



## Mexico City Metro

The project was developed to upgrade the lighting and electrical systems across the Mexico City metro system. Its objectives included improving energy efficiency, enhancing illumination quality, reducing maintenance costs, and creating a safer, more sustainable environment for commuters.

### Key Metrics

Before Annual kWh	1,611,840
After Annual kWh	209,539
Annual kWh Saved	1,402,300
Annual Savings	\$ 147,242

- Payback Period: 3.1 years
- ROI driven by 87% energy savings and elimination of maintenance costs
- Enhanced safety and comfort.
- Significant reduction in hazardous waste: Eliminated need for mercury disposal

Annual CO2 Reduction: 701 metric tonnes



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87%  
Saved

### THE CHALLENGE

- Obsolete Lighting: Mixed fluorescent lamps (e.g., 219 per station, consuming ~7,665 watts).
- Aged Infrastructure: Over 40-year-old wiring, conduits, and panels that risk safety and incur high maintenance costs.
- Inefficient Energy Use: Excessive power consumption with poor illumination, reducing overall efficiency and user experience.

### SOLUTIONS

- LED Lighting: Replaced fluorescent lamps with 15W LED luminaires (150 lumens per watt), cutting energy use from 7,665W to 3,525W (~60% savings).
- Infrastructure Overhaul: Upgraded conduits, wiring, and panels; restructured backup/emergency circuits to boost safety and reliability.
- Smart Controls: Installed occupancy sensors operating 12 AM-5 AM to reduce lighting by 66% during low-traffic hours.
- Enhanced Surfaces: Applied eco-friendly AIRLITE paint (97% reflectance) on ceilings to increase brightness and provide antibacterial, self-cleaning benefits.
- New Fixtures & Installation: Introduced lighter, aesthetically pleasing fixtures with 180° illumination and updated wiring to current codes.
- Sustainable Maintenance: Kept a stock of replacement luminaires to ensure long-term, seamless maintenance.

1. 184,000 Fluorescent Tubes -> 184,000 T8 LED Tubes
2. 92,000 Obsolete Fixtures -> 92,000 New Fixtures
3. Occupancy Sensors
4. CO2 Sensors
5. CTV Cameras