

LED technology for public roads and streets to save \$93 million annually

UPR-RUM project to start commercial production early next year

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A new system to illuminate public roads and streets based on light emitting diode (LED) technology developed by professors and students at the University of Puerto Rico, Mayagüez campus (RUM) could provide savings of \$93 million annually to the financially struggling Puerto Rico Electric Power Authority (Prepa) and its consumers.

That is a savings of 83% from the electric consumption of the current subsidy system provided for public roads and streets that cost consumers \$112 million in 2012, according to Prepa's audited financial statements.

"The implementation of the developed technology could reduce Prepa's consumption of about one million oil barrels a year," according to RUM Professor Pedro Resto, a member of the developing team.

"If all the current light bulbs were to be replaced, the subsidy now being provided by Prepa to the government and municipalities could be reduced from \$112 million to \$19 million annually," said Arturo Massol Deya, also a professor at RUM and from Casa Pueblo de Adjuntas, nonprofit community organization.

There are about 550,000 lights illuminating public roads and streets in Puerto Rico.



Massol added that the cost of public lighting represents another subsidy that is transferred to Prepa costumers. If the subsidy is divided equally among Prepa consumers, the electric bill carries an individual monthly charge of \$8.50 for subsidy provided.

"More than a year ago, we made a proposal to Andres Díaz, Pedro Resto and Gerson Beauchamp of the RUM Electric Engineering Department, to design a high-efficiency lighting system for our public roads which would reduce the current subsidy. They were successful," he added.

Recently, a prototype was installed at Casa Pueblo in Adjuntas.

Resto said that they expect to be ready for commercial production utilizing a production line donated by Hewlett-Packard to RUM. "We can manufacture the product right here in Puerto Rico. The current production line has a capacity of 80 'tablets' an hour. There will be no need to import the lamps from China or elsewhere," he said.

In addition, Massol pointed out that there is an additional saving to Prepa in the cost of the "hardware" (current street lamps) versus

the LED "tablets" developed for the project.

The LED based system developed by professors and students at the Mayagüez campus of the University of Puerto Rico would have a life span of 20 years versus five years for the current lighting technology used by Prepa.

In addition to the substantial 83% savings on oil consumption the cost of the LED "tablets" used by the developed technology will also provide a substantial savings in the acquisition by Prepa of the illumination technology. The cost of the tablets is estimated at \$250 each versus \$450 for the lamp bulbs currently being used.

The total eventual substitution of lighting of public roads and streets around the island will provide an acquisition cost reduction of approximately \$20,000,000 annually during the first five years. With a life span of five years approximately 100,000 light bulbs must be changed every year.

Massol concluded that color emission is 100% more effective than sodium discharging bulbs (current technology), the directional nature of the light reduces light contamination and the LED technology doesn't use mercury which makes its disposition more secure environmentally than the current technology.

Other industrial and commercial applications are being analyzed by the development team. ■

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