A NEW PUBLIC LIGHTING FOR THE CITY

Milano
Comune di Milano
1) An operation to reduce costs shall be matched to a capillary action to examine the service supply process.

2) The Municipality pursues this action through the by enhancing internal resources, thus making them flexible and trimming on outsourcing.
LED in Milan | Public lighting in Milan

181,76 sqm
Milan area

1,316,000
inhabitants

141,963 lamps
for public lighting

9,4 inhabitants
for each light source
150W average power for each light source used today

100 Lumen/Watt luminous efficiency of lamps

Over 114 milion kWh is the yearly consumption of power, equal to the consumption of 42.000 flats

87 kWh yearly consumption per capita
LED in Milan

The change in public lighting

141,963 lamps
for public lighting

75W
average power
of the new LED light sources

100 Lumen/Watt
luminous efficiency of the new devices

55 million kWh
is the new estimated yearly consumption of power;
it is equal to the consumption of 20,000 flats.

42 kWh
yearly consumption per capita.
## LED in Milan

### Comparison

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>LED IN MILAN</th>
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<tbody>
<tr>
<td><strong>150W</strong> average power for each light source used today</td>
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LED in Milan | Time schedule and investments

By May 2015 (beginning of Expo) 80% of the devices will be replaced.
By August 2015 100% of the devices will be replaced.

Timetable for the replacement of the lighting devices

By 31st DEC 2014

By 30 APR 2015

Beginning of EXPO

Entro il 31 AGO 2015

0% Replaced Lighting devices

43%

80%

100% 60.000 113.000 140.000

The total of investment borne by the group A2A is equal to 38 million euro over 2 years; this is the sum needed to replace all lighting sources of the city, 500 control panels and install remote control systems.
Yellow-light lamps and other types of lamps currently used will be replaced in order to uniform all devices:

- Lighting devices to be installed on light posts with different power ranges
- Lighting devices to be installed on garden posts
- Lighting devices to be installed suspended on cable
- Lighting devices for urban furniture to be installed suspended on post or on a light post

**LED LAMPS LAST FIVE TIMES MORE THAN TRADITIONAL LAMPS**

LED lighting devices can be used for public lighting in compliance with the incumbent regulations for streetlighting, regional laws against light pollution and to promote energy saving.
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The advantages

Increased energy saving

-51.8% Energy consumption

-11.033 Toe
(Tonne of oil equivalent) saved
LED in Milan

The advantages

More benefits for the environment

23,650 tons of CO\textsubscript{2} are spared from being discharged into the atmosphere. It is a relevant contribution to the goals in the Kyoto 2020 agenda.

-60,000 replaced lamps each year (burnt or replaced) enable a saving of more than 9 tons of electronic waste.

Zeroing of quicksilver and other polluting substances contained in other lamps used for public lighting.
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The advantages

More safety

**Same efficiency** of the previous lamps (100 Lumen/Watt)
**and higher yield** of the LED lighting sources

**-10.000 lamps burnt each year**
this translates into less dark areas, a neat improvement
of the service provided and safety.

Using new modern and efficient technologies
implies **an increase in the reliability of the public**
**lighting system.**

Possibility of **receiving information** on the situation
(on/off) and malfunctioning of the devices.

Management of the power on/power off through an astronomical clock.

Twilight switch with an adjustable threshold and back up function

Control of the protection system and alert in case of anomaly

Control of the power load absorbed

Remote control and supervision from remote location
LED in Milan

The advantages

Increased energy saving

The municipal Administration spends currently **42 million euro for public lighting**

Replacing light sources with LED lamps will entail a **saving equal to 10 million euro in 2015**

From 2016, the yearly expenditure will be equal to **29 million euro with a saving of 31%**

Cost reduction is attained through:

- Energy saving
- Zeroing of ordinary maintenance
  (today maintenance represents a cost of 5 million euro)
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The advantages

- Less light pollution
- Better concentration of the light beam towards the area to be illuminated, sidewalks and roads
- Zero emission of light intensity going upward
LED in Milan

Best practices

Milan, as well as Los Angeles, Copenaghen, Oslo e Stockholm, has opted for LED lighting.

Other major European cities are working on LED projects

LED in Milan, with equal luminous yield, reduces consumption by 51.8% and expenditure by 31%: a best practice in Europe

| Milano today | 87 kWh per capita |
| Milan in August 2015 | 42 kWh per capita |
LED in Milan

Gallery
LED in Milan | Gallery
LED in Milan

Gallery
LED in Milan

Gallery
THE CREDIT LINE OF THE INTERVENTIONS PURSUING ENERGY SAVING AND ENERGY EFFICIENCY IN THE FIELD OF PUBLIC LIGHTING.
The financing for the implementation of the LED project is borne by the A2A S.p.A., a subsidiary of the Municipal Administration that has been awarded a contract for the management of public lighting, in the framework of the interventions for efficiency improvements of the service according to the agreement signed by the two parties.

The investment, equal to approximately 300,00 €/light source, will be implemented thanks to the energy saving stemming from LED technology.
DIRECT FINANCING FROM THE GOVERNMENT: capital contributions and resulting reduction of costs for public lighting in the feed-in-tariff system.

THIRD PARTY FINANCING (TPF): it is an agreement that involves a third party, in addition to the energy supplier and the beneficiary of the provision to improve energy efficiency. The third party provides the capital and charges on the beneficiary a fee equal to a part of the saving attained through the very same provision.
FINANCING THROUGH PUBLIC PRIVATE PARTNERSHIP (PPP):
According to this model, the contracting party shall provide for the management and maintenance of the plants on his own responsibility and at his own expense for the entire duration of the agreement. Energy efficiency interventions are linked to the ability of the contractor to gain income and profits through relevant energy saving activities and management efficiency of the plants.
LED in Milan | Examples of financing through TPF and PPP:

ENERGY SERVICE COMPANIES:
definition of the legal subjects that provide energy services or other measures to improve energy efficiency thus accepting a certain degree of financial risk. The mostly used agreement form is the “energy supply agreement” that foresees the supply of an energy service to end users as single interlocutor and third party responsible person for the transformation and use of energy.

EUROPEAN ENERGY EFFICIENCY FUND (EEEF):
It is an innovative public-private partnership (PPP) whose target is that of providing a market-based financing for public energy efficiency projects that can be implemented, for renewable energy and clean urban transport within the public sector. It contributes – through a stratified risk/return structure – to the improvement of energy efficiency and renewable energy. The Fund wants to support the European Union's goals to promote a market based on sustainable energy and climate protection. The Institutions supporting the Fund are the following: European Commission, Founder; EIB and CDP, Founder Investoris; Deutsche Bank, Investment Manager.