

Kilkenny City, Carlow Kilkenny County

Street lighting project

Project background and objectives

The street lighting infrastructure in Kilkenny County was established over the past 60-70 years. The area selected for this project was a representative sample of the 9,800 lamps throughout the county. Street lighting represents approximately 55 % of the municipality's electricity consumption. The light quality was variable and unsatisfactory. The cost of the upgrades was traditionally the barrier to change. In 2014, the regional partner and city partner successfully arranged a finance model for the project. The focus was put on refurbishing the public lighting on 5 streets & housing estates to test the model of incorporating energy into a traditional contract.

Project description

The main objective of the project was to improve the lighting standard and energy efficiency of the street lighting system with aesthetic considerations on historic and tourist attractions. The city partner was interested in using an EPRP (Energy Performance Related Payment) model. Through this type of EPC model, the city retained 10% of the project payment for one year until it was shown that the agreed energy savings were achieved. This model was assessed and disseminated to the decision makers at city level over many months. The decision was taken not to include the maintenance costs in the EPC contract. The city nevertheless benefits from a significant reduction of its maintenance costs due to the new energy efficient and low-maintenance LED lighting system. A grant of 50 % was achieved through an energy efficiency project application.



Facts

- **Population:** 95,420 (County), 24,420 (City)
- **Type of streets:** Urban - Residential and Public roads
- **EPC model:** Moroney Electrical (Energy Performance Related Payment)
- **Electricity cost savings:** 2,200 €/year
- **Reduction electricity consumption:** 15,600 kWh/year
- **CO₂ reduction:** 7.2 tons/year
- **Investment costs:**
 - 50,000 € (total investment)
 - 5,000 € (financed by the EPC project)
- **Subsidies:** 50 % SEAI (regional contracting programme)

Further information:

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Kilkenny City, Carlow Kilkenny County Street lighting project

Project Data	Before renovation	After renovation
Total installed electric capacity	6.6 kW	3 kW
Total number of lamps	59	59
Number of lighting points (luminaires)	59	59
Annual electricity consumption	27,700 kWh	12,100 kWh
Annual electricity costs	3,900 Euro	1,700 Euro
Annual maintenance costs	1,650 Euro	300 Euro

Results

Kilkenny County Council was one of the first to implement EPRP (a form of EPC) in Ireland. The city successfully installed a number of varying technology lamps with approved historical and modern LED lanterns. This resulted in a successful upgrade to LED in 5 locations in the city. The municipality is very satisfied with the implementation process and outcome of the project and is pleased with the quality of the lighting. In 2016/17, it is proposed to complete the next phase of 1,500 luminaires in the county on the route to completing the 9,800 lamps within the coming 5-7 years using EPC from local electrical companies. Five of these companies have engaged in the development of phase II 2016/17.

Support by the facilitation service

The facilitation service supported the municipality throughout the development of the EPC project by offering feedback and guidance on funding aspects as well as on the content of the EPC contract. Among others, the topic of deeper ESCO and contractor finance has been discussed and phase II will incorporate the contractor bringing finance to the project over a 10-15 year contract.



Photos: The Carlow Kilkenny Energy Agency, Kilkenny County Council

Internal lighting retrofit, Kilkenny County Council, Indoor lighting project

Project background and objectives

Kilkenny County Council is committed to reaching their public sector targets of a 33 % reduction in energy by 2020 as set out by the National Energy Efficiency Action Plan. A number of energy efficiency projects were initiated in order to reduce their costs and energy consumption. Based on energy audits, lighting retrofits were carried out in 7 local authority owned buildings, including the corporate offices, the fire station, libraries, machinery yards, depots and the landfill.

Project description

An energy audit was carried out for each building, generating a list of lamps, lamp types and wattages. This information was used for the procurement documents. A "design and build" type contract was chosen for this project. The city also decided to use an EPRP (Energy Performance Related Payment) model. This is a form of EPC through which the city retained 10 % of the project payment for one year until it was shown that the agreed energy savings were achieved. Incorporating energy considerations into the contract allowed the contractor to specify a lamp type and wattage that met the specifications.

One year after completion of the project, a review was carried out with the consultant and the ESCO. This review compared the operation of the system and the energy usage over a one-year period. Localised smart meters were used record energy usage of the lighting system before and after installation. The review was positive and the retained payment was paid out.



Facts

- **Public Body:** Kilkenny County Council
- **Type of lighting:** Indoor and outdoor lighting
- **ESCO:** Moroney Electrical (Energy Performance Related Payment)
- **Electricity cost savings:** 8,250 €/year
- **Maintenance cost savings:** 4,800 €/year
- **Reduction electricity consumption:** 51,400 kWh/year
- **CO₂ reduction:** 23.6 tons/year
- **Investment costs:** 170,000 €
- **Subsidies:** 68,000 € (Sustainable Energy Authority of Ireland)

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Internal lighting retrofit, Kilkenny County Council, Indoor lighting project

Project data	Before renovation	After renovation
Total installed electric capacity	62 kW	30 kW
Total number of lamps	962	967
Main lamp type	Fluorescent Lamps	LED
Annual electricity consumption	86,700 kWh/year	35,300 kWh/year
Annual electricity costs	13,900 Euro	5,650 Euro

Results

This project has resulted in not only achieving greater energy efficiencies but has also improved the working environment for the staff and public visiting the buildings. The project was completed under a SEAI Better Energy Community grant scheme and is used as a showcase for communities and other organisations to see LED lighting systems in operation. Due to its success a further project was carried out for the energy efficient lighting retrofit of two libraries in Kilkenny.

Support by the facilitation service

The process was supported by the Streetlight EPC facilitation service through technical advice and expertise. Carlow Kilkenny Energy Agency carried out the initial assessments of the indoor lighting systems and compiled the contract documentation. The facilitation service was used to incorporate Energy Performance Related Payments (EPRP) into the contract documents which allowed the project to have an energy performance contracting element build in, the first of its kind used by Kilkenny County Council.



Photos: The Carlow Kilkenny Energy Agency, Kilkenny County Council

Realised project heating upgrades: Kilkenny County Council Heating Upgrade, Ireland

Project background and objectives

Carlow Kilkenny Energy Agency (CKEA) and Kilkenny County Council (KCC) used the basis of energy performance contracting to include projects other than lighting. This allowed CKEA and KCC to test the model of energy contracting for other applications. This project came from the need to upgrade the heating systems in Kilkenny County Hall and the Kilkenny Fire Station.

Project description

KCC is committed to reaching their public sector target of a 33 % reduction in energy by 2020 as set out by the National Energy Efficiency Action Plan. Therefore, a number of energy efficiency projects were initiated to reduce their costs and energy consumption. Energy audits were carried out on two of the largest energy users in the local authority. The energy audits identified that heating upgrades were required to be carried out in Kilkenny County Hall and the Fire Service Headquarters.

The project was completed under a SEAI Better Energy Community grant scheme. KCC opted for a "design & build" model on this contract and opted for the heating design to be carried out by an independent design consultant. Traditional procurement was used.



Heating Upgrades Kilkenny County Hall

Facts

- **Type of buildings:** Headquarters of Kilkenny County Council & Headquarters of the Kilkenny Fire Service
- **EPC model:** Energy Performance Related Payment (EPRP)
- **Heating Source:** Natural Gas
- **Expected thermal cost savings:** 5,500 €/year
- **Expected reduction in thermal energy consumption:** 109,600 kWh/year
- **Expected CO₂ reduction:** 22.5 tons/year
- **Investment costs:** 90,000 €
- **Subsidies:** SEAI 50%
- **EPRP contract duration:** 1 Year

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Realised project heating upgrades: Kilkenny County Council Heating Upgrade, Ireland

Project Data	Before renovation	After renovation
Total installed electric capacity	483 kW	475 kW
Annual Thermal Consumption (kWh/year)	465,000	518,500
Operational Time	1,500 Hours	1,200 Hours
Annual thermal costs	23,200 Euro	25,900 Euro
Annual maintenance costs	3,000 Euro	1,500 Euro

Results

When compared to energy lighting upgrades, the energy savings related to heating systems proved more difficult to estimate. This can be attributed to the various changes in weather patterns and upgraded thermal comfort in both buildings. The baseline year needs to be clearly defined from the outset and agreed by both parties. For example, the Fire Service Headquarters is now a much more comfortable building to work in; however, the heat consumption has increased. As we can see from the table above, the energy savings were not achieved and the new system resulted in increased energy consumption. In order to counteract this, a report was requested from the mechanical contractor to identify areas where the energy savings can be improved. The systems are all in place, but the thermal energy usage on site needs to be managed more effectively. Weather corrected data also needs to be factored into any baseline project analysis.

Support by the facilitation service

The facilitation service supported the municipality throughout the development of the EPC project. The facilitation service along with the municipality developed a tender brief to appoint a mechanical contractor to design the new energy efficient heating system in both buildings. The facilitation service used the examples and lessons learnt from internal and external lighting projects to apply it to other applications such as heating system upgrades.



Boiler Room & Appliance Bay Kilkenny Fire Station Headquarters

Photos: The Carlow Kilkenny Energy Agency, Kilkenny County Council

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