Plan To Reduce Errors of Estimated Readings in the Billing Process of PREPA

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Abstract
This project develops a strategic plan to reduce the inefficiencies in the measurement and billing processes of the Puerto Rico Electrical Power Authority (PREPA). There are two methods for reading the meters: the manual system (Radix) and the remote system. During the years 2010 and 2011, the estimated readings reached 35%. After carrying out the plan of changing all the meters to the remote system, the estimated readings were reduced to 2%. This reduction permits a greater efficiency in the readings of the meters and reduces the complaints and investigations related to billing.

Introduction
The evaluation of processes is fundamentally related with the optimized utilization of human and economic resources and the implementation of technology that permits processes of high efficiency and quality. The high percentage of administrative losses due to the rise in billing complaints indicates an inefficiency in the measurement and billing processes.

Problem
During the years 2010 and 2011 the estimated readings reached 35% of the total of bills in the Humacao District.(1) The main reasons for the rise in the quantity of estimated readings are locked meters (inaccessible since they are located inside the residence or in places with doors and padlocks) and problems with modules (meters programming problems). (2) (3)

Table 1. Reckoned Readings in Humacao District (1)

Year	Reckoned readings
2008	20%
2009	27%
2010	34%
2011	35%
2012	2%

Methodology
The meters that needed to be changed were identified by the MR 704R report . (1) With the placement of 53,597 digital meters, PREPA undertook the pilot plan of replacing the system of analogous measurement with digital, focused on reducing the consumption billing errors and on providing the clients a method of controlling their energy consumption. (4) (5)

Costs
- Meter cost- $270
- Total replaced meters- 53,597 units
- 8 Substations -$37,500 ea.
- Total investment- $14,771,190.00
- Budget assigned for the district $16 million (5)

Advantages
An autoprotection system that avoids its alteration, allowing theft detection, remote connection and disconnection, and control of load. It permits detection of clients without service and the reduction of billing errors, stating the real consumption.(6)

Results
The complaints and petitions of investigation related to remote readings was reduced to 2%. The personnel was also reduced from 12 to 5 employees, therefore optimizing the resources and allowing to take readings in less time (2) , expediting the billing and achieving an efficiency of 98%.(3)

Conclusion
In the economic evaluation carried out to apply the replacement of meters and re-evaluation of the processes, an investment of $16 million was budgeted. This investment allowed to expedite the processes in each of the analyzed areas.
It allowed reducing 94% of the estimated readings, achieving a significant decrease in losses.

References
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