CITIES HAVE A NEW ENERGY WITH ENEL X
Our cities are transforming faster than ever. New, relevant challenges face cities every day. Growing urbanization, continuous technological advances, and citizens’ behaviors and attitudes are increasingly transformed by digitization. This deeply influences life in urban centers. Such an evolution puts tremendous pressure on urban infrastructure. Sustainably, such a challenge can only be confronted through a profound transformation of the entire urban ecosystem and by promoting a vision of the city based on circular economy principles.

Enel X is ready to accompany Public Administrations, communities, citizens, and all stakeholders of urban development in this transition. Enel X brings more efficient energy solutions and innovative services to make our cities smart: more efficient, livable, sustainable, and digital. Urban public lighting by Enel X turns into the city’s new energy backbone, enabling not only efficient light but also innovative and digital services. Lighting, security, mobility, connectivity, sustainability, and resilience are among the areas where Enel X has developed its new offer. This proposal is intended for smart Public Administrations wanting to put their concept of “smart city” into practice.

Urban population grew from 14% to 54% between 1900 and 2015. This figure is expected to reach 66% by 2050.
Enel X is a global company that wants to lead the new energy revolution by using innovative and digital technology solutions for Public Administration.
**THE ROLE OF ENEL X IN THE CITY**

Enel X’s range of innovative solutions embraces the city’s entire ecosystem. These solutions extend from lighting to building management, and from public and private transport to mobility and logistics.

We place Enel’s long and solid energy experience at the service of Public Administrations and all urban stakeholders on multiple fronts. Our vision of open power allows us to offer cutting-edge solutions through a vast network of active partners around the world.

Further, the wide-ranging solutions portfolio by Enel X enables Administrations to use a single interface and easily process and manage interconnected and integrated services.
THE ENEL X OFFER

Beyond efficient public lighting, we also offer cities a wide range of innovative services. We are the largest Italian ESCO active in over 3,000 municipalities.
Most of today’s cities still use traditional lighting systems via obsolete sources, such as high-pressure sodium or mercury-vapor lamps. These systems produce many negative consequences, including poor illumination quality, light pollution, frequent breakdowns, and extremely high consumption in comparison to the current potential offering from the most advanced technologies. Enel X public lighting is “smart” in all aspects: in its light source type, as well as its design, structure, and functionality.

Through **LED sources**, Enel X ensures significant energy savings (>60%), better light quality, reduced light pollution, and a longer system lifetime with lower maintenance costs.

Enel X adds an even more advanced feature to the LED: **remote control** for monitoring each city lighting point. It is possible to capture the real-time status of lighting systems and accurately monitor the quality of the public service. This also provides benefits by ensuring greater street safety in terms of management costs.

Enel X public lighting goes even further. It reaches the most advanced frontier with the latest proposal of **adaptive lighting technologies**: solutions that adapt lighting to actual traffic, weather, and environmental light conditions. All of this is provided by a system of video cameras that can process data and by digital systems that further develop information. As a result, the lighting system is always regulated in full compliance with normative constraints. In doing so, we bring light to citizens where and when it is needed with a remarkable impact on the city’s efficiency and safety.

At the intersection of public lighting, electric mobility, and street furniture, Enel X presents another innovative product: the **JuiceLamp**, streetlight that combines state-of-the-art public lighting and two charging stations for electric vehicles. Its attractive and adaptive design fits any urban context.

All solutions are designed based on the specific context’s actual needs. Enel X can implement the desired solution by taking care of all phases: energy audit, design, permitting, installation, management, and maintenance.

We also propose Project Financing by following an “as service” approach. This way, we fully finance the initial investment and provide the requested service to share energy savings with the city.
ARCHITECTURAL LIGHTING

A CITY FULL OF BEAUTY

Every city, large or small, has its own artistic and architectural heritage that is unique and priceless. Enel X believes in maintaining and enhancing this heritage to preserve and celebrate territorial beauty through a simple yet fundamental element: its lighting.

By inheriting 30 years of experience from the Italian context and with more than 1,500 success stories from around the world, Enel X offers Municipalities solutions for both permanent and temporary architectural lighting characterized by:

- a long, sought-after philosophy of design that is tailored to specific monuments, kept pure and simple. It avoids invasive interventions and brings out beauty’s simplicity while fully respecting the historical-artistic context in which it is situated;

- a detailed design replaces the existing devices with next generation lighting fixtures and optimizes the necessary quantity of light sources with energy savings that make a difference: even up to 80%!

ENERGY EFFICIENCY

GREENER PUBLIC BUILDINGS

Enel X’s experience with energy efficient solutions also transfers to Public Administration buildings. By addressing a wide range of public buildings, such as schools, sports centers, offices, and hospitals, Enel X offers what are known as full electric solutions to today’s Public Administrations. This allows for:

- monitoring consumption through energy management information systems;

- saving significant amounts of energy;

- substantially reducing urban pollution;

- enabling a series of value-added services that can benefit both employees and citizens;

- offering both employees and citizens a more functional and more welcoming environment that encourages greater contextual productivity and harmony;

- accessing, where and when applicable, the new flexibility market (known as Demand Response) by actively participating in an efficient electric grid balance and generating extra revenue for investment in additional citizen services.

Through this innovative offer, Enel X is the ideal partner for Municipalities to effectively, skillfully, and safely manage a city’s main energy assets in tandem with the local Administration.
ALSO PUBLIC TRANSPORT GOES GREEN

Pushing sustainability for our urban environments, Enel X is strongly committed with electric mobility, both for private and public transport. Thanks to the pioneering experience and significant investments done in electric mobility infrastructure for private use, today Enel X is ready to offer sustainable solutions also to Public Administrations, promoting the transition to electric mobility also for public transport.

With some examples around the world (for example, in Chile with an e-bus fleet in Santiago de Chile and many other related services), Enel X’s innovative offer is complete and flexible and ranges from the installation and management of e-charging infrastructure (batteries and charging infrastructure) to the supply of green energy (100% from renewable sources) together with fleet management and consumption optimization tools thanks to the new demand response opportunities. Moreover, through partnerships with key operators such as e-bus suppliers, the solution can be provided “turnkey” including also the supply, management, and maintenance of electric buses vehicle fleet, offering to Public Admin the possibility to benefit from a very innovative and sustainable service with no impact on investments and a very optimized and effective service level.

A CITY THAT COMMUNICATES

Our innovative Enel X proposal also encompasses street furniture. In Santiago, Chile, we promoted the public transport transition to electric mobility with a fleet of electric buses and related services. This gave the Enel X principles of innovation, efficiency, and integration a further field of application: smart stations/shelters and a system of variable message screens or totems for urban communication and media advertisement.

Among others, this experience gave life to the:

- **“Enel X JuiceShelter”**: Our new concept for a bus waiting platform that turns into a smart or multi-purpose area. It integrates video surveillance cameras (e.g. with alarms for lost items, people counters, etc.); USB sockets for charging smartphones/tablets; sockets for recharging bikes or electric scooters; info points or advertising displays; integrated photovoltaic panels; Wi-Fi hotspots, and much more.

- **“Enel X JuicePark”**: The smart photovoltaic parking shelter that recharges cars, scooters, and bikes, plus public electric buses.

- **“Enel X eBench”**: Smart bench, also provided off-grid, with Wi-Fi hotspots, USB ports to recharge smartphones and tablets, environmental monitoring sensors, LCD displays and possible addition of a defibrillator.

- **“Enel X eBike Sharing”**: Solution to recharge private electric bicycles and bike sharing services managed through a digital platform providing booking and payment services.

- Solutions for digital display/totems to communicate, inform, or advertise in synergy with the entire infrastructure.

- **“Enel X MultiPole”**: Halfway between public lighting and street furniture, the perfect example of integrated solution and technology: a multifunctional pole, available also off-grid thanks to the integration of PV and mini-wind power, able to provide as well as smart public lighting, a multiple range of services enabled by sensors such as videoanalysis, public videosurveillance, info-point and advertising through LCD or LED displays.
DIGITAL CITY

A BETTER CITY

What do you expect from the city of tomorrow? Undoubtedly, you want better life quality. Enel X also strives for this by incorporating a series of new support services for Public Administrations and their citizens. By leveraging urban public lighting infrastructure and our digital platform, we can offer our customers various “digital services”. This is possible by integrating information from urban sensors and video cameras, plus today’s big data multiple sources.

Among our main services, we offer:

Safety first:
this videosurveillance service based on video camera and sensor data installed on the extensive Enel X public lighting infrastructure immediately flags critical events for citizens’ safety and sends alerts to the authorities with full respect for privacy.

Optimized mobility:
through developed digital infrastructure and our solutions such as City Analytics, it is possible to reconstruct people’s mobility and traffic flows, as well as more efficiently plan the city’s activities with potential benefits for both public and private stakeholders, e.g. optimizing the distribution of goods in cities or improving viability through an optimization of traffic lighting systems.

A clean and green city:
a network of environmental sensors and promotion of electric mobility via street lamp-integrated charging stations (our JuiceLamp!) track urban pollution and promote good practices.

An online city:
both local WiFi and wider coverage connectivity solutions linked to 3G-4G-5G take advantage of the best urban transmission infrastructure in high speed optical fiber.

Information in real time:
thanks to a single control platform that uses new data analytics and Internet of Things (IoT) technologies, Enel X has the ability to collect and process information for continuous learning processes and service improvement. These then become available to citizens, Public Administrations, or third parties interested in developing smart applications for our urban communities. Information, such as traffic, weather, and air quality are used to trigger actions and influence actions. This creates a mechanism of active participation on behalf of the urban community toward the Municipality’s outcomes. Everything moves in the direction of a more resilient city.
In a world increasingly immersed in digital transformation, Enel X is committed to renewing every solution, including the most traditional of public lighting. Enel X delivers a digital infrastructure capable of communicating, contributing, and benefiting from today’s vast amount of constantly changing data and information. The Enel X platform is a digital environment that radically changes the traditional user experience of physical infrastructures. The platform expands the potential of Enel X and makes its management easier, immediate, and direct.

A NEW PLATFORM FOR CITIES

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KEY PRINCIPLES OF THE PLATFORM

1. Interoperable and open
   An environment open to every type of device (e.g. surveillance cameras, street lights, sensors, and other devices) working under any connectivity condition (both radio and fiber, current or next-generation) and designed to ensure that third-party applications, services, solutions, or technologies are easily integrated.

2. Customizable and constantly evolving
   Formulated to concretely respond to the evolving needs of each stakeholder by adapting the features and performance according to current and future scenarios.

3. Safe and reliable
   Processing information in full compliance with Privacy guaranteed by the recent GDPR regulations and cybersecurity without impacting the speed or immediacy of the data provided.

Enel X YoUrban©

The urban platform's functionality follows the services and solutions offered by Enel X with a modular and customizable structure, starting from public lighting. Enel X's YoUrban© allows easy reporting and management of lighting faults via a versatile portal for the Municipality and an enjoyable app for citizens.

Enel X’s digital interfaces

For some interfaces such as Smart Public Building or City Analytics, Enel X used widely established concepts and tools, such as Machine Learning, Artificial Intelligence, Big Data, and the "Internet of Things" - with use case libraries, integrated applications, and data base cloud architectures. These have been implemented with a targeted approach to offer simple, intuitive interfaces and tools that really support and bring value to Public Administrations and their citizens. The goal is to increasingly promote active and real community participation by continuously improving quality of life in the city.
Enel X puts the circular city at the center of its new design. Its proposal pursues a dual commitment. First, we check our own portfolio solutions from the critical circular economy point of view. We then analyze the solutions according to five pillars of circularity:

1. Recycle
2. Reuse
3. Sustainable Input
4. Life Extension
5. Sharing Platform

Enel X evaluates how to improve each solution from all five dimensions once the analysis is scored. This ensures that the market proposal is as circular as possible.

Secondly, we directly support Public Administrations in their transition toward circularity by offering an assessment tool that produces a client report. Specific key dimensions are analyzed and improvement areas are highlighted and addressed. Once the path has been cleared, the circular city immediately becomes a close and concretely viable reality.
Thanks to Enel X, turning your city into a smart city is no longer science fiction. Whether it is a densely populated urban area to be reshaped or a small town to be preserved and valued, our far-reaching network across the national territory and our extensive experience in the sector are available to local administrators for designing the infrastructure and services of the future. We can deliver the service through all the main purchasing channels, however, we are not just providers.

Rather, we want to be a partner able to support and facilitate the Administration in choosing the most effective models to maximize the benefits for the city and its citizens, while tapping into the best funding opportunities.

HOW TO JOIN?

HOW MUCH DOES IT COST?

A lot, a little, or nothing. Designing together with us means being able to fine-tune the size of the investment, the duration, and the service level in order to achieve the Administration’s expenditure targets.

Need an example? Through the Project Financing model, we are able to fully support the initial investment and pay it back by sharing energy savings with the city. This produces an immediate reduction in public spending, as well as an excellent service at zero cost.