



GREEN PUBLIC PROCUREMENT CASE STUDY

Contracting Authority: EPA Procurement of LED Lighting

Background

The Environmental Protection Agency (EPA) is an independent public body whose purpose is to protect, improve and restore Ireland's environment through regulation, scientific knowledge and working with others. The EPA supports Ireland's commitment to implementing Green Public Procurement (GPP) in all public tenders using public funds by ensuring that the application of sustainable initiatives remains at the forefront of all EPA procurement processes.

As part of its refurbishment of office spaces, the EPA had installed LED lighting in various office locations over a number of years. In 2018, a new approach was decided upon – to upgrade all lighting in buildings to LED to further increase energy efficiency in line with national energy efficiency targets and the EPA's own strategic ambition.

The EPA decided to tackle the LED installation through a process of pilot, learn, scale and repeat. This started in two smaller offices, Monaghan and Castlebar, delivering a 78% measured reduction in lighting energy (metered before and after).

This case study relates to the LED installation at EPA Headquarters in Wexford.

To give context to the scale of the project, the EPA Headquarters in Wexford is 5,244 sq. metres.

Carbon and energy reduction was the focus, and analysis of LED solutions as set out in the table below indicated potential savings of ~40 tonnes of carbon and approximately €339,000 over 18 years.

Building Element	Energy Saving kWh (Annual)	Carbon Saving Tonnes (Annual)	*Financial Reduction on Energy (Annual)	*Financial Reduction Over 18 years**
Main Building Lighting	52,844	18.07	€8,719	€156,942
Extension Building Lighting	57,061	19.26	€9,415	€169,470
External Lighting	4,336	1.89	€715	€12,870
Totals	114,241	39.22	€18,849	€339,282

*Assumes €0.165 per kWh and no future energy price increase

**Life expectancy estimated based on the same number of hours of operation used for assessing the current lighting system. The proposed lighting control system should increase the actual life well beyond this figure.

Procurement Objective

In the procurement of LED lighting for EPA HQ, energy efficiency was the primary environmental objective being pursued.



Procurement Approach

The EPA is conscious that when delivering procurement projects, they are spending public money, and must demonstrate value for money, good governance and achieve GHG emission targets and energy reductions. Therefore, the EPA also analysed the cost of doing nothing and the findings are presented in the table below.

Reduction/Saving Type	Cost Per Unit Activity	Cost Per 18 Years
Specialised maintenance of existing lighting system in the HQ extension. Estimated from average annual spend to date.	€5,000 per annum	€90,000
Main building: The lighting in the main building is past end of life and requires upgrading. EPA are currently upgrading units on an ad-hoc basis as failures occur with the expectation that all units are due to fail in the next few years.	*€147,000	*€147,000
Extension: Expected to reach end of life in less than 10 years with full upgrade of fittings required.	*€163,440	*€163,440
External Lighting: At end of life and will require upgrading in next few years.	*€38,000	*€38,000
Emergency Lighting Critical Components Upgrade (e.g. batteries). At least one upgrade will be avoided.	€26,500	€26,500
Bulb replacement for existing fluorescent light system every 4 years.	**€26,500	**€106,000
Total Avoided Costs		€570,940

*Figure quoted is for a complete upgrade which will be considerably cheaper than the current approach of ad-hoc replacement

**Bulb replacement of fluorescent tubes is recommended every two years. However, a replacement period of 4 years has been used in above calculations as this is more typical of the actual practice.

Reviewing the avoided costs over the expected life expectancy of the LED lighting system of 18 years, the EPA found that:

- they were already replacing lights that were no longer working on a piecemeal basis
- in the older building lights were past end-of-life with lots of failures (estimated cost €147,000)
- in the newer part of the building, the lights were expected to reach end-of-life in less than 10 years with a full upgrade of fittings required (estimated cost €163,000)
- emergency lighting critical components upgrade (e.g. batteries) – at least one upgrade would be avoided (estimated cost €26,500)
- bulb replacement for existing fluorescent light system every 4 years (industry recommends every 2 years) at a cost of €106,000
- specialised software upgrades and maintenance of lighting system was approx. €5,000 per annum.

When all costs were considered, the cost of upgrading was considerably less than ‘the cost of doing nothing’.



Criteria Used

Requirements based on the [National GPP Criteria for Indoor and Outdoor Lighting](#) were included in the tender to ensure that the products supplied were of good quality and efficiency (meeting the standards of the Triple E Register) and compliant with all required regulations.

It was also crucial that the successful tenderer met high standards for environmental management, including appropriate storage and management of waste lights.

Year Contract Signed

2021

Outcome

- Reduced maintenance costs including reduced working at height requirements to change light bulbs by contractors
- improved lighting that meets the minimum required lux levels, is adjustable to meet user preferences and delivers improved staff wellbeing
- reduction in lighting helpdesk requests from staff
- the upgraded system will provide flexible control allowing for future furniture changes e.g. sit/stand desks
- annual carbon reduction of 39.22 tonnes
- annual energy reduction of 114,241 kWh (€18,849)
- reduction in hazardous waste by avoiding future upgrade of fluorescent tubes
- no blinking lights and improved light levels for staff
- reduction of in-house maintenance time
- unmeasured carbon reductions and efficiencies due to the reduction in electrician call outs etc.

Due to the significant increase in energy costs since 2021, payback will be much earlier than initially forecast.

Lessons Learned/Challenges/Success Factors

Don't dismiss LED upgrades based on cost alone – look at the 'cost of doing nothing'

Contact Details

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Please consult the [National GPP Criteria for Indoor and Outdoor Lighting](#) for further information.

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