

Georeferenced Public Lighting Program

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Abstract:

The Georeferenced Public Lighting Program developed in the municipality of Bragança, Pará, Brazil, represents an integrated model for modernization, intelligent management, and public service optimization in urban lighting systems. Coordinated through the Public Lighting Department (DIP), the initiative combines technological innovation, operational planning, georeferenced control, and citizen participation to improve the quality and efficiency of public lighting services.

The program was created to address operational limitations, outdated infrastructure, high energy consumption, and the absence of reliable technical control over the municipal lighting network. Through a multi-channel service system, citizens can register demands using a mobile application, WhatsApp, call center services, and formal community requests. All demands are automatically converted into service orders, enabling structured management, prioritization, monitoring, and execution.

One of the main differentiators of the project is the full georeferencing of lighting points combined with photographic records before and after each intervention. This methodology ensures transparency, traceability, technical validation, and accurate territorial control. The collected data are consolidated into technical reports and formally communicated to the electric utility company, contributing to the continuous updating of the municipal lighting database.

The modernization strategy prioritizes the gradual replacement of conventional lighting with high-efficiency LED technology. The implementation began at strategic city entrances, followed by the historic center, urban neighborhoods, districts, and tourist areas. As a result, the municipality achieved the modernization of more than 75 kilometers of public roads, the installation and revitalization of over 3,400 lighting points, and a proven reduction of 21,919.62 kWh in energy consumption.

Beyond the technical and operational gains, the program has generated significant social and urban impacts, including increased public safety, improved night mobility, enhancement of public and tourist spaces, and more efficient use of public resources. The experience demonstrates that the integration of technology, operational management, georeferenced monitoring, and social inclusion can transform public lighting into a sustainable, efficient, and replicable public policy model for growing cities.