


*Una manera de hacer Europa*



# BUENAS PRÁCTICAS

## Operaciones Cofinanciadas

**Programme of Aids for the Renovation of Outdoor Public Lighting (Street Lighting Programme), focused on the actions of Valle de Egües-Eguisibar and Valencia City Councils**

**Institute for Energy Diversification and Savings (IDAE)**

# Programa Operativo Plurirregional de España

Fondo Europeo de Desarrollo Regional

**Año 2019**



**Best practices for the 2015 - 2018 call for proposals of the Programme of Aids for the Renovation of Outdoor Public Lighting (Street Lighting Programme), focused on the actions of Valle de Egües-Eguisibar and Valencia City Councils**



*Paseo Pinedo (Valencia) – photograph courtesy of Schröder España*

In May 2015, the Institute for Energy Diversification and Savings (IDAE), a body attached to the Spanish Ministry for Ecological Transition and the Demographic Challenge, set up the aid programme for the improvement of municipal lighting facilities, aiming to reduce their final energy consumption and CO<sub>2</sub> emissions. Therefore, a funding line is established, on reimbursable loan basis, so that local entities can renovate their outdoor lighting systems taking energy efficiency criteria into account.

**The actions carried out under the Street Lighting Programme are highly replicable and scalable.** They contribute to the incorporation of innovative technology and management in such an essential service as public lighting, as well as to the wide introduction of energy efficiency into the agendas of local governments and an increased awareness of the **importance of considering both energy efficiency and management as a resource.**

Thanks to this financial support, reimbursable loans amounting to EUR 94 million have been granted, with an equivalent ERDF aid of approximately EUR 20 million, resulting in annual electricity savings of 98,860 MWh and a reduction in CO<sub>2</sub> emissions of 38,061 tonnes per year.

Among all actions funded, we take as an example the ones of two specific city councils: the City Council of Valle de Egües-Eguisibar (Pamplona) which carried out a comprehensive replacement of its outdoor lighting, including the modernisation of all control panels as well as the implementation of centralised management systems; and the City Council of Valencia, which undertook global action to improve the energy efficiency of its municipal public lighting system, carried out in 2 stages.



*Gorraiz (Valle de Egües – Pamplona) – Photograph courtesy of ATP Iluminación*

Both actions are deemed to be a best practice because they meet the assessment criteria designed for this purpose:

**1. The role of the ERDF in these actions has been conveniently spread among potential beneficiaries and the public in general**

In addition to the mandatory advertising actions by the beneficiaries:

**Dissemination of ERDF aid through plaques and web pages**



Permanent plaque of Ayuntamiento Egüés



Website Ayuntamiento Egüés



Permanent plaque Puente Ángel Custodio - Valencia



Website Ayuntamiento de Valencia

Press releases and technical articles have also been published

**City Council of Valle de Egüés-Eguesibar**

## Valencia City Council



## Videos

Public Lighting Project in Valle de Egüés

<https://www.youtube.com/watch?v=k5aYQ9Y8w-4>

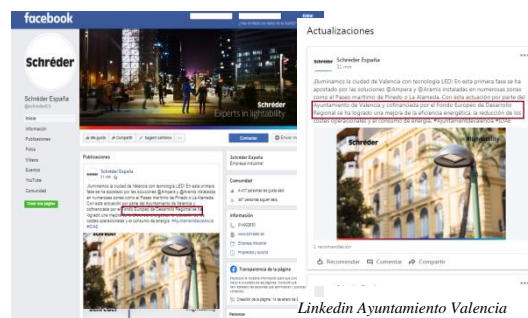


## Social Media



Facebook on Public Lighting Valle de Egüés

Twitter on Public Lighting Valle de Egüés



Facebook Ayuntamiento de Valencia

LinkedIn Ayuntamiento Valencia

## 2. The action includes innovative elements

The city councils considered the improvement of the energy efficiency of their public lighting systems to reduce energy consumption, their carbon footprint and the environmental impact, and increase the safety and comfort of their citizens.

The most significant measures carried out by the City Council of Valle de Egüés-Eguesibar consisted in replacing 3,365 luminaires with others with dimmable LEDs technology, as well as eliminating inefficient and unnecessary street lights. Moreover, all the control panels have been replaced; an on-site variable lighting system has been implemented, adaptable to night hours, which has enhanced pedestrian safety as the intensity of the light automatically increases with the movement of vehicles and people. Finally, centralised management systems have been installed, taking into account the principles of flexibility.



Ayuntamiento Valle de Egués – Photograph courtesy of ATP Iluminación

The actions carried out in Valle de Egués-Eguesibar stand out for the **excellence of the engineering works**, with a very detailed approach, studying the specific needs of each section of the street and specifying point by point which luminaires were more suitable. Thanks to this action, **innovation was enhanced, with the collaboration between the different actors involved** —the company in charge of engineering and the manufacturer—, **who managed to adapt the product to the needs of the population.**



Street light spherical Campanar new LED - Valencia

The Valencia City Council undertook the renovation of its public lighting in 2 phases, the first one, which ended in June 2018, consisted of the intervention of a total of 31,691 luminaires, in which 27,302 lamps have been replaced by others more efficient, and 4,389 spherical low-height luminaires have been renovated with newly acquired LEDs. In 2019, the City Council began the works in which 10,875 additional street lights will be fixed. The works consist of the renovation and improvement of the luminaires of low luminous efficacy, by others with a high-performance LED light source.

The most remarkable aspect of the actions carried out by the City Council has been the development and implementation of a strategy for the renewal of the public lighting in Valencia, which established clear and defined criteria to determine the most advantageous technical and economical solutions for each case, which allowed **satisfying the lighting needs with the best cost-benefit ratio**. The project sought to optimise the investment as much as possible, prioritising the economic savings of the installation. **This approach has allowed acting on a higher number of street lights, ultimately obtaining a more significant global energy saving.**

### 3. Adequacy of the results obtained to the set objectives

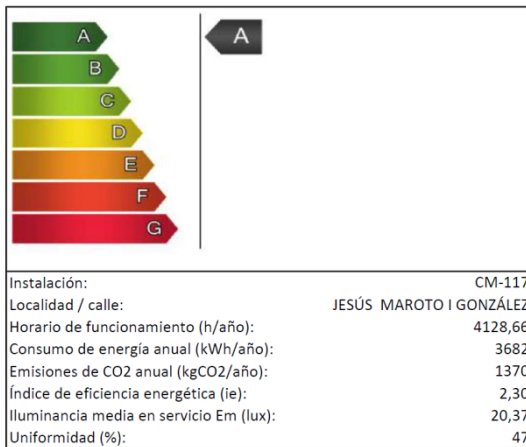
The programme for the renewal of municipal lighting aims to renew public lighting installations applying energy efficiency criteria, achieving maximum energy savings and CO<sub>2</sub> emissions reduction. This requires the use of the most advanced technology and the compliance with current regulations in order to achieve a minimum energy saving of 30% compared to previous consumption, as well as obtain an A or B energy rating.

Both actions have gone beyond the objectives established by the program.

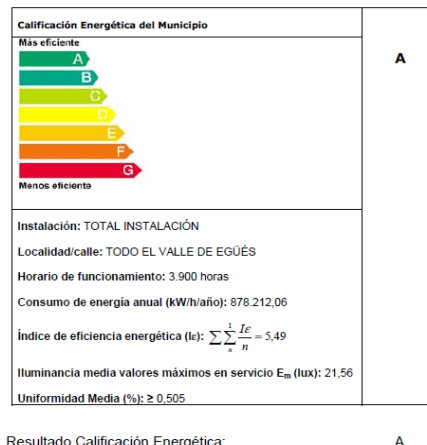
In the case of the lighting installation in Valle de Egués-Eguesibar, **a reduction in electricity consumption of approximately 1,530 MWh/year (64%) and 797 tCO<sub>2</sub>/year of avoided emissions has been achieved.**

Thanks to the new lighting installations (phase I and phase II), the city of Valencia has achieved a reduction in electricity consumption of approximately 25,725 MWh/year and 13,403 tCO<sub>2</sub>/year of emissions avoided. This resulted in **a saving of 74% in the initial consumption of the fixed installation and 24% on the total consumption of all the lighting in the city.**

The installations have achieved an “A” energy rating, which implies that both municipalities have the highest energy efficiency index, both in terms of global installation and by streets, and therefore, they achieve maximum lighting with the lowest possible energy consumption.



Energy label at Jesús Maroto I Gonzalez street, Valencia



Energy label at Valle de Egüés

#### 4. Contribution to the resolution of a problem or weakness detected in the territorial scope of execution

The City Councils had to face **obsolete, old-fashioned and highly polluting systems, which implied high energy consumption costs and high levels of CO<sub>2</sub> emissions.**

The street lighting of Valle de Egües-Eguesibar was initially made up of 4,316 luminaires. Large part of them was located in the Eco-city of Sarriguren (2,523) and Gorraiz (638). In the case of Sarriguren, many low-height luminaires were turned off to achieve some energy savings due to inefficient lighting. In contrast, in other towns such as Gorraiz, the lighting was very poor, with low levels of lighting due to its urban design. In many cases, the luminaires were older than 25 years, being obsolete and lacking adequate saving and protection measures.



Ustarroz: Council before and after the renovation  
 Photograph courtesy of ATP Iluminación

In the case of Valencia, the city has achieved in 3 years a total paradigm shift. As it is considered as one of the European cities with the highest light pollution and an annual electricity bill of more than 13 million Euros, Valencia had a great challenge in 2017, renovating the entire park of public lighting to ensure efficient lighting, reducing the electricity bill and CO<sub>2</sub> emissions, as well as contributing to creating an ecological culture and increasing the well-being of citizens by reducing intrusive lighting.

The city's public lighting was made up of a park with more than 107,000 street lights, which in 2015 had total installed power of over 25 MW. It was outdated equipment, which had not been renovated since 1990, which led to high energy consumption and consequently a high rate of CO<sub>2</sub> emissions, as well as high light pollution. The facility had outdated, low-light output luminaire models, which also involved high operating costs for the facility, particularly energy costs. This fact implied an inefficient use of the installations, with streets with inadequate light levels for both excess and defect.



*Cid Avenue before and after the renovation, Valencia*

## 5. High coverage over the target population

**Valle de Egüés-Eguesibar** is part of the Pamplona metropolitan area, and it has 10 municipalities, with a total of approximately 22,000 inhabitants. It shall be noted that the Valle de Egüés-Eguesibar City Council has carried out a comprehensive replacement project, tailored to the needs of its population. Throughout the process followed by the City Council for the design and execution of the project, **the participation of councils and neighbourhood associations** has been prioritised, as well as the application of designs that respect the historical heritage of **Valle de Egüés-Eguesibar**.

**Valencia**, with a population of over 790,000 inhabitants, is one of the largest, oldest and most important cities in Spain. In the first years of this century, the city has experienced a very favourable demographic dynamic, driven by migratory movements and by a rise in birth rates. **The renovation of its outdoor lighting, not only on some streets but in city neighbourhoods, has made it possible to renew and intervene in the urban framework** as a clear way of improving a service demanded and highly valued by citizens.

## 6. Consideration of the cross-cutting criteria of equal/non discriminatory opportunities and accessibility

The renovation of public lighting in a city is a direct action on the entire population, which brings multiple benefits at the environmental and economic level, and the improvement of the quality of life. The increase in the energy efficiency of public lighting reduces light pollution. It also improves visual quality, which results in greater road and citizen safety, particularly for the most vulnerable groups, which leads to greater comfort and social welfare.





Valencia – Photograph courtesy of Schröder España

The **Valencia** City Council carried out different studies, which took into account energy saving, environmental and social factors. Its facilities have not only obtained an “A” energy rating but also have achieved a high Colour Rendering Index (CRI) of 80%, which means that the installed luminaires have a high capacity to reproduce colours accurately.

The **social factor has been another important aspect** taken into account by the Valencia City Council; renovations have been carried out on all types of streets, areas and neighbourhoods, including areas that required social regeneration, as well as rural areas. About 50% of the total lighting has been renovated.



Ardanaz (Valle Egüés) – Photograph courtesy ATP Iluminación

Furthermore, thanks to the measures implemented in the facilities of **Valle de Egüés-Eguesibar**, a **significant reduction in environmental light pollution has been achieved, increasing the quality of the night sky, and safe corridors have been generated through lighting to reinforce citizen security by taking advantage of the roads in green areas and the lake.** The entire system is controlled and remotely managed by a point-to-point light system, which allows greater energy efficiency of the installation. Moreover, the facility has been equipped with light vision cameras for the regulation of lighting levels when vehicles pass

through different routes of Valle de Egüés-Eguesibar and the main roads of Sarriguren, which allows adapting the night light levels to the needs of citizens, improves the sustainability of the ecosystem and gives greater security to people, especially to the most vulnerable.

## 7. Synergies with other policies or instruments of public intervention

The renovation of public lighting with criteria of energy efficiency and smart management is a step forward in the **commitment of both city councils to urban regeneration to achieve the cities of the future: smart, sustainable and inclusive.** Improving public lighting in a town builds the backbone of a Smart City. Transforming the public lighting service into an intelligent lighting service for the town implies, therefore, not a simple substitution of obsolete luminaires for more modern technology, but the incorporation of criteria and elements of intelligent management in the comprehensive renovation of lighting.

The action carried out by the city of Valencia is part of its **Valencia Smart City Strategic Plan** (Valencia Smart City), which includes emblematic works of innovation, digital society, climate-energy-mobility, competitiveness, employment and social cohesion. This action is coordinated with the **VLCi platform**, within the framework of the Smart Cities Network (Red.es), designed for the efficient city management, as well as for the definition of a strategy aimed at enabling the development of new applications that make life easier for its citizens and help foster innovation.

Furthermore, Valencia is firmly committed to the **United Nations 2030 Agenda for Sustainable Development**, specifically with the goal 11 of making cities inclusive, safe, resilient and sustainable. The United Nations has chosen Valencia to coordinate a Smart City response working group to the COVID-19.

The renovation of public lighting in Valle de Egües-Eguesibar has synergies with the **Pamplona Smart City Plan**, whose objective is promoting the use of information and communication technologies in the city. Pamplona is one of the founding cities of the Smart Cities Network (Red.es), and it is a member of its Board of Directors.

At a European level and in line with the maximum commitment to the urban regeneration of their cities, **both city councils led Smart Cities projects within the framework of the HORIZON 2020 Programme of the European Commission**. Therefore, both **Valencia (MATCHUP Project)** and **Pamplona (STARDUST Project)** have an essential role as Lighthouse Cities, implementing exemplary and replicable actions aimed at achieving smart cities in which large-scale demonstration projects of innovative technologies in the energy, mobility and ICT sectors are carried out.



*Paseo de las Flores (València)*



*Sarriguren (Valle de Egüés) – Photograph courtesy ATP Iluminación*