



Department for
Business, Energy
& Industrial Strategy

New ecodesign requirements for lighting products

A consultation on proposed amendments to the minimum energy performance standards for lighting products from late 2023.

Closing date: 4 April 2023



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

Introduction

Energy-related products are products in homes and non-domestic buildings which use, or affect the use of, energy – such as washing machines, light bulbs, boilers and heat pumps. Energy-related products account for approximately 55% of total non-transport energy use in the UK – improving the efficiency of products can drive innovation and contribute significantly to meeting our energy efficiency and heat decarbonisation objectives, improving our energy security and reducing bills for consumers.

Ecodesign enables the Government to set minimum standards in order to remove the very worst performing products from the market – ensuring consumers, particularly those in rented properties, are not exposed to the most expensive to run products.

Energy labelling improves the product information available to consumers when purchasing a new product – allowing consumers to identify the most energy efficient products to buy if they are able and wish to.

A large range of energy-related products are currently regulated under ecodesign and energy labelling legislation in the UK.

Energy-related products policies have contributed to our energy security, reducing electricity demand by an estimated 245 TWh over the last decade (equivalent to the expected energy Hinkley Point C would produce over the same period). They have delivered 59 MTCO₂e carbon savings since 2010, and are one of the most cost-effective ways to reduce emissions and bills, with low impact on consumers and businesses. Products policies to date are expected to reduce domestic consumer bills by £160-210 and commercial bills by 17% in 2022 alone.

In the Ten Point Plan, published in November 2020, the Government committed to push products to use less energy, resources, and materials, saving carbon and helping households and businesses to reduce their energy bills with minimum effort.¹

A year later, we published a policy framework for energy-related products² which set out how we plan to strike a balance between meeting environmental and energy security objectives and realising benefits for consumers and industry. This included several illustrative proposals for new minimum standards for energy-related products which would help achieve significant energy savings over Carbon Budgets 5 and 6; including a proposal for updated minimum energy performance standards (MEPS) for lighting products placed on the GB market from 2023.

Lighting accounts for a significant portion of electricity use in buildings in both the non-domestic and domestic sectors. Global innovation in lighting technology in recent years has made it possible to achieve greater energy savings which, in turn, can reduce the overall amount of electricity required for lighting.

¹ The Ten Point Plan for a Green Industrial Revolution, UK Government, November 2020. Available at: <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>

² The Energy-Related Products Policy Framework, UK Government, November 2021. Available at: <https://www.gov.uk/government/publications/energy-related-products-policy-framework>

The proposal made in the aforementioned policy framework to update MEPS for lighting products has since been discussed with stakeholders representing the lighting industry, lighting experts, environmental NGOs and consumer organisations. In response to additional evidence and feedback which was provided during this period, the Government has developed the proposal further and is now ready to consult on draft Regulations. A consultation stage Impact Assessment is also published alongside this consultation.

The consultation proposes amendments to the Ecodesign for Energy-Related Products and Energy Information (Lighting Products) Regulations 2021 (“the 2021 Regulations”).³ In particular, in place of the existing energy efficiency requirements for light sources in Schedule 3, we are proposing to introduce a new MEPS of 120 lumens per watt (lm/W) for light sources placed on the GB market from late 2023; this MEPS would increase to 140 lm/W from 1 September 2027. We plan to deliver these amendments soon when parliamentary time allows.

Alongside this, in order to avoid disproportionate impacts in the market, we propose a range of concessions whereby certain light sources will benefit from a reduction in the required MEPS on account of certain characteristics (e.g. a Colour Rendering Index of 93 or greater) which create a barrier to higher efficacy.

The proposed MEPS are ambitious but reflect what is already technologically and reasonably achievable for lighting products. Our analysis shows that as of March 2022 half of product models on the GB market already meet this standard – we would expect this proportion to have increased further by the proposed implementation in late 2023. One of the key aims of the policy is to increase the rate of innovation in the lighting market, leading to better and cheaper products for all. We are proposing an implementation date of 1 September 2027 for the second tier of higher MEPS to achieve a balance between spurring innovation and giving industry adequate time to prepare.

We expect the proposed regulations to save 19,700 GWh of electricity by 2050 if adopted in late 2023. This will also result in 1.7 million tonnes of traded CO₂e of carbon savings over the appraisal period (2022/23 to 2050/51). For domestic consumers, when switching from halogens to LEDs we expect customers to save around £3 on average per bulb each year, which more than covers the cost of replacement. For consumers that already own LEDs we expect the cost difference for replacements to be minimal, while they will still expect to see savings of around 30p per bulb.

The Government has set out its intention to extend CE recognition until 31st December 2024, which allows products meeting EU standards to be placed on the market in Great Britain until then. In order for the benefits of the revised standards proposed in this consultation to be realised, we propose ending recognition of EU ecodesign requirements for lighting products from the date the GB requirements take effect.

Subject to the outcome of this public consultation, the Government plans to lay the draft Regulations ahead of implementing the first tier of new MEPS from late 2023.

³ SI 2021 No. 1095. Available here: <https://www.legislation.gov.uk/uksi/2021/1095/contents/made>

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General information

Why we are consulting

The Secretary of State is required to consult on draft legislation and the associated Impact Assessment when making or amending product specific ecodesign regulations.⁴

We are also notifying our intention to amend the 2021 Regulations to World Trade Organisation Members for comment in accordance with the UK's obligations under the WTO Technical Barriers to Trade Agreement and to the EU under the terms of the UK- EU Trade and Cooperation Agreement. We are providing 60 days for comments.

The Regulations will apply in GB only; in accordance with the Northern Ireland Protocol, EU Ecodesign Regulations on lighting products will continue to apply in Northern Ireland. Under the UK Internal Market Act 2020,⁵ qualifying Northern Ireland goods that comply with the EU standards that will continue to apply there can be sold on the GB market without having to meet any other regulatory requirements that would otherwise apply to their sale. The associated Impact Assessment assesses the impacts for GB only.

We anticipate that manufacturers, their authorised representatives, importers, trade bodies, consumer groups, environmental organisations and other civil society organisations with an interest in lighting products may wish to respond to this consultation. The consultation may also be of interest to those with a more general interest in energy efficiency, resource efficiency, circular economy and climate change.

Consultation details

Issued: 10 January 2023

Respond by: 4 April 2023

Enquiries to:

Energy-related Products Team

Department for Business, Energy and Industrial Strategy

2nd Floor, Abbey 2

1 Victoria Street

London

SW1H 0ET

Email: efficientproducts@beis.gov.uk

Consultation reference: Ecodesign Consultation – Lighting Products

Audiences:

Manufacturers and/or their authorised representatives, importers, trade bodies, consumer groups, environmental organisations and other civil society organisations with an interest in lighting products.

Territorial extent:

Great Britain.

⁴ See Regulation 22 of the Ecodesign for Energy-Related Products Regulations 2010 which was inserted by SI 2019/539 as amended by SI 2020/1528 .

⁵ See sections 2, 3 and 11

How to respond

Respond online at: beis.gov.uk/citizenspace.com/energy-efficiency/new-ecodesign-requirements-for-lighting-products

or

Email to: efficientproducts@beis.gov.uk

Write to:

Energy-related Products Team
Department for Business, Energy and Industrial Strategy
2nd Floor, Abbey 2
1 Victoria Street
London
SW1H 0ET

For ease of reference, questions posed throughout the document are also listed together in a catalogue of questions at the end of this consultation.

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

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome. To aid our analysis, please state 'yes' or 'no' to indicate whether you agree or disagree with each proposal. If you have information which supports your view, we invite you to provide details of this.

Confidentiality and data protection

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

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

We will process your personal data in accordance with all applicable data protection laws. See our [privacy policy](#).

We will summarise all responses and publish this summary on [GOV.UK](https://www.gov.uk). The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's [consultation principles](#).

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

The Proposals

Overview

The Government proposes to amend the current ecodesign requirements for “light sources” by setting more ambitious minimum energy performance standards (MEPS) described in the Impact Assessment and draft legislation as “minimum luminous efficacy” and measured in lumens per Watt (lm/W) which is the ratio of luminous flux to electricity.⁶

The proposed Regulations will require light sources placed on the GB market to meet MEPS of 120lm/W from late 2023; and MEPS of 140lm/W from 1 September 2027. They will also amend the definition of “light source” by removing the condition in regulation 2(3)(a) of the 2021 Regulations that a product “uses incandescence, fluorescence, high-intensity discharge, LED or OLED, or any combinations of these, as lighting technology” as stakeholders have confirmed this has no material effect on the definition given that all non-LED lighting technologies will be phased out from the market by the proposed MEPS (save for exemptions in Schedule 4 to the 2021 Regulations).

Another objective of the proposal is to simplify the current legislation by applying MEPS on a largely technology-neutral basis. To reflect the technological advancement in LED technology and the wide dissemination of LED lighting, we propose to remove the support given to non-LED technologies in the 2021 Regulations by removing the ‘Ponmax’ calculation and associated allowances in Schedule 3. In its place, we propose to implement a set of allowances which will provide support for LED light sources with certain characteristic which are known to affect the luminous efficacy of the light source e.g. a Colour Rendering Index of 93 or greater which create a barrier to higher efficacy. We are not proposing that light sources placed on the market in luminaires will benefit from allowances as our analysis of EPREL⁷ data has shown that luminaire efficacy is already very high and so the majority of luminaires placed on the GB market or put into service will meet the new requirements. The proposed definition of “luminaire”⁸ is derived from that used in Commission Regulation (EU) No. 1194/2012. Further, the allowances would not apply to a light source which is intended to be used directly in an LED luminaire⁹ – this is necessary to prevent circumvention whereby manufacturers could avoid meeting the MEPS for luminaires by supplying the light source and luminaire separately.

With a small number of exceptions, we propose to maintain the exemptions from ecodesign requirements which apply to light sources under the 2021 Regulations.¹⁰ We do propose to remove exemptions currently in place for specific types of mercury-containing lighting products¹¹, to reflect that these are being phased out of the EU and UK markets via new restrictions on the use of certain hazardous substances in electrical and electronic equipment, which will effectively prevent these products from being placed on the EU and UK markets.¹² In

See regulation 3

⁷ European Product Registry for Energy Labelling

⁸ See regulation 3 of the 2023 Amendment Regulations

⁹ Regulation 2(6) of the 2021 Regulations

¹⁰ See Schedule 4 to the 2021 Regulations. Available here:

<https://www.legislation.gov.uk/ukxi/2021/1095/schedule/4/made>

¹¹ See Schedule 4 to the 2021 Regulations, paragraph 2(a).

¹² See the European Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (2011/65/EU) for the EU and The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (as amended) for the UK.

addition, we propose to amend the exemption currently in place¹³ to enable people with a photosensitivity condition to access suitable light sources more easily via a self-declaration rather than a medical prescription; doing so will make this provision more effective.

No changes are proposed to be made to the ecodesign requirements for separate control gears as there are suitable energy efficiency requirements already in place, which will be compatible with the updated efficacy requirements for light sources.

No changes are proposed to be made to the energy labelling requirements for light sources. The current energy label for light sources was re-scaled in 2021, with the new A-G scale allowing plenty of headroom for products to exceed the proposed minimum luminous efficacies of 120lm/W and 140lm/W. We do not propose to remove the lower classes on the label because the policy proposal will still allow some lighting products below 120lm/W and 140lm/W to remain on the market (subject to their eligibility for an allowance or exemption).

Policy impacts

Without the introduction of more ambitious energy efficiency requirements for lighting products, the market would not achieve energy savings in line with what is technologically feasible. This would result in foregone reductions in energy demand, household and business energy bills and missed traded carbon savings over Carbon Budget 5.

Over the past decade or so, the uptake of LED technology has greatly increased and along with this growth in demand has come a rapid increase in LED efficacy; LEDs became four times more energy efficient between 2009 and 2015, with their average price dropping over the same period.^{14,15} However, more recently the annual rate of improvement in LED efficacy has slowed.¹⁶ Further, the 2021 Regulations continue to allow relatively inefficient non-LED technologies to remain on the market.

The proposed new minimum energy performance standards (MEPS) would **spur innovation**, and hence increase the rate of improvement in efficacy as suppliers compete for market share of products over 120lm/W and 140lm/W (from 2023 and 2027, respectively). This will enable economies of scale to be reached, which in turn will reduce the cost of high efficacy light sources, supporting their wide deployment; it will also lock low performing luminaires out of the GB market.

We estimate that the proposal will **reduce energy demand** by 5,400 GWh over CB5 and by 19,700 GWh by ~]2050. This equates to 1 million tonnes of traded CO₂e over CB5 and 1.7 million tonnes of traded CO₂e by 2050. This will have a positive impact on air quality improvement. In addition, the policy will **reduce waste** as LED lighting products need to be replaced less frequently, and non-LED technologies which are hard to recycle, such as fluorescent tubes, are phased out of the market.

¹³ See Schedule 4 to the 2021 Regulations para 3(2)(p)

¹⁴ European Commission, 2015. [Preparatory Study on Light Sources for Ecodesign and/or Energy Labelling Requirements \('Lot 8/9/19'\). Final report, Task 2 Markets](#)

¹⁵ IMPACT ASSESSMENT Accompanying the document Commission Regulation laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council, 2019. Available at: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1551-Review-of-ecodesign-requirements-for-lighting-products>

¹⁶ UK sales data between 2018 and 2021 sourced from Growth for Knowledge (GfK)

The intervention will ensure **household and business consumers** are presented with highly energy efficient choices when buying a light source or luminaire, which will avoid higher energy bills and reduce the environmental impact of lighting across the GB economy. Our impact assessment has shown that for domestic consumers, when switching from halogens to LEDs we expect customers to save around £3 on average per bulb each year, which more than covers the cost of replacement. For consumers that already own LEDs we expect the cost difference for replacements to be minimal, while they will still expect to see savings of around 30p per bulb per year.

For business consumers, while savings are highly dependent on the number of hours bulbs are used, for typical office use we'd expect costs per bulb to range from £8-£10 for replacing old technologies with LEDs, with that expense paid back by energy bill savings in 1-2 years. Businesses replacing existing LEDs will again see minimal cost difference but immediate savings.

Due to the nature of lighting product manufacturing, we expect the costs of producing higher efficacy products to be borne largely by overseas manufacturers. Despite the policy removing 40-50% of the market (based on March 2022 data), we expect overseas suppliers to respond by increasing the efficacy of their products in order to continue selling to the GB market and to maintain the value of trade. For GB exports, given that our lighting product manufacturing sector is small and typically focused on high-end products, we do not expect more than a marginal impact on prices and competitiveness as a result of higher innovation costs. There may be potential benefits to GB manufacturers from being first movers in producing products which meet higher MEPS, particularly if other countries' standards converge with the proposed higher standards in GB. Therefore, overall, we estimate that the effect of the policy on trade would be negligible.

We expect that higher innovation costs will be passed on in the form of higher prices. We estimate that costs of £300m will be borne by non-domestic consumers over the next 28 years as a result of purchasing higher energy efficiency lighting products. Nevertheless, we would expect each non-domestic consumer to recoup these costs within 1-2 years through savings in energy costs.

Our impact assessment assumes a one-off transitional cost of £0.7m which will be borne by GB businesses as a result of needing to familiarise with the new Regulations.

We have assumed that none of the policy benefits would happen without the new Regulations being made (i.e. we have made an assumption of 100% additionality). The efficacy improvements that we would expect to see in the GB market without intervention (3.5% improvement year-on-year) are already factored into the baseline when modelling the benefits. We believe this assumption of 100% additionality is justified on the basis that the proposal goes further than EU and other international standards, meaning that there is no stimulus other than this policy for suppliers to remove lighting products with efficacies below 120lm/W from the GB market earlier than forecast in the baseline.

The Government recently announced its intention to extend recognition of the CE marking until 31 December 2024 when selling products in Great Britain, in light of current economic challenges. In order to realise the benefits associated with the proposals set out in this consultation, we propose ending recognition of EU codesign requirements for lighting products from the date the new GB requirements are implemented. Lighting products do not face many of the costs associated with the end of the CE marking, as compliance with codesign requirements does not require third party testing by a conformity assessment body

so manufacturers would not incur retest or recertification costs for the GB market. Given the policy benefits from introducing these Regulations, and pre-existing engagement on these proposals, we propose removing lighting products from the extended CE recognition period from the point that the regulations in this consultation are introduced. Subject to the UKIM Act, manufacturers, authorised representatives and importers wishing to place lighting products on the GB market would then be required to meet the proposed higher MEPS and to use the UKCA marking to demonstrate compliance.

1. Are there any additional policy impacts (benefits or costs) which have not been captured by our impact assessment? Please provide evidence to support your answer.
2. Thinking specifically about the proposed removal of lighting products from the extension of CE recognition to 31 December 2024, what would be the impacts on manufacturers (or other stakeholders) of this? Please provide evidence to support your answer.
3. Of the lighting products manufactured in GB, what proportion (and quantity) of these are sold on the domestic market, and what proportion (and quantity) are exported?
4. How long (in hours) would you estimate it would take a company to understand and become familiar with the proposed changes in legislation set out in the draft Regulations?
5. Do you agree with our assumption of 100% additionality? Please give reasons for your answer, supported by evidence where possible.

Proposed increases in minimum energy performance standards (MEPS)

We propose the following MEPS must be met by light sources including light sources placed on the GB market or put into service in a containing product, subject to the defined allowances¹⁷ and exemptions¹⁸:

- From late 2023, 120 lm/W (“Tier 1”); and
- From 1 September 2027, 140 lm/W (“Tier 2”).

We assessed this proposal against a number of different options, with varying the level that MEPS were set at and the implementation profile. We assessed these on the basis of their energy savings, traded and non-traded carbon savings, energy bill savings and wider policy benefits; how attainable the MEPS would be across the whole market for lighting products (i.e. balancing what is realistic for domestic products versus non-domestic products); and when the market would be ready.

This consideration led us to the preferred policy option as the optimum way to balance all of these factors and, in particular, it offers a more achievable implementation profile.

¹⁷ See regulation 18(b) of the 2023 Amendment Regulations

¹⁸ Schedule 4 to the 2021 Regulations as amended by regulation 9 of the 2023 Amendment Regulations

Tier 1 from late 2023

Implementing Tier 1 of the policy in 2023 leads to the greatest energy and carbon savings. A delay of just one year to 2024 would reduce carbon savings from the policy by 0.6MtCO_{2e} by 2050. There would be equivalent decreases in the savings expected on consumer and business energy bills and energy demand.

This is because the carbon savings from the policy are largely front loaded; the sooner the Regulations come into force, the greater the number of legacy technologies that will be removed from the market as a direct result of the policy (as opposed to being phased out naturally over a longer time period). The market may continue to move towards higher levels of energy efficiency, however Government intervention is needed to accelerate the transition by bringing forward investment in efficacy improvement to 2023. Owing to the long lifetimes of light sources, it is important to phase out the most inefficient products from late 2023 in order for the benefits of reduced energy demand to be realised over Carbon Budget 5 and to make an immediate impact on people's bills.

In addition, under World Trade Organisation rules, and the UK-EU Trade and Cooperation Agreement, we are required to allow a six-month 'standstill' period between publishing the new Regulations (i.e. when they are laid in Parliament) and their entry into force. Therefore, we anticipate that Tier 1 would be implemented in late 2023.

Whilst we recognise the Tier 1 implementation date of late 2023 may be challenging for some light source suppliers, this was first proposed by Government in 2020 therefore suppliers have had advance notice of the change.

Nevertheless, we are keen to understand any possible issues which suppliers and other stakeholders may experience in complying with the new MEPS six months after the Regulations are published, i.e. by late 2023, particularly Small and Medium Enterprises (SMEs, defined as businesses with fewer than 250 employees).

6. Is it achievable to implement a minimum energy performance standard (MEPS) of 120 lm/W six months after the Regulations are published? Please give reasons for your answer, supported by evidence where possible.
7. Are there any impacts of implementing Tier 1 in late 2023 which have been overlooked by our analysis (particularly for SMEs)? Please give reasons for your answer, supported by evidence where possible.

Tier 2 from 2027

Our analysis has assumed the market for light sources and luminaires improves its average efficacy by 3.5% year on year. This has been informed by evidence provided by CLASP (an environmental NGO) and the UK Lighting Industry Association (LIA) and takes into account trends seen in comparable international markets as well as representations from LED-chip manufacturers and anecdotal reports of general economic constraints in the market. We consider this to be a cautious estimate, which has helped us to avoid underestimates in our analysis of the market impact of Tier 2.

We propose to implement Tier 2 of the policy on 1 September 2027. Considering that Tier 1 will be implemented in 2023 and assuming a 3.5% efficacy improvement rate, we have concluded that implementing Tier 2 in 2027 is necessary to avoid removing more than 50% of the market.

The Government's original proposal was to implement Tier 2 in 2025, however we received representations from the lighting industry which highlighted a risk that this could lead to product shortages between the Tiers. We consider that allowing almost a four-year gap between Tiers mitigates this risk, and still provides a strong incentive to suppliers to improve the efficacy of their lighting products.

8. Is a 3.5% year-on-year improvement in average light source and luminaire efficacy a reasonable assumption? Please give reasons for your answer, supported by evidence where possible.
9. Is the proposal to implement a minimum energy performance standard (MEPS) of 140 lm/W from 1 September 2027 achievable? Please give reasons for your answer, supported by evidence where possible.
10. Are there any impacts of implementing Tier 2 in 2027 which have been overlooked by our analysis (particularly for SMEs)? Please give reasons for your answer, supported by evidence where possible.

Other proposed changes

Changes to support for non-LED technologies (removal of the Ponmax equation)

Under the policy proposal, the GB market for lighting products would be pushed towards the best performing LEDs on a technology-neutral basis. Our proposal would remove the Ponmax calculation by removing paragraph 1 (including tables 2 and 3) from Schedule 3 of the 2021 Regulations. This would be replaced by minimum energy performance standards (MEPS) of 120 lm/W for light sources from 2023, increasing to 140 lm/W from 2027, subject only to a set of defined concessions and exemptions.

The 2021 Regulations define the required MEPS for lighting products using the 'Ponmax calculation' ('Ponmax' is the maximum allowed power of a light source). This complex calculation reduces the energy efficiency required of certain lighting technology sub-categories, meaning they can continue to be sold on the market at significantly lower energy efficiency than potential LED substitutes. This results in missed energy and carbon savings and enables low-efficacy light sources and luminaires to continue being installed in homes and non-domestic spaces, leading to higher energy costs than necessary.

This mechanism was initially intended to soften the market transition to LED technologies. We judge that the market has now moved sufficiently towards LED replacements to justify removing this support for non-LED technologies. The proposed change will accelerate investment decisions to support the full transition to higher efficacy LED technologies. To avoid disproportionate impacts on specific sectors which continue to rely on these lighting technologies and where there are not suitable more efficient substitutes, the policy will

continue to provide specific and limited exemptions (e.g. lights used for railway signalling¹⁹). Our analysis has not identified any lighting technologies within the list whose removal would cause significant disruption, although we note that the change would make certain fittings redundant as LED replacements require different fittings.

The non-LED technologies which would be removed from the market are:

- LFL T5-HE*
- LFL T5-HO, $4000 \leq \Phi \leq 5000$ lumens*
- LFL T5-HO, other lumen output*
- FL T5 circular*
- FL T8*
- FL T8 U-shaped
- FL T8 of 2-, 4- and 5-foot (would have been removed from 01.09.2023 under the 2021 Regulations)*
- Magnetic induction light source, any length or flux
- CFLni*
- FL T9 circular
- HPS single-ended
- HPS double-ended
- MH ≤ 405 W single-ended
- MH > 405 W single-ended
- MH ceramic double-ended
- MH quartz double-ended
- OLED
- HL G9, G4 and GY5.35 (would have been removed from 01.09.2023 under the 2021 Regulations)
- HL R7s ≤ 2700 lumens

**denotes a technology which will already be phased out under separate regulations in the EU and UK on the restriction on the use of certain hazardous substances.*

A number of the technologies in the list above, which currently receive allowances under the Ponmax calculation in the 2021 Regulations will be phased out of the EU market under the European Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment from mid-2023, before the proposed Regulations would enter into force. There are safe, mercury-free alternative products available and these are more energy efficient, hence there is a strong case for removing them from the market. As the GB, NI and EU markets are supplied by similar global manufacturers, we would expect suppliers to have largely removed these light sources from their supply chains to the GB market by late 2023, following the changes coming into force in the EU.

Nevertheless, the UK Government plans to amend the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (as amended) (“RoHS”) to remove these light sources from the GB market. Therefore, the effect of the proposed ecodesign policy is to bring forward the removal of these mercury-containing non-LED lighting products from the GB market to late 2023.

¹⁹ Paragraph 3(2)(a) of Schedule 4 to the 2021 Regulations

11. Are there any impacts of removing the Ponmax calculation which our analysis may have overlooked, including any interaction with other policies affecting lighting products, for example RoHS? Please provide reasons for your answer, supported by evidence where possible.
12. Are there any non-LED technologies (for which there is not currently an exemption) which should not be removed from the GB market from late 2023? Please provide reasons for your answer, supported by evidence where possible.

Allowances for LED technologies with certain characteristics

To account for the fact that certain LED lighting technologies (such as directional LEDs) and light sources with specific characteristics (e.g. low correlated colour temperature) face inherent technological barriers to increasing efficacy at the same rate as other LEDs, the policy proposal includes a series of “allowances”. The allowances will enable eligible light sources to meet slightly lower minimum luminous efficacy requirements, which will enable a greater proportion of products to remain on the market than would have been the case without them.

All of the following factors have been used in determining whether to apply an allowance ((a) to (g) are not cumulative):

- a) Without an allowance, there would be a large impact on the market, with both of the following conditions being met:
 - i. A large proportion (more than 50%) of models on the market would be removed; and
 - ii. there are no readily available substitutes for this technology (and none are expected by 2023/2027).
- b) Giving an allowance is unlikely to have a significant impact on carbon savings.
- c) With no allowance, the products which remain on the market have significantly higher life-cycle costs, in particular significantly higher up-front costs, than those products being removed from the market.
- d) With no allowance, the products which remain on the market are, or require, a proprietary technology; or are made by a select few firms (therefore affecting competition).
- e) With no allowance, it is likely there would be a negative impact on innovation.
- f) With no allowance, it is likely there would be a disproportionate negative impact on any of the protected characteristics in the Equality Act 2010.
- g) With no allowance, it is likely there would be disproportionate impacts, for example on certain groups of people, activities or market segments.

The allowances will be additive, meaning if a light source meets more than one of the qualifying criteria, it will benefit from each applicable allowance.

We propose that the allowances should apply to light sources only but not to light sources in luminaires (whether the light source can or cannot be removed from the luminaire for verification as a light source) and light sources within the meaning of Regulation 2(6) of the 2021 Regulations (a light emitting device which is intended to be used directly in a LED luminaire).

We propose to define a “luminaire” as follows:

- “luminaire” means a product which—
 - (a) distributes, filters or transforms the light transmitted from one or more lamps and includes all the parts necessary for supporting, fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electricity supply;
 - (b) has the primary purpose of lighting; and
 - (c) is dependent on energy input in fulfilling its primary purpose.²⁰

This is intended to reflect the relative performance of light sources compared to luminaires (luminaires have much higher average energy efficiency) and therefore to avoid disproportionate impacts on the GB light source market.

The allowances will apply to non-domestic and domestic light sources with the exception of the allowances for mains voltage light sources, which will apply to domestic light sources only. This accounts for the relative lower average efficacy of light sources used primarily in domestic environments and is intended to ensure a sufficient proportion of these products remain on the market, whilst still incentivising suppliers to develop higher efficacy options. Table 1 summarises the proposed allowances.

Table 1 – Summary of proposed allowances

Criteria	Allowance (lm/W)	Application
Mains voltage light source	20	Domestic light sources only
Directional light source	10	All light sources
Connected light source	5	All light sources
CRI ≥ 93	10	All light sources
CCT [K] ≤ 2000K	5	All light sources
A light source with ≤ 400 lm	10	All light sources

13. Do you agree with our definition of a luminaire? Please give reasons for your answer, supported by evidence where possible.

²⁰ This definition of “luminaire” is adapted from the definition of the same term used in Commission Regulation (EU) No. 1194/2012.

Mains voltage light sources

We propose a reduction in required minimum luminous efficacy of 20lm/W (from 120lm/W) for domestic mains voltage light sources.

Our analysis has shown that the energy efficiency of the domestic segment of the light sources market lags behind that of the non-domestic segment, meaning that without an allowance for domestic light sources, a significant (more than 50%) number of models would be removed from the GB market. In addition to this, it is recognised that mains voltage light sources suffer additional power losses as a result of the additional components they contain for adapting the electrical current entering the light source. As the vast majority of domestic light sources are also mains voltage light sources, we propose to apply a 20lm/W allowance to domestic mains voltage light sources to account for this relative lower efficacy. Limiting this allowance to domestic light sources only ensures the policy maximises the reduction in energy demand across the market, and reflects where we think the allowance is most justified in terms of market impact.

Despite there also being non-domestic light sources which are also mains voltage (therefore suffer the same power losses), our analysis suggests that these markets can more easily adapt to the higher MEPS. This is due to average energy efficiency already being closer to the Tier 1 requirement of 120lm/W and the availability of high efficiency alternatives in other global markets.

In order to limit the allowance for mains voltage light sources to domestic directional and non-directional light sources only, we propose to use the following definitions:

- A “domestic directional light source” is any directional light source with a luminous flux equal to or less than 450 lm.
- A “domestic non-directional light source” is any non-directional light source with a luminous flux equal to or less than 1200lm.

14. Do you agree with the proposed definitions of “domestic directional light source” and “domestic non-directional light source”? Please provide reasons for your answer, supported by evidence where possible.

15. Do you agree with the proposed approach to mains voltage light sources? Please provide reasons for your answer, supported by evidence where possible.

Directional light sources

We propose a reduction in the MEPS of 10lm/W for all directional light sources. This accounts for the inherent power losses suffered by directional lighting technologies, which is a barrier to higher efficacy.

Our analysis has shown that this allowance is required for all directional light sources (domestic and non-domestic) in order to enable around half of current models to remain on the market (data from March 2022) - we would expect this proportion to have increased by late 2023. We have set the allowance at a level which balances the market impact against the need to protect the energy savings expected from this market segment and the need to incentivise suppliers to innovate higher efficacy directional light sources.

16. Do you agree with the proposed approach for directional light sources? Please provide reasons for your answer, supported by evidence where possible.

Connected light sources

We propose a reduction in the MEPS of 5lm/W for all connected light sources (as defined in the 2021 Regulations²¹).

Whilst the market for connected light sources has high enough energy efficiency to allow more than half of current models to remain on the market at Tier 1 in 2023 (data from March 2022), this allowance supports innovation in this area. Connected appliances can help us to reduce energy demand across the economy as their functionality allows greater control of when they use energy and how much. Despite the market already performing well in terms of energy efficiency, connected light sources require additional components to enable their connectivity, which lead to some power losses (a barrier to improved efficiency).

The category of “connected light sources” contains light sources with other special features, such as colour-tuneability and dimmability, which also need additional components to deliver their functionality, leading to power losses. The intention is that these light sources would benefit from the allowance for connected light sources, hence no additional allowance is needed.

17. Do you agree with the proposed approach for connected light sources? Please provide reasons for your answer, supported by evidence where possible.

Light sources with colour rendering index (CRI) greater than or equal to 93

We propose a reduction in the MEPS of 10lm/W for all light sources with colour rendering index (CRI)²² equal to or greater than 93 ($CRI \geq 93$).

Our analysis shows that for non-directional light sources, energy efficiency appears to decline from CRI of 93, hence this is the point at which an allowance for high CRI appears to be needed to support around half of $CRI \geq 93$ models currently on the market to remain at Tier 1 (data from March 2022).

For directional light sources, we note a similar decline in energy efficiency at high levels of CRI, with performance generally lagging behind the market for non-directional light sources.

However, we have not seen any evidence to suggest that the energy efficiency of directional light sources with $CRI \geq 93$ could not catch up with their non-directional counterparts (noting that an allowance of 10lm/W for directional is already proposed). Further, we have not seen evidence that directional light sources with high CRI suffer greater power losses than non-directional light sources with high CRI. Therefore, we believe it is justified to set a single allowance of 10lm/W for all light sources with $CRI \geq 93$. This will ensure a strong incentive to

²¹ “connected light source” means a light source which includes data-connection parts that are physically or functionally inseparable from the light-emitting parts to maintain the reference control settings; and either (i) has physically integrated data-connection parts in a single inseparable housing; or (ii) can be combined with physically separate data-connection parts which are placed on the market together with the light source as a single product. Schedule 1 Interpretation

²² Defined in regulation 2 of the 2021 Regulations

suppliers to innovate higher energy efficiency light sources with high CRI, in particular directional light sources, whilst still ensuring a reasonable proportion of the current market for $CRI \geq 93$ light sources can remain at Tier 1.

18. Do you agree with the proposed approach for light sources with CRI greater than or equal to 93? Please provide reasons for your answer, supported by evidence where possible.

Light sources with correlated colour temperature (CCT) [K] less than or equal to 2000k

We propose a reduction in the MEPS of 5lm/W for all light sources with correlated colour temperature of 2000k or less ($CCT [K] \leq 2000k$).

This accounts for the inherent barrier which “warmer” LEDs face to energy efficiency improvement, as a result of the power losses incurred from having more phosphors within the light source.

Our analysis of EPREL data shows that for non-directional light sources, efficiency appears to decline at 2000k and below. A 5lm/W allowance applied to this CCT range would enable more than half of the current market for non-directional light sources with $CCT \leq 2000k$ to remain on the market at Tier 1.

For directional light sources, we note a similar decline in efficiency at low CCT, with performance lagging behind the market for non-directional light sources. However, we have not seen evidence to suggest that the efficiency of directional light sources with $CCT \leq 2000k$ could not catch up with their non-directional counterparts (noting that an allowance of 10lm/W for directional is already proposed). Further, we have not seen evidence that directional light sources with low CCT suffer greater power losses than non-directional light sources with low CCT. Therefore, we believe it is justified to set a single allowance of 5lm/W for all light sources with $CCT \leq 2000k$. This will ensure a strong incentive to suppliers to innovate higher energy efficiency light sources with warmer colour temperature, in particular directional light sources, whilst still ensuring a reasonable proportion of the current market for low CCT light sources can remain at Tier 1.

Our analysis of EPREL data also suggested that the current market of light sources (non-directional and directional) at certain higher ranges of CCT [K] (between 3000k and 4000k; and over 6000k) is worse performing than other CCT ranges. However, no evidence is available to suggest that unique power losses would occur in these CCT ranges and a large number of models on currently on the market today would be able to meet Tier 1 requirements. It is possible that there has not been the same level of innovation to increase energy efficiency in these CCT ranges as there has been in others. Therefore, we do not propose to allow an allowance for light sources in these CCT ranges, which we expect will incentivise greater innovation in energy efficiency improvement.

19. Do you agree with the proposed approach for light sources with correlated colour temperature equal to or less than 2000k? Please give reasons for your answer, supported by evidence where possible.

Light sources with lumen output less than or equal to 400 lumens

We propose a reduction in the MEPS of 10lm/W for all light sources with lumen output equal to or less than 400 lumen (lumen output \leq 400lm).

Our analysis of EPREL data shows that energy efficiency starts to decrease between 300lm and 400lm output; this is due to power losses associated with low lumen output. For both non-directional and directional light sources with lumen output \leq 400lm, less than half of the current market would be able to meet the Tier 1 requirements. An allowance of 10lm/W, reflecting the average efficiency loss for low lumen light sources, would enable a greater proportion of the current market to remain at Tier 1 and so will ensure reasonable choice in the short term, whilst still incentivising greater innovation in the medium to long term.

20. Do you agree with the proposed approach for light sources with lumen output equal to or less than 400lm? Please give reasons for your answer, supported by evidence where possible.
21. Are there additional exemptions which the Government should consider, bearing in mind the criteria used for making an allowance which were outlined earlier in this document? Please give reasons for your answer, supported by evidence where possible.

Exemptions

The 2021 Regulations contain a range of exemptions which allow certain technologies to remain on the market. We undertook an assessment of these exemptions to identify if changes are required at this time, which concluded that very few changes were necessary. The reasons why we judged exemptions not to require changes at this time fell within the following buckets:

- Out of scope of ecodesign powers (e.g. means of transport) or historically unregulated under ecodesign (e.g. military applications, medical devices and batteries).
- The technology is highly specialised, and we judge the risk of circumvention to be low.
- It is not practicable to force a transition to LED lighting at this point in time (e.g. emergency lighting and theatre lighting); LED replacements are being phased in but the costs involved in replacing fittings is prohibitive and creates a circular economy risk.

We are pleased to see the development of industry codes of best practice for theatre and film lighting, which is driving a transition towards higher efficiency lighting in that sector, whilst acknowledging that a full-scale transition to LED is a longer-term aim. The Government is encouraging of self-improvement measures such as this in sectors where exemptions for specific non-LED lighting technologies are not being removed at this time.

Nevertheless, we do propose two changes.

Firstly, we propose to remove the exemption²³ for double capped fluorescent T5 light sources with power $P \leq 13$ W in order to reflect the fact that this technology will be phased out of the EU market from 2023 under changes the EU Commission is making to the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Directive. As both the GB and EU markets are supplied by similar global manufacturers, we would expect suppliers to have largely removed these light sources from their supply chains to both the EU, NI and GB markets by the time of the EU ban in August 2023.

The UK Government intends to amend the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (as amended) to remove these light sources from the GB market. Therefore, the effect of the proposed ecodesign policy is to remove double capped fluorescent T5 light sources with power $P \leq 13$ W from the GB market by late 2023.

22. Do you agree with the proposal to remove the exemption for double-capped fluorescent T5 light sources with power $P \leq 13$ W from the ecodesign Regulations with effect from late 2023? Please provide reasons for your answer, supported by evidence where possible.

Secondly, we propose to amend the exemption for light sources for people with a photosensitivity condition to improve how this operates in practice. This follows representations made by groups representing people with photosensitivity conditions who have experienced difficulties when trying to access suitable non-LED light sources using the current exemption. We propose to remove the requirement to present a medical prescription in order to access a suitable light source from a pharmacy or other authorised selling point (such as suppliers of disability products). Instead, we will replace this with a condition that the individual self-declares verbally or in writing as having a photosensitivity condition. Further, we will seek to understand what barriers might exist to the supply of suitable non-LED light sources to pharmacies and other authorised selling points, and seek to remove these where possible.

23. Do you agree with the proposed amendments to the exemption for light sources for people with a photosensitivity condition? Please provide reasons for your answer, supported by evidence where possible.
24. Are there any reasons why the proposed amendments to this exemption would not be effective? (For example, any difficulties faced by pharmacies or other authorised selling points in sourcing suitable non-LED light sources from manufacturers/distributors.) Please provide reasons for your answer, supported by evidence where possible.
25. Are there other exemptions which you think should be removed or amended in order to further push the GB light source market towards the best performing LEDs? Please provide reasons for your answer, supported by evidence where possible.
26. Where exemptions remain, is there anything else government can do to help industries improve their lighting efficiency on a voluntary basis?

²³ See Schedule 4 to the 2021 Regulations, para 2(a).

Review of the Regulations

As required by the Ecodesign for Energy-Related Products Regulations 2010²⁴, and in line with better regulation practices, we are required to set a review date for the 2021 Regulations.

We propose to review the 2021 Regulations no later than December 2029, which will be around 2 years after the proposed Tier 2 application date. This will have allowed time for the market to transform and for data to clearly show the impact of the new ecodesign requirements. This review will inform any adjustments or updates needed to the policy to ensure it continues to meet its objectives.

Between 2023 and 2029, we will undertake light-touch market monitoring of the policy. If we found market information which suggested that changes were required to the policy ahead of tier two being implemented in 2027, we could bring forward this review and undertake a fuller investigation to inform an appropriate policy response.

27. Do you agree with the proposed review date of December 2029? Please give reasons for your answer, supported by evidence where possible.

²⁴ See regulation 22(7)(c)(viii)

Consultation questions

1. Are there any additional policy impacts (benefits or costs) which have not been captured by our impact assessment? Please provide evidence to support your answer.
2. Thinking specifically about the proposed removal of lighting products from the extension of CE recognition to 31 December 2024, what would be the impacts on manufacturers (or other stakeholders) of this? Please provide evidence to support your answer.
3. Of the lighting products manufactured in GB, what proportion (and quantity) of these are sold on the domestic market, and what proportion (and quantity) are exported?
4. How long (in hours) would you estimate it would take a company to understand and become familiar with the proposed changes in legislation set out in the draft Regulations?
5. Do you agree with our assumption of 100% additionality? Please give reasons for your answer, supported by evidence where possible.
6. Is it achievable to implement a minimum energy performance standard (MEPS) of 120 lm/W six months after the Regulations are published? Please give reasons for your answer, supported by evidence where possible.
7. Are there any impacts of implementing Tier 1 in late 2023 which have been overlooked by our analysis (particularly for SMEs)? Please give reasons for your answer, supported by evidence where possible.
8. Is a 3.5% year-on-year improvement in average light source and luminaire efficacy a reasonable assumption? Please give reasons for your answer, supported by evidence where possible.
9. Is the proposal to implement a minimum energy performance standard (MEPS) of 140 lm/W from 1 September 2027 achievable? Please give reasons for your answer, supported by evidence where possible.
10. Are there any impacts of implementing Tier 2 in 2027 which have been overlooked by our analysis (particularly for SMEs)? Please give reasons for your answer, supported by evidence where possible.
11. Are there any impacts of removing the Ponmax calculation which our analysis may have overlooked, including any interaction with other policies affecting lighting products, for example RoHS? Please provide reasons for your answer, supported by evidence where possible.

12. Are there any non-LED technologies (for which there is not currently an exemption) which should not be removed from the GB market from late 2023? Please provide reasons for your answer, supported by evidence where possible.
13. Do you agree with our definition of a luminaire? Please give reasons for your answer, supported by evidence where possible.
14. Do you agree with the proposed definitions of “domestic directional light source” and “domestic non-directional light source”? Please provide reasons for your answer, supported by evidence where possible.
15. Do you agree with the proposed approach to mains voltage light sources? Please provide reasons for your answer, supported by evidence where possible.
16. Do you agree with the proposed approach for directional light sources? Please provide reasons for your answer, supported by evidence where possible.
17. Do you agree with the proposed approach for connected light sources? Please provide reasons for your answer, supported by evidence where possible.
18. Do you agree with the proposed approach for light sources with CRI greater than or equal to 93? Please provide reasons for your answer, supported by evidence where possible.
19. Do you agree with the proposed approach for light sources with correlated colour temperature equal to or less than 2000k? Please give reasons for your answer, supported by evidence where possible.
20. Do you agree with the proposed approach for light sources with lumen output equal to or less than 400lm? Please give reasons for your answer, supported by evidence where possible.
21. Are there additional exemptions which the Government should consider, bearing in mind the criteria used for making an allowance which were outlined earlier in this document? Please give reasons for your answer, supported by evidence where possible.
22. Do you agree with the proposal to remove the exemption for double-capped fluorescent T5 light sources with power $P \leq 13$ W from the ecodesign Regulations with effect from late 2023? Please provide reasons for your answer, supported by evidence where possible.
23. Do you agree with the proposed review date of December 2029? Please give reasons for your answer, supported by evidence where possible.

24. Do you agree with the proposed amendments to the exemption for light sources for people with a photosensitivity condition? Please provide reasons for your answer, supported by evidence where possible.
25. Are there any reasons why the proposed amendments to this exemption would not be effective? (For example, any difficulties faced by pharmacies or other authorised selling points in sourcing suitable non-LED light sources from manufacturers/distributors.) Please provide reasons for your answer, supported by evidence where possible.
26. Are there other exemptions which you think should be removed or amended in order to further push the GB light source market towards the best performing LEDs? Please provide reasons for your answer, supported by evidence where possible.
27. Where exemptions remain, is there anything else government can do to help industries improve their lighting efficiency on a voluntary basis?

Next steps

Following this consultation, we will consider whether revisions, if any, are needed to the draft Regulations; the final policy position will be confirmed in a Government Response to the consultation. We will publish a final Impact Assessment alongside the Regulations when they are laid in Parliament. In accordance with WTO rules, we will allow a 6-month stand-still period between laying the draft Regulations in Parliament (at which point they are publicly available at legislation.gov.uk) and their entry into force.

[Policy Framework for energy-related products](#)

This consultation is available from: www.gov.uk/government/consultations/new-ecodesign-requirements-for-lighting-products

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