125
Electric Storage Heater	125
Heating Controls	45
Hot Water Cylinder Insulation	45
Hot Water Thermostat	45
Low energy lighting	5
Double glazing	40
Solar PV	150

Operating costs

35. Operating costs relate to the annual maintenance of first time central heating and Solar PV. Drawing on assumptions used for the most recent Energy Company Obligation and Feed-in Tariff Impact Assessments for central heating and Solar PV respectively, we use cost of assumptions of £100 per year for central heating and £24 per kW of installed capacity for solar PV.

Lifetime of measures

36. The lifetime of measures used in the PRS modelling are consistent with those used in the most recent Energy Company Obligation Impact Assessment.

Annex D: Impact of amending the regulations on landlords

The Impact of Regulations on the size of the PRS

1. Studies on the relationship between regulation and the size of the private rented sector suggest the relationship is ambiguous. A comprehensive 2012 study by the Cambridge Centre for Housing and Planning Research (CCHPR), University of Cambridge (*The private rented sector in the new century – a comparative approach*) examined the role of regulation in the private rented sector across 11 European countries, and suggested that: "the outcomes of regulatory regimes depend on the general context in which they operate as well as on finding a balance between too much interference which deters investment and too little protection for tenants".

2. This CCHPR study noted that deregulation has been the norm in most European countries at least since the 1980s, but that in some countries, particularly Germany and Switzerland, the private rented sector had remained large and stable over time, despite a high degree of regulation. These countries, it found, had amongst the largest sectors providing mainstream housing for families as well as for more mobile households.

3. This study also notes that in many countries, decreases in regulation have historically been associated with decreases in the size of the sector. The study also reported that England was the only country reviewed where the private rented sector had been growing rapidly in recent years. This was attributed, in part, to deregulatory trends in the country, but more significantly to "the development of a dedicated range of mortgage products for residential landlords, which fuelled investment in the PRS since the mid-1990s".

4. The CCHPR report suggests that regulation governing housing quality is the oldest form of government intervention in the housing sector. It notes that these standards tend to increase with economic growth and improvements in the standards of living. It also notes that, at the present time, housing quality regulations demonstrate an increasing emphasis on energy efficiency and sustainability, which in turn carry increased capital costs. The report does not identify any specific consequences resulting from housing quality regulation, however it does suggest that "regulation that allows landlords who upgrade their properties to increase rents by more than would otherwise be permitted can be an effective way to incentivise investment in the quality of the PRS." This point is only relevant to situations were rent is regulated, which is not the case across the majority of the PRS stock in England and Wales.

5. For non-regulated tenancies in the UK Landlords may be able, subject to general market restrictions, to pass improvement costs (including costs of energy efficiency improvements) on to tenants in the medium to long term through modest rent increases. Many landlords may also be able to recover expenditure on energy efficiency either through tax deductions (dependent on the measure), upon future sale of the property (through reduced capital gains tax) or through capital appreciation of the asset.

6. Discussing potential negative impacts on tenant choice of standard and quality regulation, the CCHPR study referred to Ball (*The Future of Private Renting in the UK: Social Market Foundation* 2004) who argued that the imposition of high minimum standards in housing could limit housing options for some private tenants who are willing to accept lower quality housing for a lower price. He further suggested that low price–low quality dwellings may serve as stepping stones for some people, enabling them to afford a better home later on or to move into a different locality. Turner and Malpezzi (2003), summarise the existing studies on the relationship between regulation and the size of the PRS sector, stating "regulation per se is neither good nor bad. What matters are the costs and benefits of specific Regulations under specific market conditions"

7. Aside from potentially placing restrictions on tenant choice, there is limited evidence that quality and standards regulations, and in particular energy-efficiency focused regulations, would have a significant impact on the size or health of the PRS in England and/or Wales. In particular, as the proposed amendments discussed here and in the accompanying consultation document would impact around 5% of the private rented housing sector (especially once exemptions are accounted for) it is unlikely that a regulatory

requirement on landlords to meet some or all of the costs of reaching or maintaining a minimum standard of EPC E would materially affect the sector.

Energy efficiency in relation to the wider fiscal landscape

<u>Mortgage Tax Relief changes</u>

8. At the present time, landlords can claim income tax relief on any mortgage interest payments they make. This means they are able to offset the cost of mortgage interest from their rental income when calculating their profits. Following tax changes announced in the summer 2015 Budget, the amount of Income Tax relief landlords can receive on residential property finance costs will be restricted to the basic rate of tax. The adjustments, which will be introduced incrementally over four years from April 2017, will affect some landlords who let mortgaged residential properties as an individual, or in a partnership or trust, and will change how they receive relief for interest and other finance costs.

9. Finance costs will not be taken into account to work out taxable property profits. Instead, once a landlord's Income Tax on property profits and any other income sources has been assessed, their Income Tax liability will be reduced by a basic rate 'tax reduction'. For most landlords, this will be the basic rate value of the finance costs.

10. The finance costs that will be restricted include interest on:
    - mortgages
    - loans - including loans to buy furnishings
    - overdrafts

    Other costs affected will be:
    - alternative finance returns
    - fees and any other incidental costs for getting or repaying mortgages and loans
    - discounts, premiums and disguised interest

11. These changes should not impact on the tax liability for basic rate tax payers; there should also be no change to how rental income from mortgage free properties is taxed. HMRC have estimated that 82% of domestic landlords will not have any increased tax liability as a result of these rule changes.

<u>Effect of the tax changes</u>

12. Landlords currently pay tax on their profits according to their income tax band. If a landlord collects rental income of £10,000 a year on a residential let, but pays mortgage interest of £9,000, their profit is the difference between the two figures, or £1,000. So, in this example, a basic-rate taxpayer will pay 20% tax on £1,000, or £200, and retain £800. The tax bill for a higher-rate 40% taxpayer would be £400, leaving £600, or £450 for a taxpayer at the 45% additional rate, leaving £550.

13. The landlord tax changes mean that mortgage interest tax relief will gradually be cut back to 20% between 2017 and 2020. So, going forward, a higher-tax-rate landlord with a rental income of £10,000 and £9,000 of mortgage interest to pay will, in future, be required to pay tax on the full amount, less a 20% credit on the mortgage interest. The tax bill for a higher rate taxpayer would work out at £4,000 (40% of £10,000 profit) minus £1,800 (20% of £9,000 interest), which equals £2,200, up from £400 under the current tax rules.

Other recent tax changes

14. The Landlord's Energy Saving Allowance (LESA) was introduced in 2004 to encourage landlords to improve the energy efficiency of let residential properties, and was available until 2015. Expenditure on energy savings measures cannot normally be deducted when calculating taxable profits and is not eligible for capital allowances. LESA permitted landlords to deduct up to £1,500 from taxable profit for approved energy saving expenditure on each rental property.

15. The allowance was extended in 2007 from its original end date of April 2009, but take-up by landlords was low. In 2013 for example, only 5,760 landlords claimed LESA, representing only 0.15% of the total private rented sector homes in England. The allowance was withdrawn in March 2015 due to low take-up.

Investment within the PRS

16. Investment in the private rented sector is similar to other types of investment – namely that the expected net present value of an investment should be at least as high as substitute investments, and ideally should pass some minimum rate of return. Landlords will consider the costs and benefits to them before deciding on whether to invest in the sector.

17. Research suggests that the most important factor in whether or not to invest in the PRS is the anticipated capital appreciation, with rental income of secondary consideration. For example, a report by Shelter (summarising the findings of other studies) states: "The overwhelming majority of returns over the next fifteen years are likely to stem from house price changes rather than rental income. This has been the model for residential investment over the past decade or more and seems unlikely to change. As a result, changes to rental terms and conditions have only a marginal effect on overall investment returns" (paragraph 7.1.18)

18. With capital gains expected to be the key driver of investment within the domestic PRS, the Regulations are unlikely to hamper investment. For example, there is international research suggesting that improving the energy efficiency of properties increases a property's value and/ or rent levels.

Potential Investment Displacement

19. Investment in energy efficiency may potentially displace other productive investments. This situation could arise, for example, if landlords were credit constrained, and therefore had a limited amount of funds to invest in their properties. However, there is evidence that PRS landlords do generally have better access to funds than the general population, suggesting that investment in energy efficiency improvements could be made in many cases without necessarily displacing other investment.

20. A 2013 study by the Strategic Society Centre (*Understanding Landlords a study of private landlords in the UK using the Wealth and Assets Survey* – derived from the nationally representative dataset*: the Wealth and Assets Survey 2008-10.*) suggested that:

> PRS Landlords had greater financial wealth than both non-landlord homeowners and the general adult population, with over a quarter (26%) holding £70,000 or more. This can also be shown by the mean and median value of total financial assets held by PRS Landlords, which was £75,103 and £20,500 respectively, over twice as high as the figures for non-landlord homeowners (£36,934 and £8,105 respectively) and all adults aged 16 or more (£22,981 and £2,300 respectively). This indicates that PRS Landlords have access to a significant amount of financial wealth in addition to the value of the properties they own.

21. A recent Energy Saving Trust (EST) report: *Trigger points: a convenient truth* surveyed a range of property owners, including PRS landlords, to understand attitudes to incorporating energy-saving improvements within existing or planned property improvement projects. The survey also examined willingness to stretch the refurbishment budget to pay for some energy-efficiency measures – the 'energy saving stretch'. The report noted that, despite significant landlord scepticism around the value of installing energy-saving

improvements, nine out of ten claimed to be willing to stretch their budgets to include an element for energy-saving measures. The report noted that the average stretch envisaged by landlords is nine per cent – which worked out at an average of £1,118. The report also noted:

> Private landlords are planning bigger refurbishment projects, and planning to spend more on each refurbishment project, than homeowners. Though they are more sceptical about energy efficiency than owner-occupiers, they accept the logic of fitting energy-saving measures alongside other refurbishment jobs.

22. The University of Cambridge CCHPR report discussed above considered levels of financial management literacy amongst landlords. This concluded that the majority of PRS Landlords have comparatively high levels of financial resilience and suggests that they manage their finances sufficiently to 'cope with substantial income shocks', as well as unplanned purchases associated with their investment property.

23. The reports discussed above do not represent every financial eventuality which a landlord may face, nor do they necessarily speak for the comparatively small proportion of landlords who own property currently at EPC F or G. Nevertheless, they suggest that investment in energy efficiency improvements of either the voluntary or obligatory kind is unlikely to postpone or displace other investment in a majority of cases.

Impact on Rents and Rent affordability

24. Current BEIS analysis suggests that demand for housing within the private rented sector is relatively unresponsive to rent levels. This is partly due the perceived inability of tenants to obtain suitable alternative accommodation in either the owner occupier or social housing sector. However, in the case of the proposal discussed in this impact assessment, rent levels are not expected to be materially affected by the imposition of improvement costs on landlords of EPC F & G rated properties due to the relatively small proportion of the landlord population required to act (around 5% of the overall PRS sector).

25. According to DCLG analysts landlords are typically price takers, rather than price setters, and the 5% of domestic PRS landlords affected by this proposal may struggle to remain competitive if they sought to recover costs by raising rents significantly above the average rate for their local market. Evidence suggests that rental levels are more likely to be affected by changes which affect a greater proportion of the market, such as changes in mortgage rates.

Impact on PRS property values

26. A number of studies both from abroad and in the UK have shown a robust link between higher standards of energy efficiency and increased property values. For example, a study for the UK found that EPC Band D-rated homes commanded a 10% sale premium compared to F or G-rated homes.

27. Landlords may, therefore, benefit from improved capital value as a result of the amended regulations, but this will vary depending on the property and only if they look to sell in future – we therefore do not seek to quantify this potential impact here.