

POLARIS LIGHT

FREE GUIDE FOR UK SITES

Warehouse LED lighting upgrade guide

A step-by-step checklist, BS EN 12464-1 light levels and a method to work out your own savings

Written for maintenance, warehouse, facilities and HSE managers planning an LED upgrade in a warehouse, distribution centre or factory store.

Edition 2, November 2026

How to use this guide

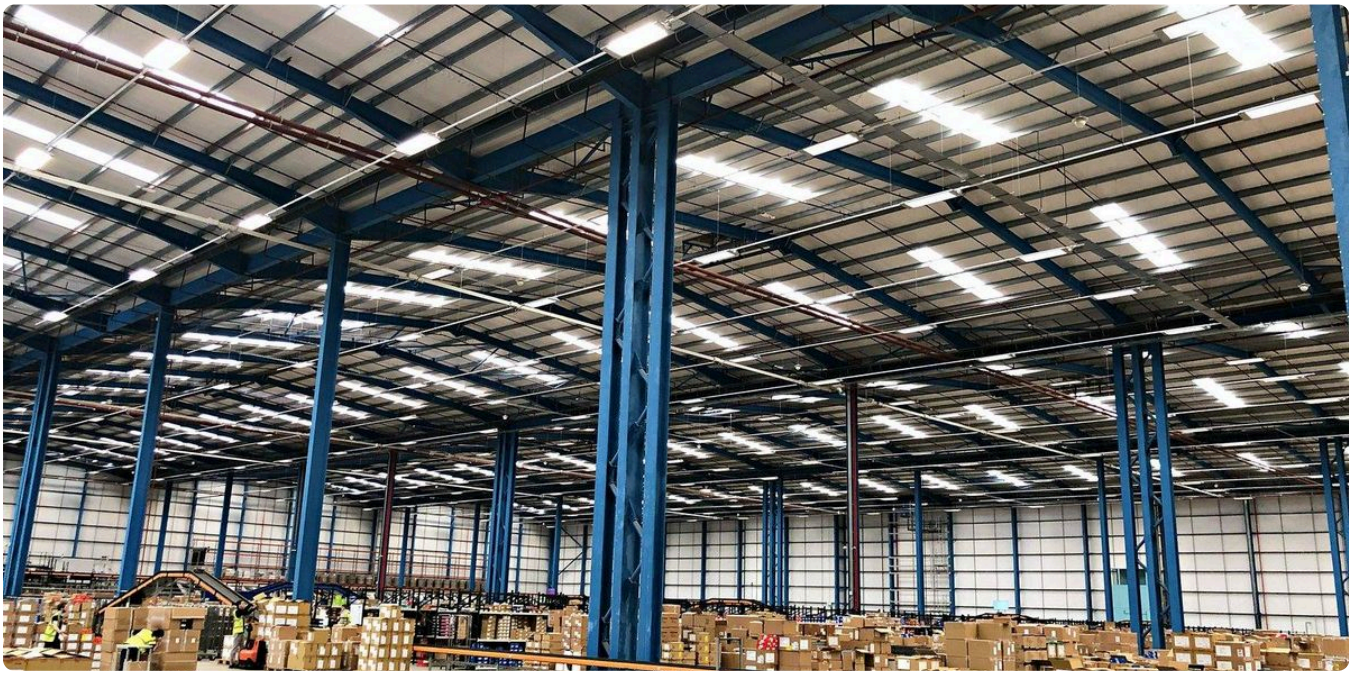
An LED upgrade is one of the most common energy projects in UK warehouses. Done well, it gives better light where people work, lower electricity use and fewer lamp changes at height. Done badly, it gives dark rack faces, glare and a payback that never arrives.

This guide takes you through the decisions in the order you will meet them. Each step ends with a short checklist you can tick off. After the checklist you will find a worked method to calculate the saving for your own site, a list of questions to put to any supplier, and what to look for inside the fitting.

1. Survey the site
2. Set the light level for each zone
3. Mounting height and spacing
4. High bay or linear fitting
5. Controls and sensors
6. Emergency lighting
7. Installation without stopping the operation
8. ESOS, funding and tax notes
9. How to calculate your savings
10. What to ask a supplier
11. Why component quality matters
12. Next step: a free lighting survey

The short answer: what are the best LED lights for a warehouse?

There is no single best fitting, because a warehouse has several kinds of space. In most buildings the right answer is a mix: a round (UFO) high bay with a wide beam for open floors and loading areas, a linear high bay with an aisle optic for racking aisles, a low glare fitting where people look up, and a sealed fitting for washdown and cold areas. Compare the lumens per watt of the complete fitting, ask which LEDs and driver are inside, and ask for a lighting design before you order.



LED high bays over an open warehouse floor on a Polaris Light project.

1 Survey the site

The right fitting depends on the building more than on the catalogue. A good survey records what is there now and how the site works, so that the new design is based on facts rather than a one-for-one swap.

- [ ] Mounting height: the height at which fittings will hang, usually the underside of the roof steel or the existing trunking.
- [ ] Layout: open floor, racking aisles, picking faces, packing and dispatch, marshalling and loading bays.
- [ ] Racking height, aisle width and the direction of the aisles.
- [ ] Existing lighting: lamp type, wattage (including control gear where known), number of fittings and condition.
- [ ] Hours of use for each zone, shift patterns and which zones stay empty for long periods.
- [ ] Daylight: rooflights and windows that could let sensors dim the fittings.
- [ ] Electrical supply: circuits, isolation, the condition of wiring and supports.
- [ ] Access: what lifts are needed, and where racking or stock limits access.
- [ ] Special areas: cold stores, washdown areas, hazardous areas with flammable gas, vapour or dust.
- [ ] Existing emergency lighting and its test records.



A racking aisle: light is needed on the rack faces as well as the floor.

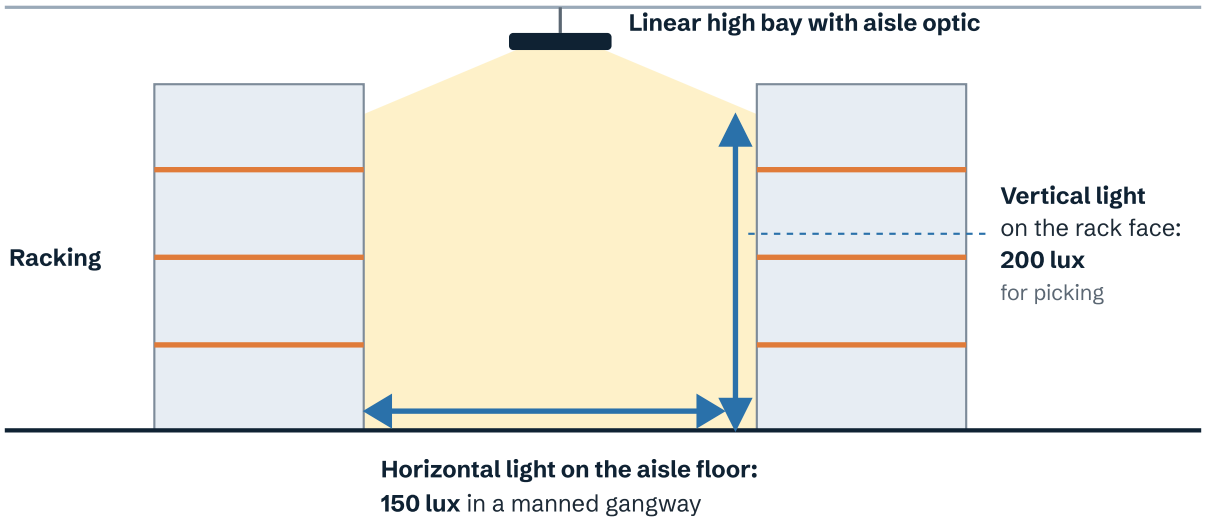


An open floor: record heights, rooflights and how each zone is used.

2 Set the light level for each zone

Light levels for UK workplaces are set out in BS EN 12464-1:2021, Light and lighting. Lighting of work places. Part 1: Indoor work places. The maintained illuminance values for typical warehouse areas include:

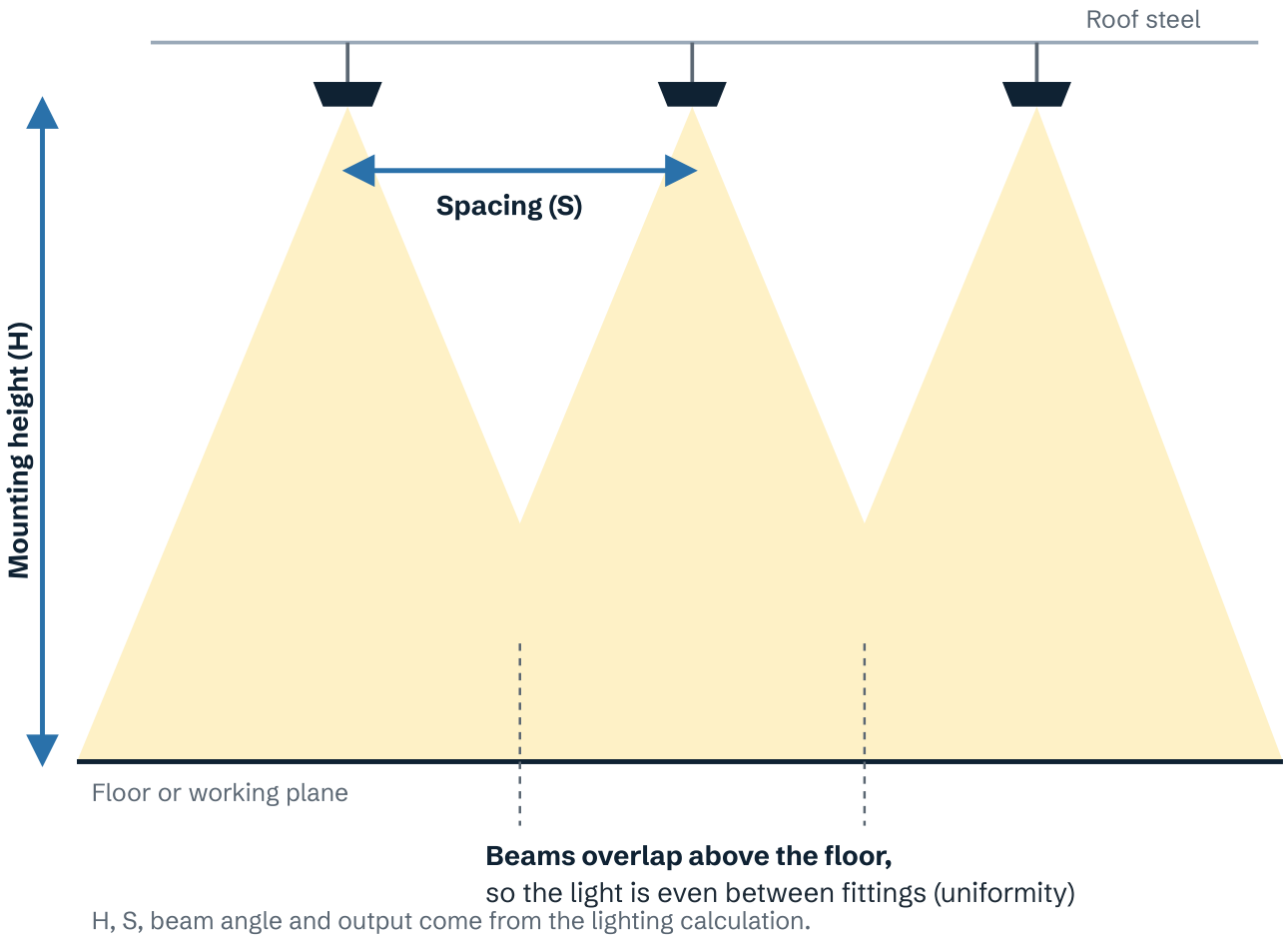
Area	Maintained illuminance
Store and stock rooms	**100** lux (**200** lux if continuously occupied)
Gangways between racking, manned	**150** lux at floor level
Gangways between racking, unmanned	**20** lux at floor level
Storage rack faces (picking from the rack)	**200** lux, measured vertically
Packing, dispatch and handling areas	**300** lux
Loading bays	**150** lux



- [ ] Give every zone its own target, rather than one figure for the whole building.
- [ ] These are **maintained** values: what the installation must still deliver as fittings age and get dirty, not the level on day one.
- [ ] For racking aisles and picking faces, ask for the **vertical** light on the rack faces, not only the floor level.
- [ ] Check glare where people look up, and colour rendering where colours or labels must be read.

3 Mounting height and spacing

Mounting height affects both output and beam. The higher a fitting hangs, the more its light spreads before it reaches the floor, so higher buildings generally need more lumens per fitting or a tighter beam to keep light on the working plane. Lower buildings can use less output per fitting, often with a wider beam for even light between fittings.



H, S, beam angle and output come from the lighting calculation.

There is no reliable rule of thumb that turns a ceiling height into a wattage. The answer comes from a lighting calculation that takes the mounting height, the spacing, the room surfaces and the target lux into account. That is why a lighting design (for example a DIALux calculation) should come before the order.

- [ ] Ask for a lighting design that shows the lux levels zone by zone, with the maintenance factor stated.
- [ ] Check the spacing between fittings and how even the light is (uniformity), not only the average.
- [ ] Consider a fitting whose wattage can be set on site, so one product can suit different heights and zones.

4 High bay or linear fitting

Feature	Round (UFO) high bay	Linear high bay
Best for	Open floors, production halls, loading and marshalling areas	Racking aisles and long, narrow spaces
Light distribution	Wide, even spread	Directed along the aisle with an aisle optic
Polaris example	PS–UFO–MAX: **100**, **150** or **200** W switchable on site, **200** lm/W, **90°** beam	PS–CURVE: aisle optic **30 × 90°**, plus **60 × 110°** and **90 × 110°** optics

Many sites use both: UFO high bays over the open areas and linear high bays in the racking. Where glare matters, check the unified glare rating (UGR) as well as the beam: PS-MILD keeps UGR below 19.

- [ ] Check the IP rating (IEC 60529). IP65 is dust-tight and protected against water jets, which suits most warehouses. Washdown areas may need an IP69K sealed fitting such as PS-CORROSION.
- [ ] Check the IK rating (IEC 62262) where fittings could be hit: IK08 is rated for 5 joules, IK10 for 20 joules.
- [ ] Check the operating temperature for cold stores. PS-UFO-MAX is rated from −40°C to +60°C.
- [ ] Hazardous areas need ATEX and IECEx certified fittings for the zone, such as PS-ATEX-HIGHBAY.



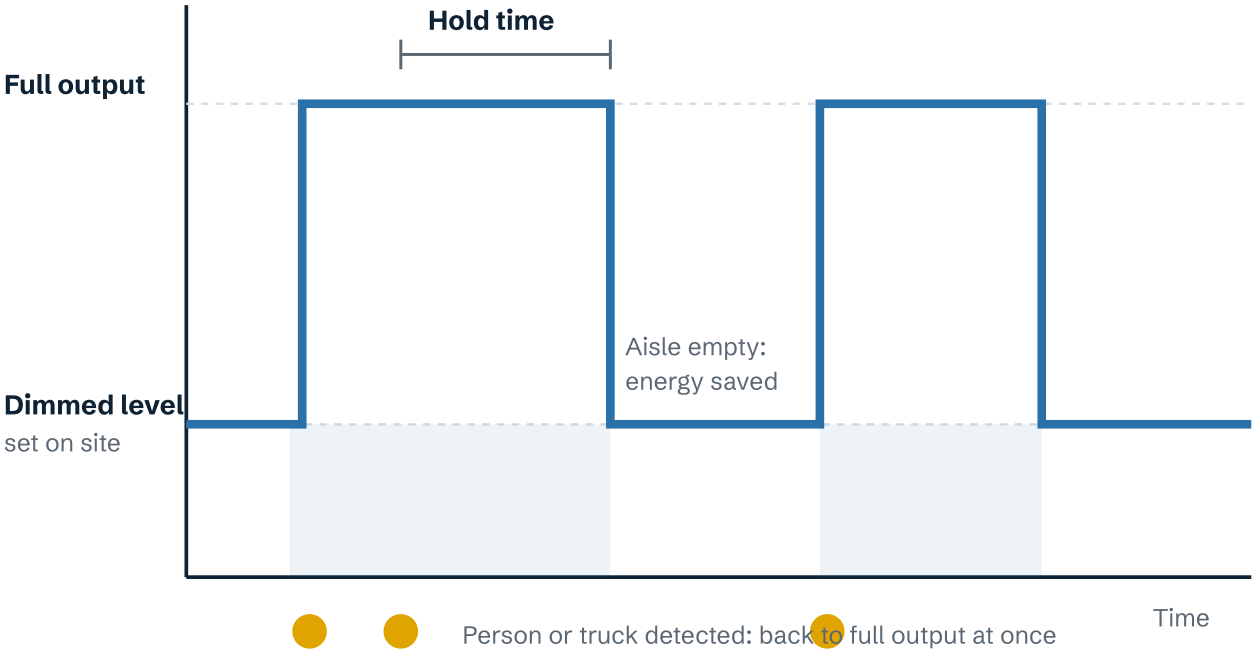
UFO high bays over a loading and marshalling area: a wide beam suits open space.



High bays above stock on a Polaris Light project.

5 Controls and sensors

In most warehouses some aisles and zones are empty for much of the shift. Presence sensors dim or switch fittings when nobody is there, and daylight sensors dim them when rooflights give enough light. LED fittings return to full output straight away when someone arrives, which discharge lamps cannot do.

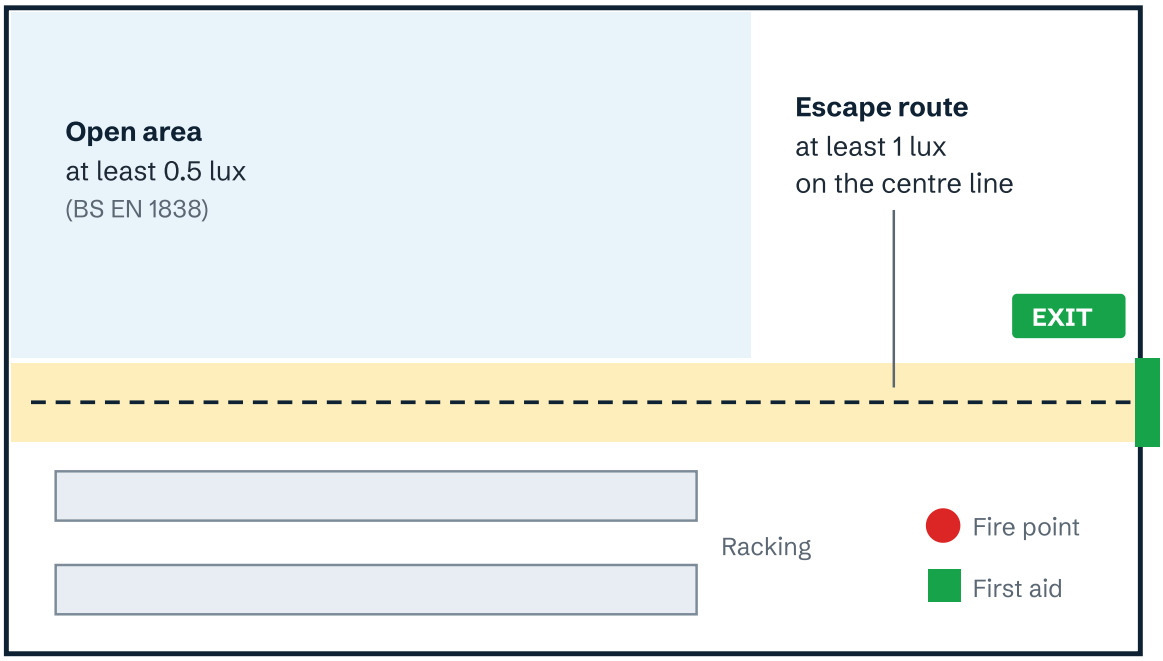


Daylight sensors work the same way: they dim the fittings when rooflights give enough light.

- [ ] Decide the control for each zone: presence detection in aisles, daylight dimming under rooflights, timed or manual control elsewhere.
- [ ] Choose the sensor type for the space: PIR for most areas, microwave where a wider or more sensitive detection pattern is needed.
- [ ] Set the hold time and the dimmed level so that aisles are never dark when a truck enters.
- [ ] Check how settings are changed later. PS-UFO-MAX takes a plug-in PIR and daylight sensor, or a plug-in microwave and daylight sensor, with no rewiring, and can be adjusted with an optional handheld remote. PS-CURVE supports 1-10V and DALI dimming.
- [ ] Base the expected saving on how each zone is actually used. A survey of occupancy and daylight is better than an assumed percentage.

6 Emergency lighting

Changing the main lighting is the right moment to check the emergency lighting, because the layout, the fittings and the circuits may all change. Under the Regulatory Reform (Fire Safety) Order 2005 in England and Wales, and equivalent legislation in Scotland and Northern Ireland, emergency routes and exits that need it must have emergency lighting of adequate intensity. The responsible person, usually the employer or occupier, is accountable for it.



Simplified plan. Exits, fire points and first aid points must also be covered.

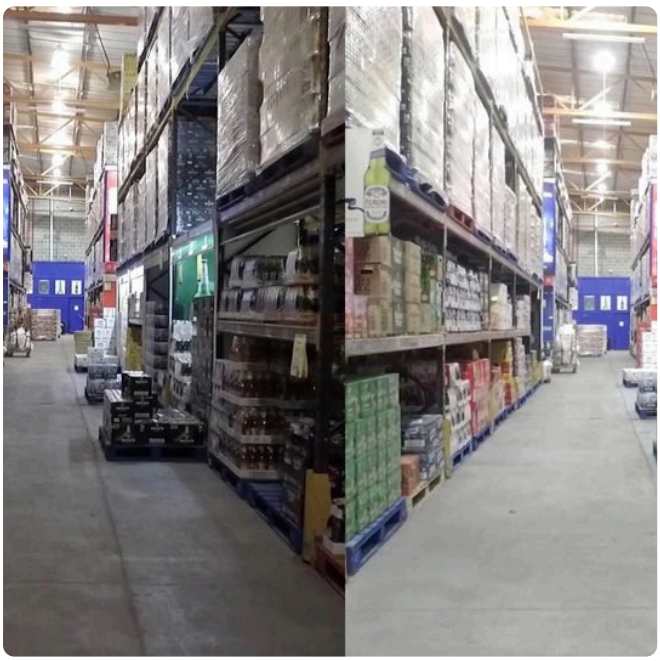
- [ ] Check the design against BS 5266-1, the code of practice for emergency lighting, and the light levels in BS EN 1838.
- [ ] Decide whether emergency lighting will come from separate emergency fittings or from emergency versions of the new fittings, and ask which fittings have an emergency option.
- [ ] Make sure the new layout does not leave escape routes, exits, fire points or first aid points uncovered.
- [ ] Keep up the test regime: a short functional test every month and a full rated duration test every year, recorded in the log book.
- [ ] Involve your fire risk assessor if the layout of the building or the escape routes changes.

This section is a summary, not legal advice. Your fire risk assessment and a competent emergency lighting designer decide what your site needs.

7 Installation without stopping the operation

Most warehouses cannot close for a lighting upgrade. Plan the installation around the operation from the start, and agree it in writing before work begins.

- [ ] Agree working hours: out of hours, at nights or weekends, or in phases zone by zone.
- [ ] Plan access: the right mobile elevating work platforms (scissor or boom lifts), and how racking, stock and traffic routes are protected.
- [ ] Ask for RAMS (risk assessments and method statements) and check the contractor's insurance.
- [ ] Electrical work should be carried out by qualified electricians to BS 7671, the IET Wiring Regulations, with certification at the end.
- [ ] Agree how old fittings and lamps are removed and recycled under the WEEE Regulations. Mercury containing lamps must be handled as hazardous waste.
- [ ] Commission the controls, check the lux levels against the design and hand over the documents: drawings, spec sheets, certificates and warranty details.



Installed in a working cash and carry warehouse. Phased work keeps aisles in use.



A production and storage hall after the upgrade.

8 ESOS, funding and tax notes

ESOS Phase 4: the current phase

The Energy Savings Opportunity Scheme (ESOS) is a mandatory energy assessment scheme for large UK undertakings and their corporate groups. Your organisation qualifies for Phase 4 if, on the qualification date of **31 December 2026**, it employs 250 or more people, or has an annual turnover above £44 million and an annual balance sheet total above £38 million. The deadline to submit the notification of compliance through MESOS is **5 December 2027**.

New for Phase 4: Display Energy Certificates and Green Deal assessments can no longer be used to comply, and the assessment must report progress against earlier action plan commitments, with an explanation where they were not met. If you qualified for Phase 3, your annual action plan progress update is due by **5 December 2026**.

Source: GOV.UK, Energy savings opportunity scheme (ESOS): find out if you qualify and how to comply, last updated 2 September 2026.

In warehouses and factories, lighting is often one of the easier energy saving opportunities to act on: it can be measured, the replacement is well understood, and controls add further savings. Polaris Light is not an ESOS lead assessor; your lead assessor signs off the assessment.

Funding and tax

- [ ] Grant and finance schemes for energy efficiency change often, and many are regional or sector-specific. Check what is open now with your local Growth Hub in England, or Business Gateway (Scotland), Business Wales or Invest Northern Ireland.
- [ ] Read the conditions before you order: some schemes require approval before any work starts, or quotes in a set format.
- [ ] Lighting can count as plant and machinery or an integral feature for capital allowances. Ask your accountant which allowances apply to your project.

Polaris Light does not give financial or tax advice.



Lighting in an industrial hall: a measurable ESOS opportunity.



LED high bays in a large hall on a Polaris Light project.

9 How to calculate your savings

The energy saving from an LED upgrade comes from three numbers: the wattage saved per fitting, the number of fittings and the hours the lights are on each year. Use the figures from your own survey and your own electricity bill.

ENERGY

Number of fittings × Watts saved per fitting × Hours a year ÷ 1,000 = kWh saved a year

COST

kWh saved a year × Your unit rate (£ per kWh) = £ saved a year

CARBON

kWh saved a year × UK government conversion factor = kg CO2e saved a year

PAYBACK

Your quoted project cost ÷ £ saved a year = Simple payback in years

- [ ] Hours matter more than anything else: a site lit 24 hours a day saves twice as much as one lit 12 hours with the same fittings.
- [ ] Use the full circuit wattage of the old fittings, including control gear, where you know it.
- [ ] Compare designs that meet the same light levels. A cheaper design that under-lights the aisles is not a saving.
- [ ] Include fewer lamp changes and less work at height in your business case, even if you do not put a figure on them.
- [ ] Try the LED savings calculator at polarislight.com with your own figures.

The next page works through the method with example figures.

Worked example

EXAMPLE ONLY

These figures are invented to show the method. They are not data from any real site and not a Polaris project result.

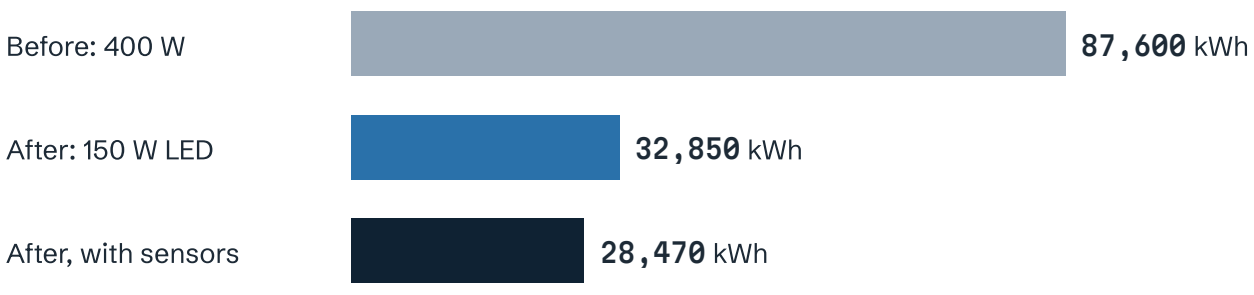
Input	Example value	Note
Fittings	**50**	Example
Existing fitting	**400** W	Example metal halide, lamp only. The full circuit with control gear draws more, so the real saving would be higher.
New fitting	**150** W	Example LED high bay
Watts saved per fitting	**250** W	400 W minus 150 W
Hours a year	**4,380** h	Example: 12 hours a day, every day
Unit rate	**28.59** p/kWh	Reference only: DESNZ average, small non-domestic users, Q2 2026 (provisional). Use your own tariff.
Carbon factor	**0.13096** kg CO2e/kWh	UK government GHG conversion factors 2026, UK electricity

Energy: 50 × 250 W **× 4,380** h **÷ 1,000** = **54,750 kWh a year** (example)
Cost: 54,750 kWh **×** £**0.2859** = **about £15,650 a year** (example)
Carbon: 54,750 kWh **× 0.13096** = **about 7.2 tonnes CO2e a year** (example)

Controls (example): if presence sensors switched 20 of the 50 fittings off for a third of their hours, they would save a further **20 × 150** W **× 1,460** h **÷ 1,000** = **4,380 kWh a year**. The real figure depends on how each zone is used, which is why it should come from a survey.

Payback: divide your quoted project cost by your annual cost saving. Polaris Light does not publish prices, because the cost depends on the site.

Example annual energy use for 50 fittings at 4,380 hours a year



EXAMPLE figures only, as in the table above. Not a Polaris project result.

10 What to ask a supplier

Put the same questions to every supplier, and ask for the answers in writing. It is the easiest way to compare quotes like for like.

1. What is the lumen output of the **complete fitting** (not the LED chip), and the lumens per watt at the wattage we will actually run?
2. Are the figures from test data, such as LM-79 for the fitting and LM-80 with TM-21 for lumen maintenance?
3. Which LEDs and which driver are inside, and who makes them?
4. What is the stated lifetime, to which method (for example L80B10 at 50,000 hours, TM-21)?
5. Will you provide a lighting design showing the maintained lux levels and uniformity for each zone, to BS EN 12464-1?
6. What are the IP and IK ratings, and the operating temperature range?
7. Which beam angles and optics do you propose for the aisles and for the open areas, and why?
8. Which sensors and controls are included, how are they set, and can settings be changed later without rewiring?
9. How does the proposal deal with emergency lighting?
10. What surge protection does the fitting have, and what is the power factor?
11. How will installation be phased to keep the site running, and who carries out the electrical work?
12. How long is the warranty, what does it cover, and who stands behind it in the UK?

A simple test

If a supplier cannot tell you which LEDs and driver are in the fitting, or cannot show test data behind the lumen figure, treat the efficiency and lifetime claims with caution.



An industrial workshop on a Polaris Light project.

11 Why component quality matters

Two parts decide most of what an LED fitting does over its life. The **LEDs** set how much light you get for each watt and how well that light is maintained as the fitting ages. The **driver** converts the mains supply for the LEDs, and its quality decides efficiency, stable light output and how well the fitting copes with surges and heat. Two fittings that look the same can perform very differently because of what is inside.

That is why Polaris Light names the component makers in its fittings. They are a quality mark you can check:

Polaris fitting	Use	LEDs and driver
PS-UFO-MAX	UFO high bay for open floors and loading areas	**Lumileds** LEDs, **Sosen** driver (driver efficiency above **93%**)
PS-CORROSION	IP69K sealed fitting for washdown and harsh areas	**Bridgelux** LEDs, **Tridonic** driver
PS-ATEX-HIGHBAY	ATEX and IECEx high bay for hazardous areas	**Meanwell** driver

PS-UFO-MAX at a glance

- 40,000 lm at 200 W, which is 200 lm/W; switchable on site to 100, 150 or 200 W (20,000, 30,000 or 40,000 lm).
- Lifetime L80B10 >50,000 h (TM-21): after 50,000 hours the fittings are projected to give at least 80% of their initial light, with no more than 10% falling below that level.
- 4 kV surge protection, OTP, OCP, OVP and SCP driver protection, power factor above 0.95.
- IP65, IK08, operating range –40°C to +60°C, 90° beam, plug-in sensor option.

> **5-year warranty on every Polaris product**
>
> Every Polaris product carries a 5-year warranty. We survey, design, supply and install, so one team is responsible from the first visit to aftercare.



LED high bays on a Polaris Light industrial project.

12 Book a free lighting survey



> "...An excellent job, which has improved the light and saved us in costs"
>
> **Imperial Cash & Carry**

> "We are really impressed with the results of the lights and would like to invite you back in to quote for the rest of the facility"
>
> **Meggitt Polymers**

> "your hard work has certainly paid off, its like a summers day in our warehouse now!"
>
> **Davies Turner**

Free lighting survey and lighting design plan

Tell us about your site. We survey it, record the mounting heights, layout and existing fittings, design the lighting to BS EN 12464-1 for each zone and send you a proposal with the fittings, the light levels and the energy saving, with no obligation.

Every Polaris product carries a 5-year warranty.

CALL US

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EMAIL

hello@polarislight.com

REQUEST A SURVEY ONLINE

polarislight.com/warehouse-lighting

Sources

- BS EN 12464-1:2021, Light and lighting. Lighting of work places. Part 1: Indoor work places (BSI).
- BS 5266-1, Emergency lighting. Code of practice; BS EN 1838, Lighting applications. Emergency lighting. The Regulatory Reform (Fire Safety) Order 2005. IEC 60529 and IEC 62262.
- GOV.UK: Energy savings opportunity scheme (ESOS): find out if you qualify and how to comply, updated 2 September 2026.
- DESNZ: Gas and electricity prices in the non-domestic sector, table 3.4.2, Q2 2026 (provisional); Greenhouse gas reporting conversion factors 2026. Polaris Light spec sheets, October 2026.

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