

## Evaluation of Public Lighting Energy Efficiency Projects in Brazil

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The National Electricity Conservation Program – PROCEL – is the Brazilian program implemented by Eletrobrás Company (the Federal holding company for electricity generation and transmission), in order to promote the efficient use of electric energy and to tackle its waste. PROCEL runs subprograms that are directly involved in the execution of actions and projects in the public and the private sectors. Some of these subprograms are aimed at promoting efficient technologies and energy efficiency information dissemination; others subprograms are related to user's habit changes and capacity building.

The PROCEL Public Lighting subprogram named Reluz basically consists in implementing energy efficiency projects applied to Public Lighting systems through the substitution of incandescent lamps, mixed lamps and mercury vapor lamps for high pressure sodium vapor lamps which are more energy efficient. Besides the lamps, other equipment can be substituted or installed, including photoelectric switches, electromagnetic ballasts, start devices, luminaries and support arms. So far, PROCEL Reluz increased the efficiency of more than 2 millions points of public lighting since 2000 in many Brazilian cities. In order to check the results obtained in terms of energy savings and the lifetime of the components substituted, PROCEL Evaluation team decided to conduct a sampling evaluation of the Public Lighting systems.

For this purpose, a covenant between Eletrobrás and the Catholic Pontifical University of Rio Grande do Sul (PUCRS) was signed in 2006. The objective of this covenant is to have PUCRS evaluate in loco: (1) the adequacy of the equipment installed by the Reluz's projects all over Brazil; (2) the adequacy of the Public Lighting systems management; (3) the benefits obtained after project implementation; (4) the lifetime of the sodium vapor lamps and (5) the evaluation of the impact of energy savings and the peak demand reduction.

In this study, field studies were conducted to check the current situation of the 4-year-old installations, where samples of luminaries were collected for electrical and luminotechnical testing. Samples of 70W sodium vapor lamps were also collected for evaluating the equipment depreciation after an established period of operation in normal conditions and thus comparing it with the information stated by the manufacturers. The developed work consisted also in an ex-ante evaluation step (assessment) aimed at comparing the previous situation and the after implementation situation related to the benefits of the efficient Public Lighting systems. Field studies were carried out by interviewing about 150 residential consumers to identify their perception on Public Lighting in the city before and after the retrofit of the systems. Electric measurements were also taken on the low-voltage distribution network and luminotechnical data were collected on pre-determined streets.

Thus, the objective of this poster is to present the main results obtained by the work carried out. These data will help to review the Brazilian norms on Public Lighting and to improve the Brazilian Labeling Program and the PROCEL Seal Award for sodium vapor lamps, ballasts and luminaries.